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In the Matter of: Entergy Nuclear Operations, Inc.
(Indian Point Nuclear Generating Units 2 and 3)
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May 15, 2008

Re: Indian Point Units 1, 2 & 3
Docket Nos. 50-003, 50-247, 50-286
NL-08-081

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 2007

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, 2007 to December 31, 2007.

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,

Robert Walpole
Manager, Licensing
Indian Point Energy Center

Enclosure

cc: w/o enclosure

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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, 2007

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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 2007 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 soil. 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 2007 AREOR also contains summaries and discussions of the results of the 2007 program, trend analyses, potential impact on the environment, land use census, and interlaboratory comparisons.

During 2007, a total of 1312 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 2007. 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, as well as 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 soil 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 2007. These changes are captured in the ODCM. Groundwater sample results for 2007 are summarized in Table B-21.

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 2007 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 2007; however, residual radioactivity from atmospheric weapons tests and naturally occurring radioactivity were the predominant sources of radioactivity in the samples collected. Analysis of the 2007 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 milliroentgen, 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.

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, gross beta, and I-131. 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 and for strontium-90. In 2007, additional sampling of fish was performed further upstream in the Hudson River, to confirm the acceptability of Roseton as the control location. Samples from all three locations were split with the US NRC and the New York State Department of Environmental Conservation. The results of this effort are described in Section 4.0 of this report

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, strontium-90 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.

The milch animal census is used to identify animals producing milk for human consumption within 5 miles (8 km) of Indian Point. The 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). 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.

3.4 Statistical Methodology

There are 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 used to calculate the LLD is:

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

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 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-21, 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 1997 through 2006. The 2007 average values are included in these historic tables for purposes of comparison.

SECTION 4

RESULTS AND DISCUSSION

4.0 RESULTS AND DISCUSSION

The 2007 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 2007 and assessed the significance of the findings.

A summary of the results of the 2007 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, 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 2007 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 2007, the detected radionuclide that may be attributable to past atmospheric weapons testing consisted of Cs-137 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 2007 REMP comprises those that may be attributable to current plant operations. During 2007, Cs-137, 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 5 of 45 samples at levels which were much lower than the required Lower Limit of Detection (3000 pCi/Liter); 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 2007. Cs-137 is ubiquitous in the environment from atmospheric testing debris and a lesser amount from the Chernobyl accident. Strontium-90 (Sr-90) is also present in the environment from atmospheric testing debris. In 2007, there were several detections of Cs-137 in shoreline soil (2 indicator samples and one control sample), aquatic vegetation (1 indicator station sample), bottom sediment (6 indicator and one control sample), soil (1 indicator location) and 5 groundwater samples. The fact that there was no Cs-134 present (recent plant releases

would contain Cs-134) and that there were detections also at control locations indicates that the activity was likely due to atmospheric weapons testing, with some contribution from plant releases from several years past.

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 annual reports. I-131 was not detected in 2007.
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 2007 REMP, though they (Co-58 and Co-60) can be observed in historical tables.

In the following sections, a summary of the results of the 2007 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 Framatome via the JAF Laboratory. In 2007, 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 1997 through 2006. The 2007 means are also presented in Table B-4. Table B-5 presents the 2007 TLD data for the inner ring and outer ring of TLDs.

The 2007 mean value for the direct radiation sample points was 14.3 mR per standard quarter. The mean value for the period 2000 through 2006 was 14.3 mR per standard quarter. At those locations where the

2007 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 14.4 mR per standard quarter and also average for the outer ring was 14.6 mR per standard quarter. The control location average for 2007 was 18.8 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 2007 averages are consistent with the historical data. The 2007 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 2007 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 0.013 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 2007 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 2007.

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 2007 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 2007. Cs-137 was detected at the Verplank 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 out of two samples. The average concentration for the indicator locations that had positive indication of Cs-137 was 106 pCi/kg-dry with a maximum concentration of 149 pCi/kg-dry. The control location with one positive sample indicated 357 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 2007 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 2007.

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 2007. There were no plant related radionuclides detected as a result of the GSA.

Strontium-90 was added to the analyte list in 2007. An intensive one-time sampling and analysis program was undertaken in the Spring to confirm the use of Roseton as a control location. Seven fish samples were taken from the indicator location and 5 from the control location. An additional 5 samples were taken further upstream near Catskill, NY. There were no plant related radionuclides or Strontium-90 detected in the samples above background. The US NRC and NYSDEC obtained splits of samples from all three locations and also analyzed them for strontium-90. Their results were consistent with those obtained by Entergy.

This intensive one time sampling and analysis program shows that there is no measurable impact on fish and invertebrates from Indian Point releases and that Roseton is a satisfactory control location. 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 2007. Cs-137 was detected at one of one indicator station samples, and neither of the two control station samples. The concentration of Cs-137 in the indicator sample was 31 pCi/kg. Cs-134 was not detected in any aquatic vegetation samples. While it is possible that the Cs-137 is from plant origin, the lack of Cs-134 suggests that the primary source of the Cs-137 is residual weapons test fallout.

This detection of Cs-137 in aquatic vegetation at the indicator location at such a low concentration is consistent with historical levels.

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 2007. Cs-137 was detected at 6 of 6 indicator station samples, and at one 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 2007 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 2007. 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 1997; 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 2007. Other than naturally occurring radionuclides, only Cs-137 was detected in any of the soil samples. It was detected in one of two indicator samples at 136.5 pCi/kg, and not in the control sample. No Cs-134 was detected in any soil 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 is also consistent with historical results over the last 10 years.

4.12 Groundwater

A summary of the groundwater samples for 2007 is contained in Table B-2. Data resulting from analysis of the groundwater samples for gamma emitters, tritium analysis, and Sr-90 are presented in Table B-21.

Tritium was detected at very low concentrations in 5 of the 45 groundwater samples analyzed. The amount detected ranged from 176 - 223 pCi/L and averaged 194 pCi/L which was well below the required LLD of 3000 pCi/L.

Other than tritium, Cs-137 and Ru-106 were the only other potentially plant-related radionuclides detected in the groundwater samples. Cesium-137 was present in 5 of the 45 samples taken at an average concentration of 11.5 pCi/L.

The 5 positive Cs-137 sample results were all from MW-51 all on the same sample date. This data was investigated by Entergy and the offsite laboratory. No apparent reason for these positive results could be determined. Follow-up samples collected a month later were all non-detect. Therefore these data are considered anomalous. There was only one positive Ru-106 sample result out of the 45 samples taken. Since no other positive radionuclides were present in the sample, this result is also considered anomalous.

Sporadic detection of H-3, Sr-90 and Cs-137 is expected as 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 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

Environmental Monitoring Land Use Census
Methodology:

A comprehensive survey of the of the 5 mile (8 kilometer) area surrounding the Indian Point Site was conducted during the 2007 Spring, Summer and Fall months in accordance with the ODCM.

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.

Information was obtained from the New York Agricultural Statistic Service on milching animals within the 5-mile area surrounding Indian Point Energy Center.

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 4 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.

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

Results:
A census was performed in the vicinity of Indian Point in 2007. This census consisted of a milch animal and a residence census. Results of this census are presented in Tables B-22 and B-23.

The results of the 2007 census were generally same as the 2006 census results. There were no animals producing milk for human consumption found within 5 miles (8 km) of the plant or listed in the New York Agricultural Statistic Service. 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 2007 land use census indicated there were no new residences that were closer in proximity to IPEC.

The Indian Point REMP does not include a garden census. ODCM allows the sampling of broad leaf vegetation in two sectors at the site boundary in lieu of performing a garden census. Analysis results 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 2007 REMP reveal that operations at the station did not result in an adverse impact on the environment.

The 2007 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. 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 2007 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-22 and B-23 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

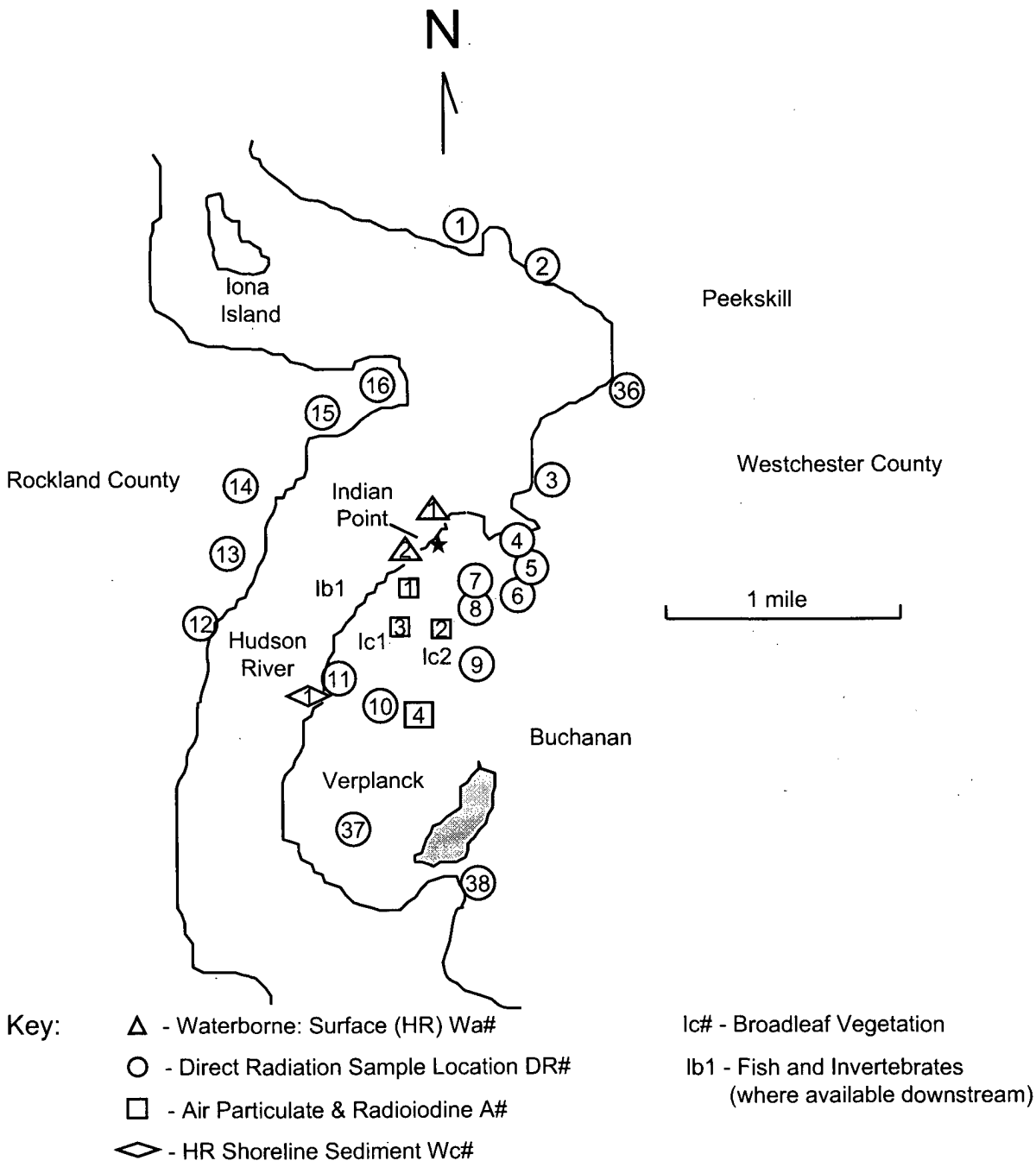
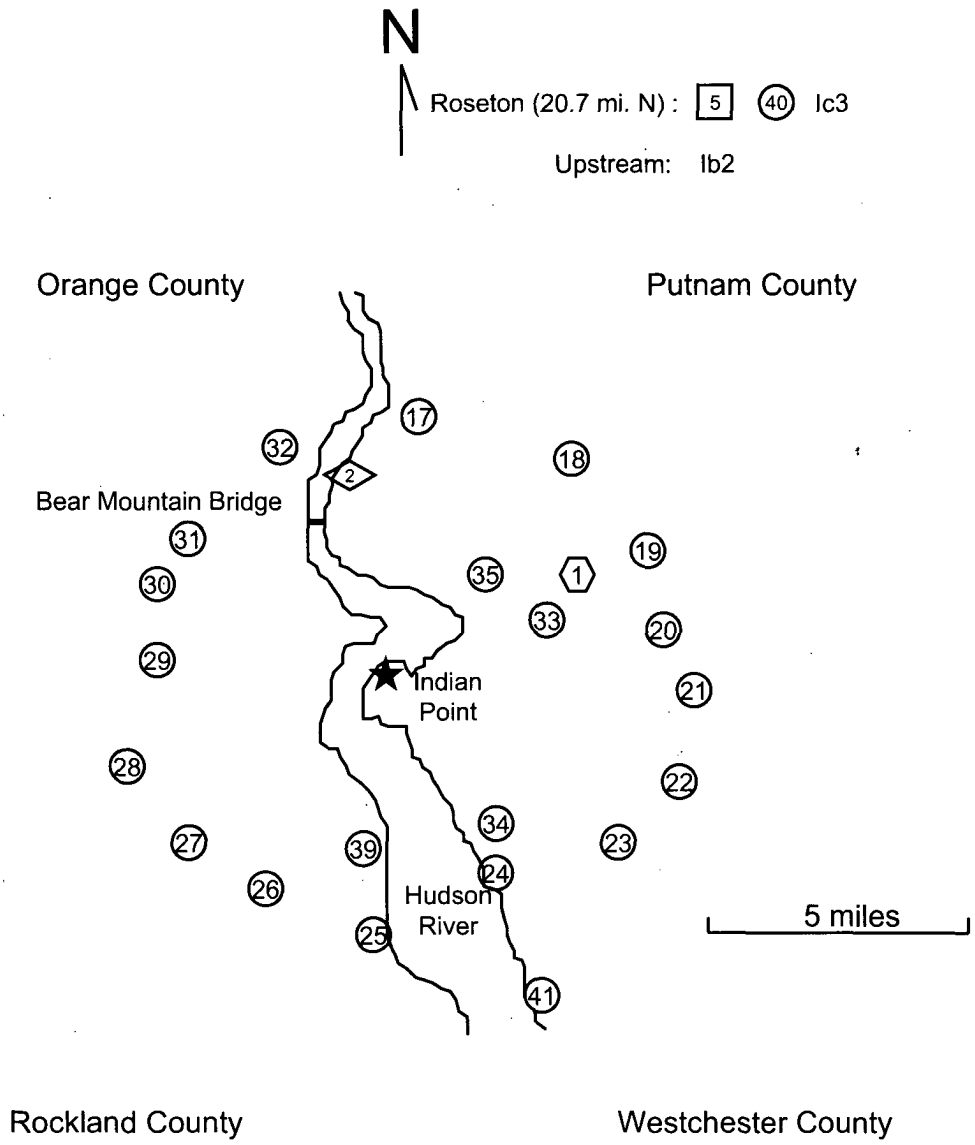


FIGURE A-2

SAMPLING LOCATIONS
Greater Than 2 Miles From Indian Point



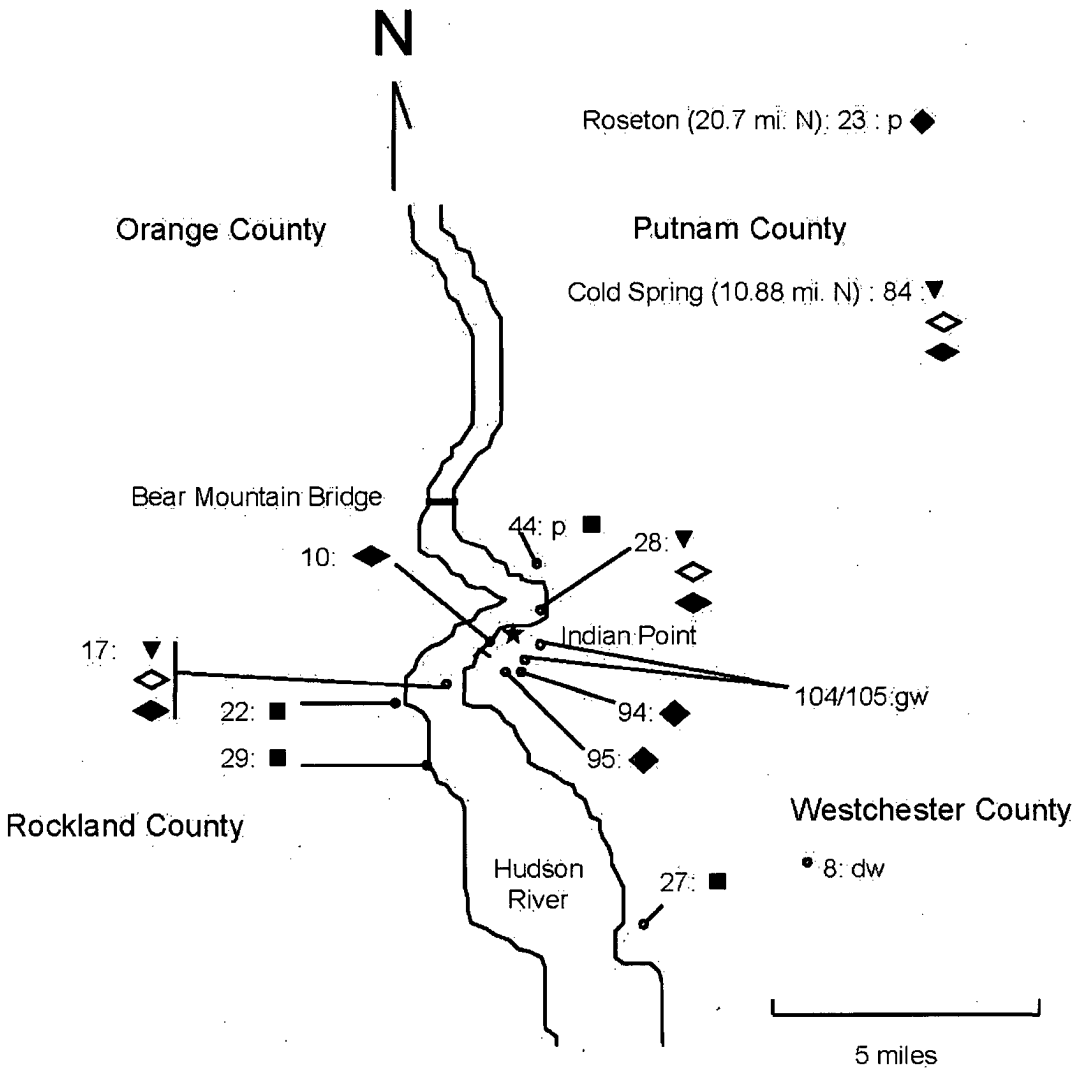
Key:

- ○ - 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 2007 Annual Radiological Environmental Monitoring Program Summary

The results of the 2007 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 2007. 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 2007, environmental sampling was performed for 12 media types addressed in the ODCM and direct radiation. A total of 1322 samples/measurements were obtained. Of the scheduled samples, 99.3% were collected and analyzed for the program. 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

There were no analytical deviations for 2007.

B.5 Special Reports

No special reports were required under the REMP.

TABLE B-1

SUMMARY OF SAMPLING DEVIATIONS
2007

MEDIA	TOTAL SCHEDULED SAMPLES	NUMBER OF DEVIATIONS*	SAMPLING EFFICIENCY %	REASON FOR DEVIATION
MEDIA				
PARTICULATES IN AIR	468	1	99.8%	See Table B-1a
CHARCOAL FILTER	466	2	99.6%	See Table B-1a
TLD	164	2	99%	See Table B-1b
HUDSON RIVER WATER	32	0	100%	N/A
DRINKING WATER	24	0	100%	N/A
SHORELINE SOIL	20	4	80%	See Table B-1c
BROAD LEAF VEGETATION	54	0	100%	N/A
FISH & INVERTEBRATES	27	0	100%	N/A
AQUATIC VEGETATION	3	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
GROUNDWATER SAMPLES	45	0	100%	N/A
TOTALS	1322	9	99.3%	

TOTAL NUMBER OF ANALYSES REPORTED = 1313

* Samples not collected or unable to be analyzed.

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

TABLE B-1a
2007 Air Sampling Deviations

STATION	WEEK	PROBLEM / ACTIONS TO PREVENT RECURRENCE
LOVETT	01/16/2007	We lost about 90 hours of sample this past week. The pump had failed.
LOVETT	03/12/2007	The Lovett air sample lost 48 hours of sample time last week. It was running when we left it last week and it was running when we changed it this week.
LOVETT	04/16/2007	The Lovett air sample lost 105 hours of sample time last week. It was running when we left it last week and it was running when we changed it this week.
LOVETT	04/23/2007	The Lovett air sample was not running when we went to change it out on 4/23/2007. According to the hour meter it stopped running 30 minutes after we left on 4/16/2007. We have no air sample for the past week. Power was restored to the station.
LOVETT	05/21/2007	The Lovett air sample lost 118.8 hours of sample time last week. It was running when we left it last week and it was running when we changed it this week.
TRAINING BLDG	06/12/2007	The Training Bldg air sample pump failed this past week and we lost 84 hours of sample. We replaced the pump.
PEEKSKILL GAS HOLDER	07/30/2007	The Peekskill Gas Holder 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.
TRAINING BLDG	11/13/2007	The Training Bldg air sampler lost 18 hours of sample time last week. It was running when left the week berofre and it was running when changed out again.
GRASSY POINT	12/26/2007	The Grassy Point air sample lost 47 hours of sample last week. It was running when we left it last week and it was running when we changed it this week.

TABLE B-1b
2007 TLD Deviations

STATION	QUARTER	PROBLEM / ACTIONS TO PREVENT RECURRENCE
TLD 200 & 212	10/18/2007	Two of the 10 CFR20 / 40CFR190 TLD locations on site had the TLD's missing.

TABLE B-1c
2007 Other Media Deviations

STATION	SAMPLE SCHEDULE	PROBLEM / ACTIONS TO PREVENT RECURRENCE
HUDSON RIVER INLET	02/16/2007	The dock was snow covered and ice covered and unsafe to go out and get the sample.
HUDSON RIVER OUTLET	02/16/2007	The hose was frozen and there was no sample for the week.
LENT'S COVE	06/06/2007	Shoreline soil sample not analyzed for Sr-90
WHITE BEACH	06/07/2007	Shoreline soil sample not analyzed for Sr-90
MANITOU INLET	06/06/2007	Shoreline soil sample not analyzed for Sr-90
COLD SPRING	06/06/2007	Shoreline soil sample not analyzed for Sr-90
LENTS COVE	09/06/2007	No aquatic vegetation was found in this area
VERPLANCK AREA	09/06/2007	No aquatic vegetation was found in this area

TABLE B-2
ODCM ANNUAL SUMMARY - 2007

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	*14.3 (160/160) / 9.5 - 22.2*	West Shore Drive - North 1.21 Mi (W) at 276° DR13 20.0 *(4/4) / 18.3 - 21.6*	*18.8 (4/4) / 17.4 - 21.5*	0
AIR PARTICULATES AND RADIOIODINE (pCi/m^3) B-6, B-7, B-8	GB (467)		*0.013 (415/416) / 0.003 - 0.026*	#22 Lovett Power Plant 1.6 Mi (WSW) at 244° 0.014 (51/52) / 0.003-0.023	*0.013 (52/52) / 0.003-0.023*	0
	I-131 (466)	0.07	<Lc	<Lc	<Lc	0
	GSA (36) Cs-134	0.05	<Lc	<Lc	<Lc	0
	GSA (36) Cs-137	0.06	<Lc	<Lc	<Lc	0
SURFACE HUDSON RIVER WATER (pCi/L) B-9, B-10	H-3 (8)	3000 (c)	<Lc	<Lc	<Lc	0
	GSA (24)					
	Mn-54	15	<Lc	<Lc	<Lc	0
	Co-58	15	<Lc	<Lc	<Lc	0
	Fe-59	30	<Lc	<Lc	<Lc	0
	Co-60	15	<Lc	<Lc	<Lc	0
	Zn-65	30	<Lc	<Lc	<Lc	0
	Zr/Nb-95	15	<Lc	<Lc	<Lc	0
	I-131	15	<Lc	<Lc	<Lc	0
	Cs-134	15	<Lc	<Lc	<Lc	0
	Cs-137	18	<Lc	<Lc	<Lc	0
	Ba/La-140	15	<Lc	<Lc	<Lc	0

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

TABLE B-2
ODCM ANNUAL SUMMARY - 2007

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	GB (24)	4				
	H-3 (8)	2000	<Lc	<Lc	N/A	0
	GSA (24)					
	Mn-54	15	<Lc	<Lc	N/A	0
	Co-58	15	<Lc	<Lc	N/A	0
	Fe-59	30	<Lc	<Lc	N/A	0
	Co-60	15	<Lc	<Lc	N/A	0
	Zn-65	30	<Lc	<Lc	N/A	0
	Zr/Nb-95	15	<Lc	<Lc	N/A	0
	I-131	15	<Lc	<Lc	N/A	0
	Cs-134	15	<Lc	<Lc	N/A	0
	Cs-137	18	<Lc	<Lc	N/A	0
	Ba/La-140	15	<Lc	<Lc	N/A	0
SHORELINE SOIL (pCi/kg - dry) B-13	GSA (10)					
	Cs-134	150	<Lc	<Lc	<Lc	0
	Cs-137	180	*106 (2/6) / 63.3 - 149*	#17 Off Verplanck 1.5 Mi (SSW) at 202.5° 106 *(2/2) / 63.3 - 149*	*#50 Manitow Inlet 357 (1/4) / 357 - 357*	0
	Sr-90 (6)	5000	<Lc	<Lc	<Lc	0

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

TABLE B-2
ODCM ANNUAL SUMMARY - 2007

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	<Lc	<Lc	<Lc	0
	Co-60	N/A	<Lc	<Lc	<Lc	0
	Cs-134	60	<Lc	<Lc	<Lc	0
	Cs-137	80	<Lc	<Lc	<Lc	0
FISH AND INVERTEBRATES (pCi/kg - wet) B-15	GSA (27)					
	Mn-54	130	<Lc	<Lc	<Lc	0
	Co-58	130	<Lc	<Lc	<Lc	0
	Fe-59	260	<Lc	<Lc	<Lc	0
	Co-60	130	<Lc	<Lc	<Lc	0
	Zn-65	260	<Lc	<Lc	<Lc	0
	Cs-134	130	<Lc	<Lc	<Lc	0
	Cs-137	150	<Lc	<Lc	<Lc	0
	Sr-90 (27)	5	<Lc	<Lc	<Lc	0
AQUATIC VEGETATION (pCi/kg - WET)	GSA(7)					
	Co-60	NONE	<Lc	<Lc	<Lc	0
	I-131	100	<Lc	<Lc	<Lc	0
	Cs-134	100	<Lc	<Lc	<Lc	0
	Cs-137	100	#17 Off Verplanck 1.5 Mi (SSW) at 202.5° 31.0 *(1/1) / 31.0 - 31.0*	#17 Off Verplanck 1.5 Mi (SSW) at 202.5° 31.0 *(1/1) / 31.0 - 31.0*	<Lc	0

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

TABLE B-2
ODCM ANNUAL SUMMARY - 2007

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)					
	Co-60	NONE	<Lc	<Lc	<Lc	0
	Cs-134	150	<Lc	<Lc	<Lc	0
	Cs-137	180	*221 (6/6) / 95.0 - 373.7*	#28 Lents Cove 0.45 Mi (ENE) at 069° 291.5 (2/2) / 373.7 - 209.2	#84 Cold Spring 20.7 Mi (N) at 356° 254.8 *(1/2) / 254.8 - 254.8*	0
SOIL (pCi/kg - DRY)	GSA(3)					
	Co-60	NONE	<Lc	<Lc	<Lc	0
	Cs-134	150	<Lc	<Lc	<Lc	0
	Cs-137	180	#94 Training Center 0.45 Mi (SSW) at 208° 136.5 (1/2) / 136.5 - 136.5	#94 Training Center 0.45 Mi (SSW) at 208° 136.5 (1/1) / 136.5 - 136.5	<Lc	0
PRECIPITATION (pCi/L)	GSA(8)					
	H-3	3000 (c)	<Lc	<Lc	<Lc	0
	Co-60	15	<Lc	<Lc	<Lc	0
	Cs-134	15	<Lc	<Lc	<Lc	0
	Cs-137	18	<Lc	<Lc	<Lc	0

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

TABLE B-2
ODCM ANNUAL SUMMARY - 2007

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(45)					
	H-3 (45)	3000 (c)	194 (5/45) / 176 - 223	#105 MW-51 0.18 mi - SSW 203 (3/26) / 187 - 223	N/A	0
	Co-60 (45)	15	<Lc	<Lc	N/A	0
	Cs-134 (45)	15	<Lc	<Lc	N/A	0
	Cs-137 (45)	18	11.5 (5/45) / 5.15 - 21.6	#105 MW-51 0.18 mi - SSW 11.5 (5/26) / 5.15 - 21.6	N/A	0
	Sr-90 (41)	1	<Lc	<Lc	N/A	0

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

TABLE B-3

2007 DIRECT RADIATION, QUARTERLY DATA
(mR per STANDARD QUARTER)

Station ID	Sector	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	AVG	Yearly
DR-01	N	15.56 ± 0.65	17.3 ± 0.8	14.86 ± 0.7	15.69 ± 1.03	15.9	63
DR-02	NNE	14.00 ± 0.55	15.4 ± 1.3	13.24 ± 0.7	14.54 ± 0.69	14.3	57
DR-03	NE	11.91 ± 0.77	12.9 ± 0.7	10.47 ± 0.7	11.75 ± 0.82	11.8	47
DR-04	ENE	13.03 ± 0.65	15.0 ± 0.8	12.57 ± 0.7	13.63 ± 0.70	13.6	54
DR-05	E	13.29 ± 0.75	15.2 ± 0.7	13.24 ± 0.8	14.20 ± 0.82	14.0	56
DR-06	ESE	13.99 ± 0.53	15.7 ± 0.7	12.79 ± 0.7	14.41 ± 0.63	14.2	57
DR-07	SE	15.44 ± 0.73	18.5 ± 0.7	14.73 ± 0.8	15.96 ± 0.79	16.2	65
DR-08	SSE	11.70 ± 0.55	13.6 ± 0.7	11.38 ± 0.8	12.04 ± 0.55	12.2	49
DR-09	S	12.81 ± 0.71	14.3 ± 0.8	12.46 ± 0.9	13.43 ± 0.82	13.3	53
DR-10	SSW	13.28 ± 0.62	15.2 ± 1.1	13.64 ± 0.9	14.53 ± 0.78	14.2	57
DR-11	SW	10.35 ± 0.57	12.3 ± 0.8	9.96 ± 0.6	10.63 ± 0.69	10.8	43
DR-12	WSW	16.39 ± 0.77	19.5 ± 0.9	16.86 ± 0.9	15.52 ± 0.79	17.1	68
DR-13	W	18.34 ± 0.78	21.6 ± 1.1	19.49 ± 1.5	20.74 ± 1.07	20.0	80
DR-14	WNW	12.51 ± 0.69	15.5 ± 1.2	13.39 ± 1.1	12.86 ± 0.99	13.6	54
DR-15	NW	12.95 ± 0.66	15.4 ± 0.6	12.59 ± 0.7	13.88 ± 0.86	13.7	55
DR-16	NNW	13.82 ± 0.61	16.9 ± 0.6	14.78 ± 0.7	15.08 ± 0.82	15.2	61
DR-17	N	14.27 ± 0.78	17.3 ± 1.0	14.49 ± 0.8	15.34 ± 1.35	15.3	61
DR-18	NNE	13.53 ± 0.66	16.2 ± 0.9	12.85 ± 0.7	14.50 ± 0.93	14.3	57
DR-19	NE	14.89 ± 1.28	16.7 ± 0.9	13.47 ± 1.0	15.17 ± 0.85	15.0	60
DR-20	ENE	12.58 ± 0.58	14.6 ± 0.7	12.37 ± 0.8	13.71 ± 0.87	13.3	53
DR-21	E	13.27 ± 0.71	15.5 ± 0.6	12.09 ± 0.8	13.94 ± 0.76	13.7	55
DR-22	ESE	11.42 ± 0.65	13.1 ± 0.9	9.52 ± 0.6	11.63 ± 0.70	11.4	46
DR-23	SE	13.28 ± 0.47	16.3 ± 1.0	12.54 ± 0.7	13.97 ± 1.20	14.0	56
DR-24	SSE	13.87 ± 0.85	16.4 ± 0.8	13.68 ± 0.7	14.93 ± 0.73	14.7	59
DR-25	S	12.17 ± 0.56	15.5 ± 1.0	11.51 ± 0.8	13.42 ± 0.91	13.1	53
DR-26	SSW	13.58 ± 0.61	16.9 ± 0.7	13.70 ± 1.2	14.73 ± 1.18	14.7	59
DR-27	SW	13.01 ± 0.91	17.3 ± 2.2	12.61 ± 0.8	13.65 ± 0.84	14.1	57
DR-28	WSW	18.05 ± 0.66	22.2 ± 0.9	18.57 ± 0.9	20.06 ± 1.19	19.7	79
DR-29	W	13.12 ± 0.68	17.9 ± 1.3	13.43 ± 0.7	14.27 ± 0.88	14.7	59
DR-30	WNW	13.55 ± 0.58	18.8 ± 1.0	14.42 ± 0.7	14.56 ± 0.63	15.3	61
DR-31	NW	15.57 ± 0.67	19.8 ± 0.9	15.46 ± 1.1	16.59 ± 0.89	16.9	67
DR-32	NNW	12.97 ± 0.50	16.1 ± 0.9	12.31 ± 0.7	13.33 ± 0.68	13.7	55
DR-33	NE	13.12 ± 0.88	15.8 ± 0.7	12.28 ± 0.7	13.50 ± 0.68	13.7	55
DR-34	SE	12.24 ± 0.50	15.5 ± 0.9	11.28 ± 0.6	12.21 ± 0.59	12.8	51
DR-35	NNE	12.95 ± 0.62	15.4 ± 0.8	11.63 ± 0.6	13.01 ± 0.95	13.2	53
DR-36	NE	14.28 ± 0.76	17.6 ± 2.3	13.07 ± 0.8	14.91 ± 1.34	15.0	60
DR-37	SSW	12.75 ± 0.61	15.4 ± 0.6	12.17 ± 1.6	14.60 ± 0.86	13.7	55
DR-38	S	11.71 ± 0.58	14.5 ± 0.7	11.60 ± 0.7	13.59 ± 0.66	12.8	51
DR-39	SSW	14.46 ± 0.70	18.1 ± 2.2	13.79 ± 0.7	14.94 ± 0.75	15.3	61
DR-40**	N	17.42 ± 0.99	21.5 ± 0.9	17.43 ± 0.9	18.87 ± 0.90	18.8	75
DR-41	SSE	12.41 ± 0.81	14.8 ± 0.8	11.64 ± 0.8	12.04 ± 0.69	12.7	51
AVERAGE		13.6	16.3	13.2	14.3	14.3	57

* Data not available

** Control Location

TABLE B-4

DIRECT RADIATION, 1997 THROUGH 2007 DATA (mR per Standard Quarter)

Station ID	Mean (1997-2006)	Standard Deviation (1997-2006)	Minimum Value (1997-2006)	Maximum Value (1997-2006)	2007 Average
DR-01	62.8	2.8	58.2	67.8	63.4
DR-02	64.4	9.9	53.7	79.0	57.1
DR-03	48.2	2.1	43.8	50.4	47.0
DR-04	53.9	3.7	46.8	58.6	54.3
DR-05	54.5	2.6	48.3	58.0	55.9
DR-06	53.8	3.1	46.2	57.6	56.9
DR-07	63.7	3.7	55.6	68.6	64.6
DR-08	52.1	2.6	47.1	56.3	48.7
DR-09	51.6	3.6	44.1	55.2	53.0
DR-10	55.3	6.0	39.2	59.8	56.7
DR-11	45.3	2.2	40.8	48.5	43.3
DR-12	67.0	3.7	62.4	76.0	68.3
DR-13	76.2	4.0	67.8	81.3	80.2
DR-14	54.4	3.5	49.8	60.4	54.3
DR-15	54.5	4.1	46.5	59.8	54.9
DR-16	59.4	2.8	55.2	63.6	60.6
DR-17	59.8	3.2	56.0	66.8	61.4
DR-18	57.0	2.6	52.2	60.7	57.1
DR-19	60.0	2.8	55.1	63.6	60.2
DR-20	54.8	3.7	47.4	59.2	53.3
DR-21	55.2	3.2	49.8	60.6	54.8
DR-22	46.8	3.6	40.2	51.9	45.7
DR-23	56.1	2.9	49.5	58.9	56.1
DR-24	55.7	2.9	49.2	59.8	58.9
DR-25	49.7	2.5	44.7	53.2	52.6
DR-26	55.2	2.5	50.4	58.9	58.9
DR-27	55.3	3.9	46.8	61.5	56.6
DR-28	64.8	6.5	57.2	77.1	78.9
DR-29	66.8	8.7	54.6	77.3	58.8
DR-30	63.9	6.3	52.2	71.1	61.3
DR-31	72.7	5.8	62.1	80.4	67.4
DR-32	53.1	3.4	45.9	57.2	54.7
DR-33	44.7	8.6	34.0	55.0	54.7
DR-34	53.5	4.7	43.2	60.7	51.2
DR-35	57.4	4.1	48.6	61.2	52.9
DR-36	61.8	5.0	52.5	70.5	59.9
DR-37	55.2	3.3	48.9	60.0	54.9
DR-38	52.2	2.8	48.6	58.4	51.4
DR-39	62.8	4.0	55.2	66.8	61.3
DR-40**	63.1	5.2	54.6	70.4	75.2
DR-41	52.5	4.0	44.4	57.9	50.9
Average	57.2	-	50.0	62.9	57.8

* Data not available

** Control Location

TABLE B-5

2007 DIRECT RADIATION
INNER AND OUTER RINGS
(mR per Standard Quarter)

Inner Ring ID	Outer Ring ID	Sector	Inner Ring Annual Average	Outer Ring Annual Average
DR-01	DR-17	N	63.4	61.4
DR-02	DR-18	NNE	57.1	57.1
DR-03	DR-19	NE	47.0	60.2
DR-04	DR-20	ENE	54.3	53.3
DR-05	DR-21	E	55.9	54.8
DR-06	DR-22	ESE	56.9	45.7
DR-07	DR-23	SE	64.6	56.1
DR-08	DR-24	SSE	48.7	58.9
DR-09	DR-25	S	53.0	52.6
DR-10	DR-26	SSW	56.7	58.9
DR-11	DR-27	SW	43.3	56.6
DR-12	DR-28	WSW	68.3	78.9
DR-13	DR-29	W	80.2	58.8
DR-14	DR-30	WNW	54.3	61.3
DR-15	DR-31	NW	54.9	67.4
DR-16	DR-32	NNW	60.6	54.7
Average			57.4	58.5

TABLE B-6

IPEC

ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - 2007

GROSS BETA ACTIVITY pCi/ m^3 ± 1 Sigma

SAMPLE STATION #

Week Number	Week End Date	4	5	94	95	23**	Week Number	22	27	29	44
1	01/02/2007	0.012 ± 0.001	0.013 ± 0.001	0.015 ± 0.001	0.010 ± 0.001	0.014 ± 0.001	1	0.016 ± 0.001	0.014 ± 0.001	0.016 ± 0.001	0.012 ± 0.001
2	01/09/2007	0.013 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	2	0.013 ± 0.002	0.012 ± 0.001	0.011 ± 0.001	0.015 ± 0.002
3	01/16/2007	0.011 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	3	0.012 ± 0.002	0.013 ± 0.001	0.010 ± 0.001	0.012 ± 0.001
4	01/23/2007	0.017 ± 0.001	0.013 ± 0.001	0.016 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	4	0.018 ± 0.002	0.016 ± 0.001	0.014 ± 0.001	0.014 ± 0.001
5	01/30/2007	0.015 ± 0.001	0.017 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.016 ± 0.001	5	0.017 ± 0.002	0.017 ± 0.001	0.016 ± 0.001	0.016 ± 0.001
6	02/06/2007	0.020 ± 0.002	0.018 ± 0.001	0.015 ± 0.001	0.015 ± 0.001	0.017 ± 0.001	6	0.020 ± 0.002	0.019 ± 0.001	0.020 ± 0.001	0.023 ± 0.002
7	02/13/2007	0.015 ± 0.001	0.011 ± 0.001	0.017 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	7	0.013 ± 0.001	0.014 ± 0.001	0.011 ± 0.001	0.014 ± 0.001
8	02/20/2007	0.017 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.015 ± 0.001	0.009 ± 0.001	8	0.016 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.016 ± 0.001
9	02/27/2007	0.010 ± 0.001	0.008 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	9	0.012 ± 0.001	0.010 ± 0.001	0.013 ± 0.001	0.010 ± 0.001
10	03/06/2007	0.011 ± 0.001	0.008 ± 0.001	0.007 ± 0.001	0.009 ± 0.001	0.008 ± 0.001	10	0.008 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	0.009 ± 0.001
11	03/13/2007	0.018 ± 0.001	0.018 ± 0.001	0.019 ± 0.001	0.017 ± 0.001	0.021 ± 0.001	11	0.022 ± 0.002	0.016 ± 0.001	0.020 ± 0.001	0.018 ± 0.001
12	03/20/2007	0.015 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.016 ± 0.001	0.014 ± 0.001	12	0.015 ± 0.001	0.017 ± 0.001	0.016 ± 0.001	0.015 ± 0.001
13	03/27/2007	0.010 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	13	0.015 ± 0.001	0.013 ± 0.001	0.015 ± 0.001	0.013 ± 0.001
14	04/03/2007	0.011 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	14	0.012 ± 0.001	0.008 ± 0.001	0.011 ± 0.001	0.012 ± 0.001
15	04/10/2007	0.004 ± 0.001	0.004 ± 0.001	0.004 ± 0.001	0.005 ± 0.001	0.003 ± 0.001	15	0.003 ± 0.001	0.003 ± 0.001	0.004 ± 0.001	0.004 ± 0.001
16	04/17/2007	0.004 ± 0.001	0.005 ± 0.001	0.005 ± 0.001	0.007 ± 0.001	0.005 ± 0.001	16	0.008 ± 0.002	0.006 ± 0.001	0.005 ± 0.001	0.009 ± 0.001
17	04/24/2007	0.011 ± 0.001	0.008 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	0.010 ± 0.001	17	See Deviation Report	0.010 ± 0.001	0.012 ± 0.001	0.006 ± 0.001
18	05/01/2007	0.008 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	18	0.005 ± 0.001	0.006 ± 0.001	0.007 ± 0.001	0.008 ± 0.001
19	05/08/2007	0.008 ± 0.001	0.008 ± 0.001	0.008 ± 0.001	0.008 ± 0.001	0.007 ± 0.001	19	0.009 ± 0.001	0.009 ± 0.001	0.008 ± 0.001	0.008 ± 0.001
20	05/15/2007	0.009 ± 0.001	0.007 ± 0.001	0.006 ± 0.001	0.006 ± 0.001	0.007 ± 0.001	20	0.006 ± 0.001	0.009 ± 0.001	0.006 ± 0.001	0.009 ± 0.001
21	05/22/2007	0.009 ± 0.001	0.007 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.009 ± 0.001	21	0.021 ± 0.003	0.012 ± 0.001	0.012 ± 0.001	0.013 ± 0.001
22	05/29/2007	0.015 ± 0.001	0.016 ± 0.001	0.020 ± 0.002	0.014 ± 0.001	0.018 ± 0.001	22	0.017 ± 0.001	0.019 ± 0.001	0.015 ± 0.001	0.020 ± 0.001
23	06/05/2007	0.012 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.017 ± 0.002	23	0.015 ± 0.002	0.011 ± 0.001	0.015 ± 0.001	0.013 ± 0.001
24	06/12/2007	0.009 ± 0.001	0.012 ± 0.001	0.010 ± 0.002	0.013 ± 0.001	0.010 ± 0.001	24	0.008 ± 0.001	0.011 ± 0.001	0.008 ± 0.001	0.010 ± 0.001
25	06/19/2007	0.009 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	25	0.009 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.009 ± 0.001
26	06/26/2007	0.013 ± 0.001	0.011 ± 0.001	0.010 ± 0.004	0.011 ± 0.001	0.009 ± 0.001	26	0.010 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.013 ± 0.001

** Control sample location

TABLE B-6
ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - 2007
GROSS BETA ACTIVITY pCi/ m^3 ± 1 Sigma

SAMPLE STATION #

Week Number	Week End Date	4	5	94	95	23**	Week Number	22	27	29	44
27	07/02/2007	0.010 ± 0.001	0.009 ± 0.001	0.013 ± 0.001	0.013 ± 0.001	0.016 ± 0.001	27	0.016 ± 0.001	0.013 ± 0.001	0.013 ± 0.001	0.017 ± 0.001
28	07/10/2007	0.016 ± 0.001	0.014 ± 0.001	0.016 ± 0.001	0.016 ± 0.001	0.012 ± 0.001	28	0.012 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.010 ± 0.001
29	07/17/2007	0.016 ± 0.001	0.010 ± 0.001	0.014 ± 0.001	0.016 ± 0.001	0.017 ± 0.001	29	0.018 ± 0.002	0.010 ± 0.001	0.015 ± 0.001	0.016 ± 0.001
30	07/24/2007	0.010 ± 0.001	0.011 ± 0.001	0.009 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	30	0.012 ± 0.001	0.012 ± 0.001	0.009 ± 0.001	0.016 ± 0.001
31	07/31/2007	0.015 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	31	0.011 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.010 ± 0.002
32	08/07/2007	0.021 ± 0.002	0.017 ± 0.001	0.018 ± 0.001	0.019 ± 0.002	0.018 ± 0.001	32	0.018 ± 0.002	0.020 ± 0.002	0.017 ± 0.001	0.018 ± 0.002
33	08/14/2007	0.017 ± 0.001	0.013 ± 0.001	0.017 ± 0.001	0.017 ± 0.002	0.015 ± 0.001	33	0.018 ± 0.002	0.014 ± 0.001	0.018 ± 0.001	0.015 ± 0.001
34	08/21/2007	0.013 ± 0.001	0.011 ± 0.001	0.015 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	34	0.016 ± 0.002	0.012 ± 0.001	0.012 ± 0.001	0.013 ± 0.001
35	08/28/2007	0.011 ± 0.001	0.007 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.012 ± 0.001	35	0.007 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.009 ± 0.001
36	09/04/2007	0.016 ± 0.001	0.017 ± 0.001	0.017 ± 0.001	0.017 ± 0.002	0.016 ± 0.001	36	0.017 ± 0.001	0.016 ± 0.001	0.018 ± 0.001	0.015 ± 0.001
37	09/11/2007	0.018 ± 0.001	0.016 ± 0.001	0.017 ± 0.001	0.018 ± 0.002	0.019 ± 0.002	37	0.020 ± 0.002	0.018 ± 0.001	0.017 ± 0.001	0.020 ± 0.002
38	09/18/2007	0.010 ± 0.001	0.010 ± 0.001	0.007 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	38	0.007 ± 0.001	0.006 ± 0.001	0.008 ± 0.001	0.009 ± 0.001
39	09/25/2007	0.020 ± 0.002	0.016 ± 0.001	0.021 ± 0.002	0.021 ± 0.002	0.012 ± 0.001	39	0.012 ± 0.001	0.018 ± 0.001	0.017 ± 0.001	0.021 ± 0.002
40	10/02/2007	0.017 ± 0.001	0.021 ± 0.002	0.022 ± 0.002	0.021 ± 0.002	0.019 ± 0.002	40	0.023 ± 0.002	0.017 ± 0.001	0.021 ± 0.001	0.018 ± 0.002
41	10/09/2007	0.015 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.017 ± 0.002	0.017 ± 0.001	41	0.014 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	0.012 ± 0.001
42	10/16/2007	0.005 ± 0.001	0.007 ± 0.001	0.005 ± 0.001	0.008 ± 0.001	0.005 ± 0.001	42	0.006 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.004 ± 0.001
43	10/23/2007	0.024 ± 0.002	0.022 ± 0.002	0.026 ± 0.002	0.025 ± 0.002	0.023 ± 0.002	43	0.020 ± 0.002	0.020 ± 0.002	0.020 ± 0.001	0.021 ± 0.002
44	10/30/2007	0.011 ± 0.001	0.009 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.015 ± 0.001	44	0.012 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.022 ± 0.002
45	11/06/2007	0.019 ± 0.002	0.019 ± 0.001	0.019 ± 0.001	0.020 ± 0.002	0.020 ± 0.001	45	0.017 ± 0.001	0.019 ± 0.001	0.019 ± 0.001	0.017 ± 0.002
46	11/13/2007	0.011 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	46	0.017 ± 0.001	0.012 ± 0.001	0.014 ± 0.001	0.013 ± 0.001
47	11/19/2007	0.016 ± 0.002	0.014 ± 0.001	0.018 ± 0.002	0.018 ± 0.002	0.013 ± 0.001	47	0.017 ± 0.002	0.015 ± 0.001	0.015 ± 0.001	0.017 ± 0.002
48	11/27/2007	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	48	0.016 ± 0.001	0.011 ± 0.001	0.014 ± 0.001	0.013 ± 0.001
49	12/04/2007	0.014 ± 0.001	0.013 ± 0.001	0.015 ± 0.001	0.018 ± 0.001	0.017 ± 0.001	49	0.017 ± 0.001	0.015 ± 0.001	0.015 ± 0.001	0.014 ± 0.001
50	12/11/2007	0.013 ± 0.001	0.015 ± 0.001	0.015 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	50	0.013 ± 0.001	0.017 ± 0.001	0.013 ± 0.001	0.012 ± 0.001
51	12/18/2007	0.016 ± 0.001	0.018 ± 0.001	0.021 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	51	0.020 ± 0.002	0.017 ± 0.001	0.019 ± 0.001	0.019 ± 0.002
52	12/24/2007	0.018 ± 0.002	0.018 ± 0.002	0.018 ± 0.002	0.019 ± 0.002	0.018 ± 0.001	52	0.019 ± 0.002	0.017 ± 0.001	0.020 ± 0.001	0.019 ± 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 10E-3 pCi/ m^3 ± 1 Sigma

SAMPLE LOCATIONS - 1ST QTR 2007

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	57.5 +/- 20.2	84.2 +/- 20.5	122.4 +/- 29.3	115.3 +/- 23.7	95.7 +/- 24.3	108.5 +/- 25.5	112.2 +/- 21.2	91.4 +/- 17.8	< 26.8
Cs-134	< 1.5	< 1.6	< 1.5	< 1.1	< 1.9	< 1.5	< 1.4	< 0.9	< 1.6
Cs-137	< 0.8	< 0.7	< 1.3	< 1.0	< 0.8	< 1.1	< 1.6	< 0.5	< 1.2
Zr-95	< 2.6	< 3.0	< 3.5	< 2.8	< 3.0	< 5.3	< 2.5	< 1.9	< 3.8
Nb-95	< 2.5	< 2.7	< 2.9	< 2.5	< 2.5	< 2.7	< 2.4	< 2.0	< 3.1
Co-58	< 2.2	< 1.4	< 2.3	< 1.7	< 1.6	< 2.5	< 1.5	< 1.1	< 2.5
Mn-54	< 1.2	< 1.0	< 1.5	< 1.2	< 1.2	< 1.2	< 1.5	< 0.8	< 1.7
Zn-65	< 3.0	< 3.8	< 4.5	< 2.8	< 3.3	< 3.0	< 3.2	< 3.0	< 4.9
Co-60	< 1.7	< 1.2	< 2.2	< 1.6	< 1.7	< 1.7	< 1.7	< 1.0	< 2.6
K-40	< 18.7	< 13.4	< 24.2	< 14.1	< 17.6	< 18.6	< 17.1	< 10.3	< 24.4

** Control Sample Location

SAMPLE LOCATIONS - 2ND QTR 2007

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	131.5 +/- 17.0	103.3 +/- 12.7	110.1 +/- 14.6	125.5 +/- 14.6	136.0 +/- 14.1	107.1 +/- 15.0	137.1 +/- 17.2	131.3 +/- 12.3	109.5 +/- 15.1
Cs-134	< 0.7	< 0.6	< 0.4	< 0.9	< 0.7	< 0.9	< 0.5	< 0.3	< 0.6
Cs-137	< 0.5	< 0.3	< 0.4	< 0.6	< 0.3	< 0.6	< 0.4	< 0.6	< 0.6
Zr-95	< 1.6	< 1.8	< 1.6	< 1.4	< 0.9	< 2.4	< 2.0	< 1.2	< 1.2
Nb-95	< 1.5	< 0.6	< 1.1	< 0.8	< 1.5	< 0.9	< 1.4	< 1.0	< 1.4
Co-58	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.6	< 0.9	< 0.4	< 0.7
Mn-54	< 0.8	< 0.6	< 0.9	< 0.8	< 0.5	< 0.6	< 0.5	< 0.6	< 0.7
Zn-65	< 2.9	< 1.6	< 1.2	< 1.4	< 1.3	< 2.0	< 2.2	< 1.2	< 1.5
Co-60	< 1.0	< 0.5	< 0.8	< 0.8	< 0.5	< 0.6	< 0.9	< 0.8	< 0.8
K-40	< 8.5	< 5.7	< 7.2	< 7.5	< 6.8	< 7.1	< 9.4	< 4.1	< 7.5

** Control Sample Location

TABLE B-7
CONCENTRATIONS OF GAMMA EMITTERS IN QUARTERLY COMPOSITES
OF SITE AIR PARTICULATE SAMPLES - 2007
Results in Units of 10E-3 pCi/ m^3 ± 1 Sigma

SAMPLE LOCATIONS - 3RD QTR 2007

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	132.7 +/- 13.6	130.1 +/- 13.2	116.9 +/- 13.6	104.3 +/- 15.0	112.5 +/- 13.9	143.8 +/- 14.9	130.6 +/- 13.2	136.5 +/- 15.1	112.5 +/- 13.5
Cs-134	< 0.6	< 0.8	< 0.5	< 0.8	< 0.3	< 0.9	< 0.6	< 0.5	< 0.8
Cs-137	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.6	< 0.4	< 0.4	< 0.3
Zr-95	< 1.4	< 0.9	< 1.9	< 1.6	< 1.9	< 1.4	< 1.7	< 1.2	< 1.5
Nb-95	< 1.1	< 1.6	< 0.9	< 1.6	< 1.6	< 1.4	< 1.7	< 1.0	< 0.7
Co-58	< 0.4	< 0.5	< 0.7	< 1.0	< 0.7	< 0.5	< 1.1	< 0.8	< 1.0
Mn-54	< 0.3	< 0.7	< 0.5	< 0.7	< 0.3	< 0.4	< 0.3	< 0.5	< 0.6
Zn-65	< 1.3	< 1.0	< 1.5	< 1.2	< 1.6	< 0.9	< 1.6	< 1.3	< 2.2
Co-60	< 0.5	< 0.5	< 0.5	< 0.8	< 0.8	< 0.5	< 0.5	< 0.6	< 1.1
K-40	< 6.5	< 5.1	< 9.6	< 7.2	< 5.9	< 5.0	39.4 +/- 8.9	< 7.5	< 10.5

** Control Sample Location

SAMPLE LOCATIONS - 4TH QTR 2007

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	109.9 +/- 11.9	105.0 +/- 15.2	89.4 +/- 12.1	119.6 +/- 14.9	102.8 +/- 13.4	99.4 +/- 13.0	109.2 +/- 12.4	96.1 +/- 13.5	102.2 +/- 12.9
Cs-134	< 0.7	< 0.7	< 0.3	< 0.4	< 0.4	< 0.6	< 0.5	< 0.6	< 1.0
Cs-137	< 0.4	< 0.7	< 0.2	< 0.5	< 0.6	< 0.6	< 0.5	< 0.4	< 0.4
Zr-95	< 1.4	< 1.6	< 0.8	< 1.8	< 1.2	< 1.7	< 1.7	< 1.0	< 1.5
Nb-95	< 1.1	< 1.0	< 1.3	< 2.0	< 1.4	< 1.6	< 0.9	< 1.6	< 1.7
Co-58	< 0.5	< 1.3	< 0.8	< 1.0	< 1.0	< 1.0	< 0.9	< 1.1	< 1.0
Mn-54	< 0.7	< 0.9	< 0.5	< 0.5	< 0.7	< 0.8	< 0.4	< 0.4	< 0.7
Zn-65	< 1.9	< 2.3	< 0.8	< 2.5	< 2.1	< 1.7	< 1.5	< 1.3	< 1.8
Co-60	< 0.8	< 0.9	< 0.8	< 0.8	< 0.6	< 0.6	< 0.7	< 0.7	< 0.5
K-40	45.2 +/- 8.9	< 8.2	< 5.2	< 10.2	< 6.0	< 6.9	27.8 +/- 7.6	< 7.6	< 5.5

** Control Sample Location

TABLE B-8
IPEC
ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - 2007
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	01/02/07	< 0.025	< 0.023	< 0.022	< 0.018	< 0.028	< 0.022	< 0.022	< 0.020	< 0.021
2	01/09/07	< 0.029	< 0.019	< 0.024	< 0.031	< 0.036	< 0.067	< 0.020	< 0.020	< 0.034
3	01/16/07	< 0.033	< 0.032	< 0.035	< 0.039	< 0.023	< 0.041	< 0.023	< 0.022	< 0.025
4	01/23/07	< 0.022	< 0.020	< 0.023	< 0.029	< 0.034	< 0.046	< 0.022	< 0.013	< 0.007
5	01/30/07	< 0.014	< 0.025	< 0.027	< 0.033	< 0.030	< 0.031	< 0.019	< 0.019	< 0.033
6	02/06/07	< 0.026	< 0.017	< 0.022	< 0.023	< 0.026	< 0.034	< 0.014	< 0.026	< 0.023
7	02/13/07	< 0.056	< 0.024	< 0.027	< 0.047	< 0.039	< 0.058	< 0.035	< 0.030	< 0.045
8	02/20/07	< 0.023	< 0.025	< 0.032	< 0.040	< 0.017	< 0.027	< 0.019	< 0.020	< 0.029
9	02/27/07	< 0.051	< 0.036	< 0.030	< 0.042	< 0.029	< 0.046	< 0.035	< 0.033	< 0.011
10	03/06/07	< 0.023	< 0.016	< 0.024	< 0.023	< 0.039	< 0.032	< 0.027	< 0.013	< 0.019
11	03/13/07	< 0.022	< 0.036	< 0.024	< 0.015	< 0.032	< 0.038	< 0.026	< 0.018	< 0.023
12	03/20/07	< 0.033	< 0.028	< 0.031	< 0.021	< 0.036	< 0.044	< 0.027	< 0.017	< 0.025
13	03/27/07	< 0.017	< 0.021	< 0.024	< 0.030	< 0.028	< 0.020	< 0.022	< 0.022	< 0.027
14	04/03/07	< 0.044	< 0.023	< 0.035	< 0.031	< 0.028	< 0.028	< 0.030	< 0.022	< 0.017
15	04/10/07	< 0.029	< 0.031	< 0.024	< 0.019	< 0.022	< 0.027	< 0.013	< 0.021	< 0.032
16	04/17/07	< 0.038	< 0.027	< 0.032	< 0.026	< 0.036	< 0.068	< 0.025	< 0.017	< 0.029
17	04/24/07	< 0.021	< 0.030	< 0.026	< 0.023	< 0.026	Deviation Report	< 0.026	< 0.013	< 0.017
18	05/01/07	< 0.023	< 0.016	< 0.023	< 0.038	< 0.023	< 0.028	< 0.026	< 0.023	< 0.032
19	05/08/07	< 0.030	< 0.038	< 0.030	< 0.031	< 0.034	< 0.041	< 0.029	< 0.017	< 0.020
20	05/15/07	< 0.042	< 0.041	< 0.014	< 0.031	< 0.039	< 0.033	< 0.027	< 0.032	< 0.019
21	05/22/07	< 0.028	< 0.009	< 0.027	< 0.030	< 0.031	< 0.049	< 0.017	< 0.028	< 0.020
22	05/29/07	< 0.036	< 0.024	< 0.031	< 0.039	< 0.016	< 0.018	< 0.022	< 0.031	< 0.039
23	06/05/07	< 0.024	< 0.021	< 0.019	< 0.022	< 0.036	< 0.035	< 0.017	< 0.031	< 0.023
24	06/12/07	< 0.030	< 0.024	< 0.044	< 0.035	< 0.037	< 0.033	< 0.026	< 0.027	< 0.028
25	06/19/07	< 0.035	< 0.021	< 0.026	< 0.030	< 0.033	< 0.029	< 0.022	< 0.029	< 0.032
26	06/26/07	< 0.024	< 0.024	< 0.055	< 0.025	< 0.027	< 0.052	< 0.022	< 0.017	< 0.024

** Control sample location

TABLE B-8
IPEC
ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - 2007
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	07/02/07	< 0.030	< 0.031	< 0.024	< 0.028	< 0.030	< 0.036	< 0.025	< 0.016	< 0.024
28	07/10/07	< 0.027	< 0.030	< 0.029	< 0.022	< 0.024	< 0.037	< 0.018	< 0.018	< 0.022
29	07/17/07	< 0.032	< 0.005	< 0.020	< 0.032	< 0.025	< 0.035	< 0.009	< 0.023	< 0.010
30	07/24/07	< 0.022	< 0.023	< 0.020	< 0.037	< 0.024	< 0.021	< 0.021	< 0.018	< 0.016
31	07/31/07	< 0.021	< 0.023	< 0.028	< 0.020	< 0.006	< 0.031	< 0.016	< 0.036	< 0.011
32	08/07/07	< 0.034	< 0.029	< 0.030	< 0.033	< 0.027	< 0.030	< 0.036	< 0.024	< 0.018
33	08/14/07	< 0.035	< 0.025	< 0.028	< 0.022	< 0.027	< 0.053	< 0.021	< 0.025	< 0.009
34	08/21/07	< 0.029	< 0.016	< 0.020	< 0.028	< 0.028	< 0.042	< 0.031	< 0.022	< 0.034
35	08/28/07	< 0.027	< 0.032	< 0.021	< 0.034	< 0.010	< 0.037	< 0.022	< 0.021	< 0.029
36	09/04/07	< 0.032	< 0.006	< 0.032	< 0.021	< 0.029	< 0.028	< 0.026	< 0.025	< 0.021
37	09/11/07	< 0.035	< 0.028	< 0.021	< 0.033	< 0.033	< 0.022	< 0.027	< 0.016	< 0.031
38	09/18/07	< 0.022	< 0.033	< 0.027	< 0.029	< 0.033	< 0.031	< 0.019	< 0.037	< 0.023
39	09/25/07	< 0.034	< 0.021	< 0.028	< 0.021	< 0.029	< 0.027	< 0.031	< 0.027	< 0.027
40	10/02/07	< 0.028	< 0.016	< 0.030	< 0.036	< 0.035	< 0.031	< 0.025	< 0.028	< 0.027
41	10/09/07	< 0.029	< 0.029	< 0.037	< 0.007	< 0.036	< 0.034	< 0.027	< 0.014	< 0.027
42	10/16/07	< 0.029	< 0.033	< 0.030	< 0.032	< 0.045	< 0.036	< 0.031	< 0.023	< 0.039
43	10/23/07	< 0.027	< 0.034	< 0.027	< 0.036	< 0.030	< 0.031	< 0.019	< 0.021	< 0.022
44	10/30/07	< 0.028	< 0.029	< 0.031	< 0.028	< 0.025	< 0.029	< 0.020	< 0.024	< 0.038
45	11/06/07	< 0.037	< 0.025	< 0.030	< 0.022	< 0.033	< 0.025	< 0.024	< 0.022	< 0.028
46	11/13/07	< 0.026	< 0.029	< 0.040	< 0.030	< 0.024	< 0.026	< 0.033	< 0.031	< 0.023
47	11/19/07	< 0.010	< 0.028	< 0.025	< 0.040	< 0.046	< 0.029	< 0.040	< 0.020	< 0.030
48	11/27/07	< 0.008	< 0.030	< 0.023	< 0.023	< 0.038	< 0.036	< 0.021	< 0.022	< 0.035
49	12/04/07	< 0.030	< 0.024	< 0.007	< 0.022	< 0.023	< 0.044	< 0.032	< 0.026	< 0.028
50	12/11/07	< 0.007	< 0.033	< 0.028	< 0.028	< 0.032	< 0.031	< 0.034	< 0.023	< 0.044
51	12/18/07	< 0.032	< 0.028	< 0.024	< 0.025	< 0.026	< 0.025	< 0.020	< 0.022	< 0.030
52	12/24/07	< 0.039	< 0.042	< 0.037	< 0.046	< 0.028	< 0.037	< 0.024	< 0.027	< 0.035
53	12/31/07	< 0.035	< 0.022	< 0.031	< 0.048	< 0.026	< 0.034	< 0.033	Deviation Report	< 0.034

** Control sample location

TABLE B-9
CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES – 2007
Results in Units of pCi/liter ± 1 Sigma
#9 PLANT INLET (HUDSON RIVER INTAKE)

Date	01/26/2007	02/23/2007	03/30/2007	04/27/2007	05/25/2007	06/29/2007
NUCLIDE						
I-131	< 6.03	< 4.09	< 5.78	< 7.03	< 6.91	< 5.70
Cs-134	< 0.75	< 1.01	< 0.75	< 1.78	< 1.27	< 1.10
Cs-137	< 0.94	< 0.79	< 1.00	< 1.35	< 1.22	< 0.63
Zr-95	< 2.09	< 1.84	< 1.94	< 3.43	< 2.64	< 2.19
Nb-95	< 1.42	< 1.29	< 1.51	< 2.16	< 1.72	< 1.08
Co-58	< 1.07	< 1.00	< 1.30	< 1.59	< 1.24	< 1.29
Mn-54	< 0.90	< 0.89	< 1.12	< 1.71	< 1.14	< 1.10
Fe-59	< 2.97	< 2.99	< 3.36	< 5.19	< 4.03	< 3.47
Zn-65	< 2.12	< 1.06	< 2.55	< 2.01	< 2.95	< 1.38
Co-60	< 0.76	< 0.90	< 1.01	< 1.47	< 1.25	< 0.99
K-40	106.5 +/- 9.51	321.7 +/- 12.43	157.9 +/- 11.24	349.6 +/- 21.96	127.3 +/- 12.77	326.4 +/- 13.70
Ba/La-140	< 3.13	< 2.48	< 3.11	< 3.82	< 4.20	< 3.65
Date	07/27/2007	08/31/2007	09/28/2007	10/26/2007	11/30/2007	12/31/2007
NUCLIDE						
I-131	< 5.34	< 7.00	< 6.87	< 6.72	< 6.89	< 6.75
Cs-134	< 1.41	< 1.37	< 1.45	< 1.09	< 1.14	< 1.98
Cs-137	< 1.18	< 1.14	< 1.84	< 1.54	< 1.05	< 1.88
Zr-95	< 2.65	< 2.70	< 4.08	< 2.94	< 2.23	< 3.06
Nb-95	< 1.70	< 2.12	< 2.65	< 1.40	< 1.47	< 2.30
Co-58	< 1.40	< 1.56	< 1.95	< 1.77	< 1.14	< 2.19
Mn-54	< 1.34	< 1.25	< 2.05	< 1.41	< 0.96	< 1.63
Fe-59	< 4.27	< 4.49	< 5.08	< 4.31	< 3.94	< 5.69
Zn-65	< 1.69	< 1.57	< 4.72	< 1.91	< 1.41	< 4.72
Co-60	< 1.44	< 1.24	< 2.11	< 1.33	< 1.12	< 1.96
K-40	361.6 +/- 18.82	348.3 +/- 17.84	365.1 +/- 27.71	190.2 +/- 14.55	337.6 +/- 14.56	163.9 +/- 20.54
Ba/La-140	< 4.15	< 4.10	< 5.35	< 3.73	< 3.89	< 4.09

TABLE B-9
CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES – 2007
Results in Units of pCi/liter ± 1 Sigma
#10 DISCHARGE CANAL (MIXING ZONE)

Date	01/26/2007	02/23/2007	03/30/2007	04/27/2007	05/25/2007	06/29/2007
NUCLIDE						
I-131	< 6.91	< 4.02	< 6.75	< 6.57	< 6.42	< 6.95
Cs-134	< 1.22	< 0.68	< 0.87	< 0.81	< 1.32	< 1.50
Cs-137	< 1.45	< 1.09	< 1.30	< 1.24	< 1.29	< 1.36
Zr-95	< 3.33	< 2.02	< 2.81	< 2.44	< 2.30	< 3.21
Nb-95	< 2.04	< 1.40	< 2.07	< 1.94	< 1.90	< 2.17
Co-58	< 1.86	< 1.23	< 1.61	< 1.41	< 1.49	< 1.87
Mn-54	< 1.75	< 1.06	< 1.21	< 1.43	< 1.29	< 1.55
Fe-59	< 4.00	< 3.51	< 5.05	< 4.47	< 4.21	< 4.85
Zn-65	< 3.89	< 2.56	< 3.44	< 1.79	< 3.04	< 1.80
Co-60	< 1.40	< 1.27	< 1.58	< 1.24	< 1.23	< 1.34
K-40	128 +/- 14.77	271.2 +/- 14.85	162.4 +/- 15.84	122 +/- 13.66	293.2 +/- 17.84	277.1 +/- 19.80
Ba/La-140	< 3.55	< 4.01	< 5.30	< 3.96	< 3.82	< 4.13

Date	07/27/2007	08/31/2007	09/28/2007	10/26/2007	11/30/2007	12/31/2007
NUCLIDE						
I-131	< 5.19	< 6.15	< 5.74	< 6.41	< 6.59	< 5.42
Cs-134	< 0.72	< 0.79	< 1.70	< 1.84	< 1.45	< 1.03
Cs-137	< 1.08	< 0.69	< 1.56	< 1.81	< 1.33	< 1.21
Zr-95	< 2.09	< 1.65	< 2.99	< 4.03	< 2.43	< 2.75
Nb-95	< 1.56	< 1.20	< 2.24	< 2.73	< 1.75	< 1.86
Co-58	< 1.14	< 0.93	< 1.81	< 1.89	< 1.77	< 1.55
Mn-54	< 1.07	< 0.75	< 1.58	< 1.58	< 1.36	< 1.48
Fe-59	< 3.05	< 2.70	< 4.17	< 4.95	< 4.53	< 4.58
Zn-65	< 1.35	< 0.95	< 3.49	< 3.31	< 3.06	< 3.34
Co-60	< 0.94	< 0.72	< 1.47	< 1.63	< 1.26	< 1.41
K-40	171.5 +/- 11.44	322.5 +/- 10.33	203.9 +/- 20.17	385.3 +/- 24.76	163.2 +/- 15.73	136.5 +/- 15.47
Ba/La-140	< 3.15	< 3.26	< 4.16	< 5.77	< 4.53	< 4.37

TABLE B-10
CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES – 2007
(QUARTERLY COMPOSITE SAMPLES)

Results in Units of pCi/l ± 1 Sigma

STATION CODE	PERIOD	DATE		TRITIUM
PLANT INTAKE (HUDSON RIVER) (09, INLET) **	First Quarter	12/29/06	03/30/07	<476
	Second Quarter	03/30/07	06/29/07	< 443
	Third Quarter	06/29/07	09/28/07	< 449
	Fourth Quarter	09/28/07	12/31/07	< 439
DISCHARGE CANAL (10, MIXING ZONE)	First Quarter	12/29/06	03/30/07	<476
	Second Quarter	03/30/07	06/29/07	< 443
	Third Quarter	06/29/07	09/28/07	< 449
	Fourth Quarter	09/28/07	12/31/07	<439

** Control Sample location

TABLE B-11
CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES – 2007
Results in Units of pCi/liter ± 1 Sigma
CAMP FIELD RESERVOIR

Date	01/09/2007	02/06/2007	03/06/2007	04/03/2007	05/08/2007	06/12/2007
NUCLIDE						
I-131	< 0.25	< 0.26	< 0.37	< 0.35	< 0.27	< 0.41
Cs-134	< 2.23	< 3.52	< 3.96	< 4.42	< 3.57	< 2.52
Cs-137	< 2.73	< 3.68	< 2.95	< 2.50	< 3.18	< 2.45
Zr-95	< 3.24	< 5.06	< 6.19	< 5.39	< 5.92	< 4.18
Nb-95	< 2.78	< 3.97	< 4.24	< 4.49	< 3.37	< 2.83
Co-58	< 2.13	< 3.51	< 3.98	< 4.44	< 3.60	< 2.31
Mn-54	< 2.16	< 2.97	< 2.97	< 4.11	< 4.00	< 2.24
Fe-59	< 5.15	< 9.96	< 10.92	< 8.47	< 12.62	< 5.16
Zn-65	< 5.21	< 6.54	< 8.03	< 9.12	< 7.78	< 4.50
Co-60	< 1.74	< 5.52	< 5.04	< 2.30	< 4.42	< 2.21
K-40	321.2 +/- 35.25	231.5 +/- 45.77	< 42.91	275.6 +/- 48.57	89.5 +/- 31.21	99.1 +/- 26.92
Ba/La-140	< 2.90	< 4.96	< 4.80	< 5.31	< 4.94	< 2.14
Date	07/10/2007	08/07/2007	09/11/2007	10/09/2007	11/19/2007	12/18/2007
NUCLIDE						
I-131	< 0.33	< 0.31	< 0.38	< 0.32		
Cs-134	< 2.59	< 2.84	< 1.94	< 2.51	< 1.63	< 1.93
Cs-137	< 2.62	< 2.12	< 3.58	< 3.15	< 2.38	< 2.77
Zr-95	< 4.35	< 4.60	< 5.99	< 4.86	< 3.65	< 3.94
Nb-95	< 2.91	< 2.71	< 4.46	< 3.16	< 2.16	< 2.32
Co-58	< 2.23	< 2.49	< 4.50	< 3.36	< 2.16	< 2.88
Mn-54	< 2.80	< 1.90	< 4.28	< 3.49	< 1.94	< 2.41
Fe-59	< 6.52	< 7.41	< 9.80	< 8.79	< 3.99	< 8.78
Zn-65	< 6.36	< 6.05	< 13.23	< 6.39	< 6.45	< 9.14
Co-60	< 2.42	< 2.84	< 3.90	< 3.97	< 2.25	< 2.58
K-40	197.3 +/- 31.68	133.6 +/- 30.08	326.8 +/- 47.02	85.98 +/- 32.57	131 +/- 22.62	215 +/- 32.21
Ba/La-140	< 3.49	< 3.06	< 2.35	< 3.13	< 3.23	< 3.44

TABLE B-11
CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES – 2007
Results in Units of pCi/liter ± 1 Sigma
NEW CROTON RESERVOIR

Date						
NUCLIDE						
I-131	< 0.26	< 0.23	< 0.34	< 0.32	< 0.34	< 0.30
Cs-134	< 3.65	< 3.50	< 2.84	< 3.64	< 2.81	< 3.26
Cs-137	< 3.17	< 3.53	< 2.90	< 3.89	< 2.88	< 2.52
Zr-95	< 5.16	< 6.50	< 6.03	< 5.77	< 5.99	< 4.92
Nb-95	< 3.60	< 4.16	< 2.68	< 3.53	< 3.65	< 3.05
Co-58	< 2.62	< 3.71	< 2.24	< 3.49	< 3.90	< 2.88
Mn-54	< 2.70	< 3.22	< 2.49	< 3.19	< 4.28	< 2.97
Fe-59	< 7.57	< 6.41	< 5.37	< 12.84	< 9.82	< 9.08
Zn-65	< 9.13	< 3.31	< 6.83	< 8.86	< 11.53	< 7.41
Co-60	< 3.08	< 3.60	< 2.31	< 4.21	< 4.21	< 2.66
K-40	221.9 +/- 38.95	< 40.52	177 +/- 32.14	243.1 +/- 47.97	347.2 +/- 53.88	137.6 +/- 27.55
Ba/La-140	< 4.62	< 4.21	< 2.23	< 6.23	< 5.28	< 3.96
Date	07/10/2007	08/07/2007	09/11/2007	10/09/2007	11/19/2007	12/18/2007
NUCLIDE						
I-131	< 0.29	< 0.25	< 0.31	< 0.30		
Cs-134	< 2.35	< 2.38	< 3.40	< 2.51	< 1.78	< 2.89
Cs-137	< 2.45	< 2.19	< 3.29	< 2.29	< 1.96	< 2.39
Zr-95	< 4.43	< 3.78	< 3.75	< 5.18	< 4.34	< 5.13
Nb-95	< 2.62	< 2.89	< 3.69	< 2.78	< 3.00	< 3.19
Co-58	< 2.59	< 2.61	< 2.49	< 3.11	< 2.52	< 3.00
Mn-54	< 2.88	< 2.85	< 3.62	< 3.42	< 2.30	< 2.54
Fe-59	< 8.76	< 6.30	< 7.84	< 7.54	< 6.24	< 7.14
Zn-65	< 5.36	< 5.36	< 7.96	< 5.91	< 3.12	< 7.29
Co-60	< 3.02	< 2.47	< 2.38	< 2.76	< 2.32	< 2.06
K-40	139.6 +/- 29.84	315.7 +/- 35.43	201 +/- 42.41	277.3 +/- 41.09	146.9 +/- 27.10	142.8 +/- 29.31
Ba/La-140	< 4.33	< 3.04	< 3.82	< 3.81	< 3.35	< 3.46

TABLE B-12
CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES – 2007
(QUARTERLY COMPOSITE SAMPLES)

Results in Units of pCi/l ± 1 Sigma

STATION CODE	PERIOD	DATE		TRITIUM
CAMP FIELD RESERVOIR	First Quarter	12/12/06	03/06/07	< 461.00
	Second Quarter	03/06/07	06/12/07	< 436.00
	Third Quarter	06/12/07	09/11/07	< 448
	Fourth Quarter	09/11/07	12/18/07	< 433
NEW CROTON RESEVOIR	First Quarter	12/12/06	03/06/07	< 461.00
	Second Quarter	03/06/07	06/12/07	< 436.00
	Third Quarter	06/12/07	09/11/07	< 448
	Fourth Quarter	09/11/07	12/18/07	< 433

TABLE B-13
CONCENTRATIONS OF RADIONUCLIDES IN SHORELINE SOIL SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma

Sample Location / Date		COLD SPRING SHORELINE 06/06/2007	LENTS COVE SHORELINE 06/06/2007	MANITOU SHORELINE 06/06/2007	VERPLANCK SHORELINE 06/07/2007	WHITE BEACH SHORELINE 06/07/2007
Client ID		ISS842307	ISS282307	ISS502307	ISS172307	ISS532307
Radionuclide	Req. CL					
Be-7		< 234.9	< 319.8	< 448.6	< 165.3	< 176.4
I-131		< 44.2	< 80.7	< 118.3	< 39.9	< 30.3
Cs-134	**75**	< 31.4	< 46.2	< 36.2	< 11.3	< 11.2
Cs-137	**90**	< 26.0	< 54.7	357.0 +/- 33.4	63.3 +/- 18.1	< 19.6
Zr-95		< 46.6	< 82.9	< 62.3	< 41.3	< 35.7
Nb-95		< 34.6	< 68.6	< 55.3	< 30.0	< 26.3
Co-58		< 30.3	< 39.5	< 47.8	< 22.2	< 18.6
Mn-54		< 28.7	< 49.1	< 46.4	< 15.1	< 20.0
Zn-65		< 92.4	< 52.5	< 115.3	< 54.8	< 61.3
Fe-59		< 95.9	< 143.4	< 125.4	< 53.6	< 60.2
Co-60		< 37.9	< 41.0	< 49.4	< 22.1	< 15.5
Ba/La-140		< 40.3	< 96.6	< 59.0	< 45.4	< 30.9
Ru-103		< 20.6	< 44.6	< 51.2	< 20.4	< 22.2
Ru-106		< 298.9	< 381.1	< 555.5	< 264.8	< 202.5
Ce-141		< 45.9	< 63.6	< 86.0	< 39.8	< 30.7
Ce-144		< 164.1	< 259.6	< 341.1	< 150.2	< 104.7
AcTh-228		468.4 +/- 98.0	1052.0 +/- 187.2	806.3 +/- 154.1	194.3 +/- 64.0	< 61.5
Ra-226		< 593.0	2250.0 +/- 702.7	2006.0 +/- 737.3	1194.0 +/- 388.5	979.4 +/- 314.7
K-40		36000.0 +/- 1070.0	15770.0 +/- 1077.0	24470.0 +/- 1177.0	5423.0 +/- 411.2	9411.0 +/- 598.1
Sr-90	**5000**				< 140	

TABLE B-13
CONCENTRATIONS OF RADIONUCLIDES IN SHORELINE SOIL SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma

Sample Location / Date		COLD SPRING SHORELINE 09/06/2007	LENTS COVE SHORELINE 09/06/2007	MANITOU SHORELINE 09/06/2007	VERPLANCK SHORELINE 09/07/2007	WHITE BEACH SHORELINE 09/07/2007
Client ID		ISS843607	ISS283607	ISS503607	ISS173607R1	ISS533607
Radionuclide	Req. CL					
Be-7		< 312.9	< 332.2	< 615.1	< 175.9	< 167.6
I-131		< 46.4	< 57.6	< 86.9	< 30.9	< 26.5
Cs-134	**75**	< 24.2	< 39.9	< 58.2	< 23.4	< 18.5
Cs-137	**90**	< 38.3	< 37.3	< 67.0	149.0 +/- 22.6	< 19.2
Zr-95		< 70.0	< 59.9	< 107.1	< 36.7	< 30.8
Nb-95		< 38.2	< 52.4	< 78.1	< 20.1	< 27.2
Co-58		< 37.7	< 43.3	< 32.7	< 18.6	< 20.7
Mn-54		< 33.6	< 37.3	< 48.7	< 24.7	< 20.3
Zn-65		< 68.5	< 46.1	< 198.1	< 58.9	< 66.3
Fe-59		< 147.0	< 107.0	< 98.2	< 57.7	< 51.6
Co-60		< 50.9	< 39.5	< 39.9	< 21.2	< 28.4
Ba/La-140		< 57.0	< 55.1	< 114.6	< 22.2	< 24.2
Ru-103		< 32.3	< 39.7	< 52.4	< 24.4	< 18.8
Ru-106		< 268.8	< 309.3	< 383.3	< 163.2	< 191.8
Ce-141		< 51.7	< 58.8	< 80.1	< 31.8	< 23.7
Ce-144		< 167.4	< 235.8	< 324.0	< 123.3	< 112.0
AcTh-228		691.6 +/- 138.8	992.0 +/- 151.6	1380.0 +/- 284.0	141.9 +/- 71.2	< 77.8
Ra-226		1508.0 +/- 492.5	3924.0 +/- 683.2	2561.0 +/- 1041.0	748.8 +/- 371.0	< 397.7
K-40		31600.0 +/- 1200.0	14540.0 +/- 894.9	10230.0 +/- 1239.0	8613.0 +/- 624.5	8537.0 +/- 586.1
Sr-90	**5000**	< 300	< 350	< 370	< 270	< 1200

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#95 Meteorological Tower

Sample Location Date		MET TOWER 05/24/2007	MET TOWER 05/24/2007	MET TOWER 05/25/2007	MET TOWER 06/26/2007	MET TOWER 06/26/2007	MET TOWER 06/26/2007
Client ID		IBV952107S3	IBV952107S2	IBV952107S1	IBV952607S1	IBV952607S2	IBV952607S3
Radionuclide	Req. CL	MULLEN	RAG WEED	MOTHERS WORT	GRAPE LEAVES	RAGWEED	MULLEN
Be-7		< 73.05	441.1 +/- 81.2	357.1 +/- 73.5	394.1 +/- 53.9	681.3 +/- 84.9	422.9 +/- 82.2
I-131	**50**	< 18.99	< 16.52	< 27.21	< 7.27	< 10.59	< 13.44
Cs-134	**50**	< 11.49	< 13.43	< 11.74	< 8.34	< 13.63	< 14.78
Cs-137	**50**	< 9.71	< 9.92	< 8.97	< 6.35	< 10.15	< 11.96
Zr-95		< 14.46	< 14.50	< 15.75	< 11.71	< 19.55	< 19.25
Nb-95		< 9.44	< 11.31	< 13.31	< 7.76	< 12.38	< 10.99
Co-58		< 11.60	< 9.71	< 13.34	< 7.53	< 13.16	< 11.02
Mn-54		< 10.51	< 11.30	< 10.59	< 7.54	< 11.54	< 11.06
Zn-65		< 29.73	< 28.85	< 31.51	< 19.45	< 29.27	< 29.20
Fe-59		< 30.05	< 46.86	< 48.51	< 19.06	< 42.10	< 32.25
Co-60		< 8.62	< 12.01	< 8.51	< 6.92	< 16.93	< 16.49
Ba/La-140		< 13.10	< 18.44	< 28.56	< 6.74	< 13.62	< 11.06
Ru-103		< 9.16	< 9.82	< 12.63	< 6.23	< 10.93	< 10.39
Ru-106		< 91.08	< 93.88	< 120.90	< 74.87	< 94.36	< 120.80
Ce-141		< 12.72	< 12.38	< 16.66	< 9.80	< 11.93	< 14.98
Ce-144		< 48.86	< 42.50	< 58.89	< 41.41	< 47.90	< 58.53
AcTh-228		< 34.94	< 37.75	< 46.54	< 25.89	< 48.41	< 53.57
Ra-226		< 146.30	< 150.70	312.4 +/- 131.1	218.8 +/- 121.9	280.2 +/- 138.6	< 210.50
K-40		5208.0 +/- 275.0	6498.0 +/- 300.7	4962.0 +/- 320.2	4307.0 +/- 203.4	10580.0 +/- 386.5	7602.0 +/- 395.4

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#95 Meteorological Tower

Sample Location Date		MET TOWER 07/24/2007	MET TOWER 07/24/2007	MET TOWER 07/24/2007	MET TOWER 08/14/2007	MET TOWER 08/14/2007	MET TOWER 08/14/2007
Client ID		IBV953007S1	IBV953007S2	IBV953007S3	IBV953307S1	IBV953307S2	IBV953307S3
Radionuclide	Req. CL	GRAPE LEAVES	RAGWEED	MULLEN	GRAPE LEAVE	RAGWEED	CATALPA
Be-7		491.8 +/- 77.3	1007.0 +/- 99.2	1258.0 +/- 131.6	746.5 +/- 73.1	2332.0 +/- 121.1	1047.0 +/- 95.8
I-131	**50**	< 12.16	< 17.77	< 18.01	< 16.82	< 16.43	< 18.17
Cs-134	**50**	< 9.64	< 8.67	< 7.73	< 8.73	< 11.80	< 12.56
Cs-137	**50**	< 9.37	< 9.48	< 12.30	< 6.74	< 9.00	< 10.80
Zr-95		< 20.83	< 22.03	< 17.45	< 13.15	< 16.85	< 19.57
Nb-95		< 10.04	< 13.02	< 13.63	< 9.27	< 12.70	< 12.71
Co-58		< 9.49	< 11.87	< 12.23	< 7.84	< 9.80	< 11.56
Mn-54		< 10.05	< 13.38	< 11.92	< 7.96	< 9.31	< 12.17
Zn-65		< 32.62	< 31.94	< 36.43	< 18.90	< 30.37	< 36.59
Fe-59		< 33.42	< 35.49	< 41.73	< 25.76	< 32.09	< 37.74
Co-60		< 9.03	< 11.71	< 13.49	< 9.40	< 9.52	< 16.51
Ba/La-140		< 18.70	< 16.44	< 11.31	< 11.85	< 17.74	< 23.26
Ru-103		< 11.85	< 10.24	< 11.49	< 7.43	< 9.68	< 10.86
Ru-106		< 96.38	< 109.60	< 111.90	< 89.75	< 93.88	< 95.17
Ce-141		< 11.69	< 17.94	< 13.90	< 11.84	< 12.37	< 15.04
Ce-144		< 43.14	< 69.45	< 55.13	< 44.93	< 42.83	< 46.99
AcTh-228		< 40.90	< 40.06	< 44.84	< 25.64	< 34.75	< 43.88
Ra-226		< 175.60	< 225.80	< 212.60	< 139.50	340.6 +/- 97.3	366.8 +/- 133.1
K-40		3716.0 +/- 264.0	8313.0 +/- 343.1	6807.0 +/- 380.4	4246.0 +/- 205.8	7933.0 +/- 300.7	6510.0 +/- 288.6

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#95 Meteorological Tower

Sample Location Date		MET TOWER 09/18/2007	MET TOWER 09/18/2007	MET TOWER 09/18/2007	MET TOWER 10/16/2007	MET TOWER 10/16/2007	MET TOWER 10/16/2007
Client ID		IBV953807S1	IBV953807S2	IBV953807S3	IBV954207S1	IBV954207S2	IBV954207S3
Radionuclide	Req. CL	GRAPE LEAVES	RAGWEED	MULLEIN	GRAPE LEAVES	RAGWEED	MULLEIN
Be-7		929.3 +/- 94.6	1715.0 +/- 118.3	362.2 +/- 85.9	1214.0 +/- 96.9	2203.0 +/- 157.3	755.2 +/- 94.1
I-131	**50**	< 9.79	< 12.14	< 13.83	< 12.85	< 14.82	< 11.32
Cs-134	**50**	< 13.59	< 13.33	< 9.17	< 8.50	< 18.55	< 12.13
Cs-137	**50**	< 7.73	< 9.84	< 14.32	< 6.62	< 13.55	< 9.82
Zr-95		< 14.96	< 18.34	< 23.08	< 14.97	< 23.41	< 16.86
Nb-95		< 10.44	< 10.14	< 16.12	< 10.20	< 13.46	< 12.26
Co-58		< 11.80	< 12.51	< 15.19	< 8.45	< 17.00	< 8.66
Mn-54		< 10.44	< 11.69	< 15.53	< 8.22	< 13.48	< 10.57
Zn-65		< 23.10	< 27.20	< 44.00	< 21.80	< 32.83	< 26.33
Fe-59		< 23.00	< 28.69	< 48.12	< 20.26	< 40.10	< 35.01
Co-60		< 12.11	< 9.10	< 21.25	< 12.40	< 20.87	< 12.86
Ba/La-140		< 11.41	< 9.33	< 16.40	< 6.78	< 17.40	< 12.12
Ru-103		< 8.41	< 8.92	< 10.75	< 8.10	< 12.76	< 8.35
Ru-106		< 103.00	< 99.95	< 117.90	< 75.51	< 133.60	< 108.80
Ce-141		< 13.27	< 13.78	< 15.38	< 12.01	< 17.88	< 11.26
Ce-144		< 56.27	< 64.28	< 57.44	< 53.08	< 82.95	< 49.55
AcTh-228		< 34.20	< 46.23	< 56.26	< 31.59	< 54.58	< 35.01
Ra-226		299.2 +/- 179.2	< 200.70	< 250.10	< 174.80	510.8 +/- 216.9	< 190.40
K-40		3719.0 +/- 249.0	7667.0 +/- 347.4	7117.0 +/- 373.7	4006.0 +/- 228.4	8246.0 +/- 454.5	6177.0 +/- 309.9

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton **

Sample Location Date		ROSETON 05/24/2007	ROSETON 05/24/2007	ROSETON 05/24/2007	ROSETON 06/25/2007	ROSETON 06/25/2007	ROSETON 06/25/2007
Client ID		IBV232107S1	IBV232107S2	IBV232107S3	IBV232607S1	IBV232607S2	IBV232607S3
Radionuclide	Req. CL	RAGWEED	BURDOCK	MULLEN	RAGWEED	BURDOCK	MULLEN
Be-7		406.5 +/- 95.8	389.9 +/- 59.2	165.9 +/- 64.9	1084.0 +/- 105.7	1352.0 +/- 83.5	1130.0 +/- 135.4
I-131	**50**	< 27.19	< 16.65	< 23.51	< 12.27	< 8.19	< 17.41
Cs-134	**50**	< 12.10	< 9.90	< 12.94	< 13.35	< 10.85	< 17.92
Cs-137	**50**	< 10.85	< 6.89	< 9.67	< 11.65	< 8.25	< 15.90
Zr-95		< 21.42	< 17.45	< 16.28	< 18.80	< 14.73	< 24.09
Nb-95		< 14.49	< 9.31	< 11.56	< 12.70	< 7.45	< 15.30
Co-58		< 12.42	< 7.19	< 11.21	< 12.95	< 8.47	< 9.28
Mn-54		< 13.49	< 9.65	< 9.25	< 10.63	< 8.71	< 19.39
Zn-65		< 31.73	< 30.83	< 22.32	< 29.58	< 23.68	< 46.40
Fe-59		< 57.99	< 24.10	< 33.86	< 41.95	< 26.95	< 44.85
Co-60		< 13.58	< 9.40	< 9.70	< 15.35	< 8.44	< 16.27
Ba/La-140		< 9.90	< 15.22	< 19.09	< 11.92	< 12.88	< 16.78
Ru-103		< 10.99	< 6.78	< 12.63	< 10.31	< 7.76	< 11.72
Ru-106		< 99.86	< 62.41	< 110.00	< 126.00	< 82.92	< 138.00
Ce-141		< 17.01	< 9.87	< 12.25	< 12.39	< 9.39	< 17.78
Ce-144		< 66.45	< 33.14	< 46.19	< 59.93	< 32.27	< 74.82
AcTh-228		< 37.64	< 29.74	< 34.95	< 47.51	< 28.42	< 53.33
Ra-226		< 208.30	< 115.40	< 155.70	< 208.70	< 130.50	385.0 +/- 213.4
K-40		8773.0 +/- 406.3	5144.0 +/- 249.1	3757.0 +/- 252.3	10020.0 +/- 412.2	6088.0 +/- 248.3	5830.0 +/- 402.7

** Control Sample Location

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton **

Sample Location Date		ROSETON 07/23/2007	ROSETON 07/23/2007	ROSETON 07/23/2007	ROSETON 08/13/2007	ROSETON 08/13/2007	ROSETON 08/13/2007
Client ID		IBV233007S1	IBV233007S2	IBV233007S3	IBV233307S1	IBV233307S2	IBV233307S3
Radionuclide	Req. CL (pCi)	CATALPA	BURDOCK	MULLEN	GRAPE LEAVES	RAGWEED	MULLEN
Be-7		141.5 +/- 71.0	1411.0 +/- 107.5	504.4 +/- 82.2	541.5 +/- 88.5	1990.0 +/- 144.4	2027.0 +/- 139.7
I-131	**50**	< 13.77	< 14.60	< 18.33	< 23.19	< 26.68	< 25.24
Cs-134	**50**	< 11.49	< 9.97	< 11.34	< 13.95	< 17.31	< 13.58
Cs-137	**50**	< 9.32	< 6.86	< 11.06	< 12.91	< 11.74	< 10.15
Zr-95		< 11.35	< 11.77	< 18.85	< 19.02	< 24.50	< 11.85
Nb-95		< 8.55	< 6.61	< 8.87	< 12.49	< 15.12	< 17.40
Co-58		< 11.24	< 7.95	< 11.34	< 12.11	< 16.73	< 8.45
Mn-54		< 8.06	< 9.92	< 9.94	< 8.51	< 14.63	< 9.53
Zn-65		< 17.59	< 23.96	< 29.01	< 33.00	< 46.81	< 15.40
Fe-59		< 32.87	< 23.90	< 33.82	< 22.92	< 52.13	< 37.44
Co-60		< 9.29	< 11.90	< 15.87	< 15.42	< 21.23	< 10.64
Ba/La-140		< 6.85	< 10.46	< 8.64	< 17.60	< 24.23	< 24.24
Ru-103		< 11.55	< 8.32	< 9.01	< 11.06	< 13.27	< 12.54
Ru-106		< 66.64	< 85.69	< 96.44	< 85.24	< 124.30	< 110.80
Ce-141		< 10.71	< 12.36	< 13.70	< 12.54	< 17.30	< 16.31
Ce-144		< 39.73	< 42.25	< 61.21	< 42.12	< 53.71	< 59.70
AcTh-228		< 22.66	< 30.64	< 42.01	< 40.03	< 48.92	< 36.33
Ra-226		< 157.10	< 155.70	< 192.40	< 181.20	< 220.00	< 183.90
K-40		2478.0 +/- 211.3	6527.0 +/- 298.3	4840.0 +/- 277.8	3640.0 +/- 246.0	7920.0 +/- 358.9	3590.0 +/- 243.8

** Control Sample Location

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton **

Sample Location Date		ROSETON 09/17/2007	ROSETON 09/17/2007	ROSETON 09/17/2007	ROSETON 10/15/2007	ROSETON 10/15/2007	ROSETON 10/15/2007
Client ID		IBV233807S1	IBV233807S2	IBV233807S3	IBV234207S1	IBV234207S2	IBV234207S3
Radionuclide	Req. CL	MULLEIN	RAGWEED	CATALPA	MULLEN	RAGWEED	CATALPA
Be-7		1589.0 +/- 142.8	994.1 +/- 114.0	693.1 +/- 87.2	1679.0 +/- 185.7	1961.0 +/- 140.4	1771.0 +/- 94.1
I-131	**50**	< 17.12	< 11.84	< 10.81	< 21.35	< 15.31	< 11.14
Cs-134	**50**	< 16.78	< 12.18	< 12.76	< 21.33	< 12.20	< 8.23
Cs-137	**50**	< 14.27	< 12.29	< 8.32	< 17.33	< 12.82	< 7.78
Zr-95		< 23.44	< 22.37	< 18.96	< 19.63	< 23.40	< 12.55
Nb-95		< 16.53	< 11.41	< 7.72	< 21.11	< 13.88	< 7.76
Co-58		< 14.47	< 11.52	< 11.48	< 16.56	< 12.36	< 5.86
Mn-54		< 15.07	< 11.84	< 8.76	< 18.93	< 12.90	< 7.08
Zn-65		< 44.37	< 26.80	< 27.74	< 56.50	< 16.03	< 17.21
Fe-59		< 49.21	< 39.91	< 26.74	< 54.21	< 36.91	< 21.02
Co-60		< 17.12	< 11.39	< 12.00	< 25.33	< 14.26	< 6.57
Ba/La-140		< 21.48	< 13.69	< 5.36	< 20.04	< 14.25	< 9.19
Ru-103		< 9.53	< 10.93	< 9.59	< 12.89	< 10.09	< 6.94
Ru-106		< 145.10	< 111.30	< 88.46	< 175.50	< 106.50	< 88.35
Ce-141		< 20.31	< 13.53	< 14.15	< 22.65	< 15.18	< 11.39
Ce-144		< 68.00	< 56.57	< 51.31	< 100.40	< 47.94	< 48.36
AcTh-228		< 58.61	< 44.71	< 30.05	126.5 +/- 59.9	< 42.54	< 30.34
Ra-226		< 226.20	< 226.70	< 151.90	< 334.90	< 241.70	< 146.90
K-40		4950.0 +/- 363.5	6742.0 +/- 380.3	3412.0 +/- 245.5	8119.0 +/- 494.8	7434.0 +/- 366.0	3715.0 +/- 188.1

** Control Sample Location

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#94 IPEC Training Center

Sample Location Date		TRAINING BLDG 05/24/2007	TRAINING BLDG 05/24/2007	TRAINING BLDG 05/24/2007	TRAINING BLDG 06/26/2007	TRAINING BLDG 06/26/2007	TRAINING BLDG 06/26/2007
Client ID		IBV942107S1	IBV942107S2	IBV942107S3	IBV942607S1	IBV942607S2	IBV942607S3
Radionuclide	Req. CL	BURDOCK	MULLEN	RAGWEED	GRAPE LE	MULLEN	RAGWEED
Be-7		613.8 +/- 84.1	235.4 +/- 90.5	293.2 +/- 67.0	560.2 +/- 63.8	538.7 +/- 80.2	997.7 +/- 108.9
I-131	**50**	< 24.59	< 21.68	< 20.77	< 7.01	< 8.50	< 13.35
Cs-134	**50**	< 9.18	< 15.91	< 9.46	< 8.56	< 14.08	< 15.96
Cs-137	**50**	< 9.04	< 11.65	< 7.21	< 7.01	< 9.97	< 12.42
Zr-95		< 16.48	< 21.08	< 20.03	< 11.11	< 18.57	< 23.32
Nb-95		< 11.32	< 15.40	< 13.04	< 8.35	< 12.47	< 14.33
Co-58		< 9.56	< 12.65	< 10.68	< 7.62	< 10.30	< 15.06
Mn-54		< 9.27	< 11.05	< 10.46	< 7.48	< 11.54	< 10.40
Zn-65		< 29.95	< 34.24	< 23.90	< 20.38	< 34.46	< 36.27
Fe-59		< 31.31	< 45.19	< 29.75	< 20.44	< 36.16	< 47.44
Co-60		< 10.02	< 15.16	< 5.96	< 7.36	< 15.97	< 15.50
Ba/La-140		< 5.54	< 21.45	< 16.18	< 7.10	< 11.37	< 13.31
Ru-103		< 7.76	< 12.27	< 8.52	< 6.14	< 10.25	< 9.42
Ru-106		< 77.09	< 104.90	< 79.41	< 72.78	< 91.08	< 112.30
Ce-141		< 11.10	< 16.79	< 14.55	< 9.68	< 12.53	< 14.83
Ce-144		< 47.63	< 61.57	< 53.33	< 40.26	< 46.90	< 66.81
AcTh-228		< 32.40	< 43.30	< 30.89	< 28.87	< 44.82	< 44.78
Ra-226		< 148.50	< 209.90	< 139.00	260.3 +/- 108.4	< 179.00	< 227.20
K-40		7976.0 +/- 291.2	6472.0 +/- 333.8	7224.0 +/- 281.2	4342.0 +/- 197.8	7540.0 +/- 331.3	10130.0 +/- 467.0

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#94 IPEC Training Center

Sample Location Date		TRAINING BLDG 07/24/2007	TRAINING BLDG 07/24/2007	TRAINING BLDG 07/24/2007	TRAINING BLDG 08/14/2007	TRAINING BLDG 08/14/2007	TRAINING BLDG 08/14/2007
Client ID		IBV943007S1	IBV943007S2	IBV943007S3	IBV943307S1	IBV943307S2	IBV943307S3
Radionuclide	Req. CL	GRAPE LEAVES	MULLEN	RAG WEED	GRAPE LE	BURDOCK	RAGWEED
Be-7		831.5 +/- 118.6	1097.0 +/- 104.5	916.9 +/- 125.3	1585.0 +/- 105.1	346.4 +/- 92.5	1492.0 +/- 134.5
I-131	**50**	< 14.37	< 16.38	< 19.93	< 18.16	< 20.72	< 26.73
Cs-134	**50**	< 12.89	< 10.47	< 19.76	< 9.82	< 15.78	< 13.85
Cs-137	**50**	< 9.26	< 10.50	< 16.32	< 8.77	< 12.85	< 12.31
Zr-95		< 15.66	< 21.68	< 23.25	< 16.52	< 25.16	< 23.18
Nb-95		< 14.83	< 15.56	< 14.67	< 10.05	< 15.95	< 14.79
Co-58		< 10.96	< 9.88	< 12.37	< 10.39	< 10.47	< 15.48
Mn-54		< 14.32	< 13.09	< 17.46	< 10.83	< 10.73	< 14.65
Zn-65		< 25.76	< 16.40	< 43.55	< 25.86	< 27.85	< 25.77
Fe-59		< 33.86	< 33.51	< 57.00	< 31.31	< 52.61	< 55.43
Co-60		< 14.54	< 10.25	< 13.80	< 10.48	< 10.08	< 14.28
Ba/La-140		< 20.05	< 13.78	< 30.32	< 18.13	< 26.26	< 18.79
Ru-103		< 9.86	< 10.29	< 13.65	< 8.90	< 12.52	< 13.34
Ru-106		< 92.23	< 90.79	< 150.10	< 85.99	< 149.40	< 108.50
Ce-141		< 12.52	< 16.13	< 18.07	< 14.03	< 16.79	< 17.93
Ce-144		< 58.37	< 65.13	< 55.64	< 49.71	< 52.33	< 69.60
AcTh-228		< 31.12	< 45.20	< 46.22	< 30.53	< 58.82	< 50.57
Ra-226		< 166.60	362.0 +/- 175.2	< 230.70	256.0 +/- 129.6	253.5 +/- 145.7	< 234.60
K-40		4100.0 +/- 293.0	7202.0 +/- 328.7	9241.0 +/- 482.9	4136.0 +/- 231.0	5268.0 +/- 396.7	8102.0 +/- 404.9

TABLE B-14
CONCENTRATIONS OF GAMMA EMITTERS IN BROADLEAF VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#94 IPEC Training Center

Sample Location Date		TRAINING BLDG 09/18/2007	TRAINING BLDG 09/18/2007	TRAINING BLDG 09/18/2007	TRAINING BLDG 10/16/2007	TRAINING BLDG 10/16/2007	TRAINING BLDG 10/16/2007
Client ID		IBV943807S1	IBV943807S2	IBV943807S3	IBV944207S1	IBV944207S2	IBV944207S3
Radionuclide	Req. CL	GRAPE LEAVES	MULLEIN	RAGWEED	GRAPE LE	MULLEN	RAGWEED
Be-7		1345.0 +/- 105.7	539.2 +/- 83.5	1440.0 +/- 146.5	2445.0 +/- 164.7	314.8 +/- 54.4	2255.0 +/- 147.3
I-131	**50**	< 12.91	< 26.90	< 14.73	< 12.31	< 7.31	< 12.15
Cs-134	**50**	< 11.06	< 12.41	< 10.65	< 12.05	< 8.90	< 14.17
Cs-137	**50**	< 9.24	< 8.45	< 13.38	< 13.34	< 6.91	< 11.70
Zr-95		< 17.68	< 19.26	< 30.52	< 22.31	< 13.52	< 23.37
Nb-95		< 11.46	< 12.49	< 20.10	< 13.74	< 8.15	< 13.93
Co-58		< 9.74	< 10.82	< 16.24	< 12.24	< 6.64	< 13.63
Mn-54		< 10.97	< 10.12	< 18.94	< 13.22	< 8.48	< 12.65
Zn-65		< 29.70	< 30.89	< 58.15	< 30.11	< 21.11	< 30.71
Fe-59		< 25.02	< 35.04	< 56.13	< 34.50	< 28.90	< 42.12
Co-60		< 12.39	< 10.57	< 21.37	< 9.60	< 7.22	< 18.43
Ba/La-140		< 15.63	< 18.94	< 25.72	< 8.65	< 8.32	< 10.32
Ru-103		< 9.51	< 10.06	< 15.31	< 13.29	< 8.36	< 12.73
Ru-106		< 115.00	< 92.89	< 161.70	< 145.50	< 91.07	< 136.70
Ce-141		< 14.60	< 15.71	< 18.53	< 15.71	< 8.63	< 15.01
Ce-144		< 63.04	< 57.79	< 70.35	< 58.49	< 40.61	< 56.59
AcTh-228		< 32.22	52.2 +/- 27.3	< 59.71	< 36.52	< 24.55	< 54.05
Ra-226		< 203.30	< 180.00	< 269.20	< 204.60	213.7 +/- 106.8	< 223.10
K-40		6580.0 +/- 309.2	7892.0 +/- 291.2	7873.0 +/- 455.9	3811.0 +/- 327.3	4757.0 +/- 228.5	6010.0 +/- 337.7

TABLE B-15
CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#25 Downstream (Hudson River)

Sample Location Date		VOP FISH 06/06/2007	VOP FISH 06/06/2007	VOP FISH 06/07/2007	VOP FISH 06/08/2007	VOP FISH 06/08/2007	VOP FISH 06/11/2007
Client ID		IFH252407S6	IFH252407S4	IFH252407S2	IFH252407S5	IFH252407S3	IFH252507S7
Radionuclide	Req. CL	CRABS	WHITE PERCH	STRIPED BASS	CARP	CATFISH	SUNFISH
Be-7		< 289.1	< 322.6	< 214.0	< 255.9	< 269.8	< 373.3
I-131		< 1042.0	< 1360.0	< 972.2	< 971.1	< 857.3	< 1023.0
Cs-134	**65**	< 23.1	< 23.5	< 20.5	< 17.9	< 17.8	< 24.6
Cs-137	**75**	< 18.9	< 17.6	< 15.7	< 15.7	< 17.5	< 22.6
Zr-95		< 59.6	< 54.7	< 41.9	< 44.7	< 48.1	< 73.4
Nb-95		< 50.1	< 50.4	< 39.9	< 38.5	< 39.6	< 56.8
Co-58	**65**	< 38.1	< 26.5	< 26.0	< 29.5	< 26.0	< 29.9
Mn-54	**65**	< 20.4	< 25.0	< 16.6	< 19.5	< 19.2	< 28.8
Zn-65	**130**	< 50.3	< 59.7	< 41.1	< 46.4	< 49.7	< 64.7
Fe-59	**130**	< 90.9	< 99.1	< 83.5	< 95.5	< 69.9	< 107.5
Co-60	**65**	< 23.9	< 29.7	< 17.8	< 23.5	< 17.9	< 22.9
Ba/La-140		< 442.3	< 254.7	< 268.1	< 252.2	< 193.5	< 360.2
Ru-103		< 49.2	< 49.8	< 35.1	< 32.1	< 37.6	< 54.5
Ru-106		< 217.1	< 250.7	< 186.4	< 212.9	< 173.1	< 274.8
Ce-141		< 75.9	< 77.0	< 46.5	< 56.0	< 50.9	< 73.5
Ce-144		< 115.8	< 135.6	< 102.1	< 103.8	< 88.6	< 134.4
AcTh-228		< 62.9	< 74.8	< 66.3	< 50.5	< 52.7	< 97.6
Ra-226		< 361.6	< 429.1	< 295.3	723.7 +/- 245.7	< 286.8	1001.0 +/- 376.6
K-40		3784.0 +/- 373.4	4656.0 +/- 484.3	3680.0 +/- 333.1	4399.0 +/- 331.8	3913.0 +/- 343.2	7191.0 +/- 468.2
Sr-90	**5**	< 7.1	< 8.6	< 6	< 6.8	< 7.7	< 14

TABLE B-15
CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#25 Downstream (Hudson River)

Sample Location Date		VOP FISH 06/13/2007	VOP FISH 08/16/2007	VOP FISH 08/16/2007	VOP FISH 08/20/2007	VOP FISH 08/24/2007	VOP FISH 08/29/2007
Client ID		IFH252507S1	IFH254407S1	IFH254407S5	IFH254407S4	IFH254407S3	IFH254407S2
Radionuclide	Req. CL	AMERICAN EEL	BLUE CRAB	WHITE PERCH	AMERICAN EEL	CATFISH	SUN FISH
Be-7		< 306.7	< 203.3	< 309.0	< 223.4	< 213.8	< 267.5
I-131		< 658.1	< 5898.0	< 10980.0	< 5610.0	< 4142.0	< 3583.0
Cs-134	**65**	< 22.8	< 8.9	< 10.6	< 10.9	< 7.1	< 10.0
Cs-137	**75**	< 25.8	< 9.6	< 14.0	< 12.3	< 10.9	< 15.2
Zr-95		< 67.6	< 28.7	< 53.1	< 38.8	< 34.2	< 44.4
Nb-95		< 42.7	< 35.5	< 56.7	< 52.9	< 45.4	< 50.8
Co-58	**65**	< 21.6	< 17.4	< 29.3	< 23.9	< 20.7	< 26.2
Mn-54	**65**	< 22.6	< 9.9	< 17.4	< 13.6	< 13.5	< 18.0
Zn-65	**130**	< 60.1	< 25.2	< 24.3	< 18.3	< 20.2	< 23.0
Fe-59	**130**	< 86.5	< 80.7	< 114.6	< 90.4	< 88.3	< 90.7
Co-60	**65**	< 28.8	< 9.8	< 14.7	< 12.6	< 12.4	< 15.7
Ba/La-140		< 267.7	< 583.5	< 774.0	< 645.4	< 479.7	< 395.1
Ru-103		< 39.7	< 34.9	< 53.9	< 38.8	< 38.5	< 41.2
Ru-106		< 232.3	< 104.3	< 160.5	< 132.0	< 143.1	< 172.6
Ce-141		< 66.4	< 58.1	< 98.2	< 70.2	< 62.5	< 75.8
Ce-144		< 103.0	< 57.8	< 100.6	< 71.4	< 73.3	< 98.9
AcTh-228		< 93.5	95.8 +/- 29.2	219.5 +/- 41.4	99.4 +/- 33.0	48.6 +/- 29.9	< 55.0
Ra-226		< 401.0	707.8 +/- 155.2	580.8 +/- 209.5	521.0 +/- 187.4	456.1 +/- 158.1	968.4 +/- 215.9
K-40		3629.0 +/- 422.8	4690.0 +/- 183.9	4539.0 +/- 206.2	5245.0 +/- 222.3	4154.0 +/- 219.7	4196.0 +/- 196.3
Sr-90	**5**	< 6.6	< 7.1	< 6.5	< 6.3	< 6.8	< 5.2

TABLE B-15
CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton (Control)

Sample Location Date		ROSETON FISH 06/07/2007	ROSETON FISH 06/07/2007	ROSETON FISH 06/07/2007	ROSETON FISH 06/07/2007	ROSETON FISH 06/13/2007	ROSETON FISH 08/14/2007
Client ID		IFH232407S1	IFH232407S3	IFH232407S4	IFH232407S5	IFH232507S2	IFH234407S4
Radionuclide	Req. CL	AMERICAN EEL	CARP	CATFISH	WHITE PERCH	SUNFISH	WHITE PERCH
Be-7		< 194.6	< 210.0	< 190.2	< 238.9	< 169.6	< 359.8
I-131		< 744.3	< 896.0	< 855.9	< 999.5	< 476.2	< 14910.0
Cs-134	**65**	< 16.2	< 20.0	< 14.0	< 15.5	< 16.5	< 17.6
Cs-137	**75**	< 17.2	< 18.0	< 12.5	< 15.0	< 15.2	< 15.9
Zr-95		< 43.1	< 46.9	< 33.4	< 41.6	< 38.5	< 63.5
Nb-95		< 36.6	< 41.9	< 35.0	< 43.8	< 29.0	< 79.6
Co-58	**65**	< 21.7	< 25.1	< 23.0	< 22.0	< 21.3	< 39.0
Mn-54	**65**	< 15.3	< 22.3	< 15.0	< 11.9	< 16.6	< 17.3
Zn-65	**130**	< 35.8	< 48.9	< 32.5	< 41.5	< 34.2	< 28.5
Fe-59	**130**	< 86.7	< 106.4	< 68.7	< 71.9	< 53.3	< 107.8
Co-60	**65**	< 18.2	< 21.3	< 14.6	< 16.3	< 20.8	< 19.8
Ba/La-140		< 197.4	< 329.7	< 158.8	< 235.4	< 140.9	< 1306.0
Ru-103		< 33.1	< 42.3	< 27.1	< 26.7	< 23.0	< 63.8
Ru-106		< 156.4	< 162.9	< 132.6	< 151.1	< 173.2	< 200.2
Ce-141		< 43.0	< 47.0	< 44.2	< 41.1	< 23.1	< 98.6
Ce-144		< 77.4	< 72.8	< 79.0	< 78.0	< 73.0	< 92.3
AcTh-228		< 52.4	< 66.3	< 41.2	< 59.0	< 44.6	< 66.5
Ra-226		< 251.6	833.9 +/- 240.7	< 232.9	< 267.7	667.5 +/- 178.4	617.1 +/- 268.4
K-40		3849.0 +/- 276.6	4407.0 +/- 342.6	5490.0 +/- 266.8	3751.0 +/- 280.4	3405.0 +/- 303.4	5439.0 +/- 308.5
Sr-90	**5**	< 7.2	< 9.5	< 5.2	< 8.3	< 7.2	< 6.8

TABLE B-15
CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
#23 Roseton (Control)

Sample Location Date		ROSETON FISH 08/15/2007	ROSETON FISH 08/24/2007	ROSETON FISH 08/24/2007	ROSETON FISH 08/31/2007
Client ID		IFH234407S3	IFH234407S2	IFH234407S5	IFH234407S1
Radionuclide	Req. CL	BLUE CRAB	AMERICAN EEL	SUNFISH	CAT FISH
Be-7		< 228.9	< 252.5	< 215.3	< 216.4
I-131		< 7870.0	< 4760.0	< 4582.0	< 2880.0
Cs-134	**65**	< 13.2	< 14.7	< 8.0	< 14.9
Cs-137	**75**	< 11.0	< 16.1	< 12.5	< 15.5
Zr-95		< 38.4	< 51.0	< 45.1	< 47.3
Nb-95		< 48.1	< 51.5	< 45.8	< 52.1
Co-58	**65**	< 23.4	< 26.9	< 25.9	< 26.6
Mn-54	**65**	< 11.9	< 18.4	< 16.2	< 19.4
Zn-65	**130**	< 30.0	< 38.8	< 38.8	< 38.7
Fe-59	**130**	< 92.3	< 96.9	< 104.3	< 99.7
Co-60	**65**	< 12.3	< 13.6	< 16.5	< 20.7
Ba/La-140		< 709.6	< 590.6	< 875.6	< 490.9
Ru-103		< 45.7	< 44.6	< 42.2	< 35.9
Ru-106		< 119.0	< 151.9	< 140.7	< 184.0
Ce-141		< 66.5	< 71.3	< 60.5	< 67.0
Ce-144		< 63.4	< 86.0	< 75.5	< 77.8
AcTh-228		< 35.5	< 61.0	127.1 +/- 46.5	< 64.2
Ra-226		419.9 +/- 130.3	511.5 +/- 182.0	599.8 +/- 185.3	796.7 +/- 210.3
K-40		4044.0 +/- 209.8	5483.0 +/- 285.2	5276.0 +/- 264.1	5481.0 +/- 310.0
Sr-90	**5**	< 6.9	< 6.5	< 6.7	< 7.6

TABLE B-15
CONCENTRATIONS OF RADIONUCLIDES IN FISH SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma
Catskill

Sample Location Date		CATSKILL FISH 06/07/2007	CATSKILL FISH 06/07/2007	CATSKILL FISH 06/07/2007	CATSKILL FISH 06/07/2007	CATSKILL FISH 06/19/2007
Client ID		IFHCAT2407S5	IFHCAT2407S2	IFHCAT2407S3	IFHCAT2407S4	IFHCAT2607S1
Radionuclide	Req. CL	CARP	AMERICAN EEL	WHITE PERCH	CATFISH	SUNFISH
Be-7		< 199.4	< 254.2	< 182.8	< 207.1	< 201.6
I-131		< 849.4	< 971.4	< 999.4	< 999.6	< 421.5
Cs-134	**65**	< 16.4	< 13.8	< 14.3	< 9.4	< 18.7
Cs-137	**75**	< 15.0	< 18.1	< 13.1	< 15.0	< 14.9
Zr-95		< 36.6	< 46.7	< 37.8	< 44.0	< 37.0
Nb-95		< 33.1	< 47.2	< 32.1	< 37.1	< 31.2
Co-58	**65**	< 24.5	< 26.1	< 19.6	< 19.3	< 22.3
Mn-54	**65**	< 18.0	< 19.9	< 13.4	< 15.0	< 18.6
Zn-65	**130**	< 45.1	< 48.1	< 37.5	< 20.2	< 40.6
Fe-59	**130**	< 98.9	< 83.9	< 80.4	< 74.5	< 61.3
Co-60	**65**	< 16.7	< 16.3	< 16.1	< 13.7	< 16.5
Ba/La-140		< 249.5	< 340.8	< 224.0	< 203.0	< 129.5
Ru-103		< 30.4	< 37.3	< 27.8	< 32.1	< 31.2
Ru-106		< 170.2	< 157.9	< 139.2	< 164.2	< 177.9
Ce-141		< 44.0	< 60.2	< 46.1	< 54.6	< 44.8
Ce-144		< 62.5	< 91.1	< 77.1	< 82.8	< 107.1
AcTh-228		< 46.9	< 54.1	< 47.8	< 48.7	133.0 +/- 42.9
Ra-226		504.3 +/- 180.1	702.6 +/- 266.5	427.1 +/- 167.9	831.8 +/- 254.8	580.1 +/- 250.4
K-40		4487.0 +/- 293.7	3331.0 +/- 320.6	5681.0 +/- 273.5	4671.0 +/- 234.7	3946.0 +/- 258.2
Sr-90	**5**	< 6.1	< 6.8	< 7.9	< 7.8	< 6.6

TABLE B-16
CONCENTRATIONS OF GAMMA EMITTERS IN AQUATIC VEGETATION SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma

Sample Location Date		COLD SPRING 06/06/2007	COLD SPRING 09/06/2007	VERPLANCK 06/07/2007
Client ID		IAV842307	IAV843607	IAV172307
Radionuclide	Req. CL	Aquatic	WATERMILFOIL	Aquatic
Be-7		230.2 +/- 46.4	< 90.5	445.3 +/- 75.0
I-131	**30**	< 10.9	< 14.0	< 17.1
Cs-134	**30**	< 4.9	< 6.6	< 11.7
Cs-137	**40**	< 6.2	< 12.6	31.0 +/- 6.4
Zr-95		< 9.1	< 18.9	< 16.5
Nb-95		< 6.3	< 15.4	< 11.9
Co-58		< 8.7	< 12.0	< 11.0
Mn-54		< 7.7	< 13.1	< 11.2
Zn-65		< 19.3	< 33.8	< 29.9
Fe-59		< 23.5	< 35.6	< 35.5
Co-60		< 8.8	< 8.7	< 9.8
Ba/La-140		< 16.2	< 9.7	< 18.7
Ru-103		< 6.9	< 11.0	< 9.1
Ru-106		< 66.7	< 115.1	< 100.6
Ce-141		< 8.7	< 13.0	< 15.3
Ce-144		< 30.2	< 50.3	< 56.1
AcTh-228		< 21.3	89.3 +/- 32.7	190.1 +/- 36.0
Ra-226		317.2 +/- 84.1	435.0 +/- 170.1	< 210.0
K-40		2500.0 +/- 157.2	1749.0 +/- 212.7	4320.0 +/- 279.3

TABLE B-17
CONCENTRATIONS OF GAMMA EMITTERS IN BOTTOM SEDIMENT SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma

Sample Location Date		COLD SPRING 06/06/2007	COLD SPRING 09/06/2007	LENTS COVE 06/06/2007	LENTS COVE 09/06/2007	VERPLANCK 06/07/2007	VERPLANCK 09/07/2007
Client ID		JBS842307	JBS843607	JBS282307	JBS283607	JBS172307	JBS173607
Radionuclide	Req. CL						
Be-7		< 423.0	< 234.0	< 399.4	< 339.4	< 417.3	< 309.8
I-131		< 108.6	< 48.9	< 112.3	< 54.1	< 86.0	< 55.5
Cs-134	**75**	< 31.3	< 38.3	< 32.9	< 54.1	< 48.5	< 39.4
Cs-137	**90**	254.8 +/- 44.1	< 34.9	373.7 +/- 58.4	209.2 +/- 41.1	252.7 +/- 49.6	217.1 +/- 41.0
Zr-95		< 68.5	< 56.1	< 121.4	< 77.0	< 100.1	< 70.3
Nb-95		< 64.8	< 25.4	< 83.2	< 47.0	< 44.8	< 51.5
Co-58		< 43.6	< 36.4	< 54.1	< 45.0	< 56.7	< 27.2
Mn-54		< 50.9	< 40.7	< 62.4	< 42.1	< 45.1	< 42.8
Zn-65		< 133.6	< 93.9	< 167.7	< 149.8	< 131.5	< 100.4
Fe-59		< 133.0	< 114.8	< 171.8	< 143.4	< 175.8	< 130.9
Co-60		< 47.3	< 26.1	< 56.1	< 77.3	< 46.6	< 40.6
Ba/La-140		< 101.9	< 57.5	< 151.2	< 101.2	< 36.0	< 47.6
Ru-103		< 47.5	< 35.0	< 54.3	< 36.7	< 43.8	< 42.9
Ru-106		< 393.5	< 399.4	< 599.5	< 379.5	< 463.1	< 392.2
Ce-141		< 84.9	< 45.3	< 79.7	< 58.0	< 72.1	< 56.5
Ce-144		< 322.1	< 183.0	< 268.5	< 231.0	< 260.2	< 211.0
AcTh-228		1045.0 +/- 170.7	960.5 +/- 141.8	1214.0 +/- 237.0	658.1 +/- 152.0	1143.0 +/- 176.9	728.1 +/- 134.6
Ra-226		3153.0 +/- 869.8	2009.0 +/- 581.3	2263.0 +/- 908.4	1630.0 +/- 603.7	2008.0 +/- 792.1	1796.0 +/- 668.7
K-40		20630.0 +/- 1052.0	33510.0 +/- 1219.0	20430.0 +/- 1464.0	14160.0 +/- 1041.0	19610.0 +/- 1193.0	16900.0 +/- 1017.0

TABLE B-17
CONCENTRATIONS OF GAMMA EMITTERS IN BOTTOM SEDIMENT SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma

Sample Location Date		DISCHARGE CANAL 06/07/2007	DISCHARGE CANAL 09/07/2007
Client ID		IBS102307	IBS103607
Radionuclide	Req. CL		
Be-7		< 208.8	< 233.1
I-131		< 43.8	< 55.6
Cs-134	**75**	< 15.0	< 41.1
Cs-137	**90**	177.3 +/- 31.3	95.0 +/- 34.9
Zr-95		< 49.1	< 49.7
Nb-95		< 31.6	< 37.6
Co-58		< 25.6	< 26.1
Mn-54		< 34.0	< 38.4
Zn-65		< 94.1	< 94.1
Fe-59		< 95.3	< 140.5
Co-60		< 22.6	< 26.5
Ba/La-140		< 60.6	< 83.9
Ru-103		< 30.8	< 34.9
Ru-106		< 401.0	< 404.4
Ce-141		< 35.1	< 46.3
Ce-144		< 138.8	< 183.6
AcTh-228		176.0 +/- 104.1	< 148.6
Ra-226		1248.0 +/- 425.1	< 659.0
K-40		15430.0 +/- 912.1	14730.0 +/- 1065.0

TABLE B-18
CONCENTRATIONS OF RADIONUCLIDES IN RAINWATER SAMPLES – 2007
Results in Units of pCi/L ± 1 Sigma

Sample Location Date		ROSETON RAINWATER 03/26/2007	ROSETON RAINWATER 06/28/2007	ROSETON RAINWATER 10/01/2007	ROSETON RAINWATER 12/31/2007
Client ID Radionuclide	Req. CL	IRF23Q107	IRF23Q207	IRF23Q307	IRF23Q407
H-3		< 474.0	< 443.0	< 448.0	< 439.0
Be-7		< 39.4	< 49.5	< 62.2	< 34.4
I-131		< 28.1	< 28.3	< 35.9	< 24.4
Cs-134	**7.5**	< 1.9	< 3.1	< 3.4	< 3.2
Cs-137	**9**	< 2.5	< 2.3	< 4.5	< 2.8
Zr-95		< 6.0	< 7.3	< 11.9	< 7.1
Nb-95		< 5.4	< 6.7	< 10.0	< 5.3
Co-58		< 3.9	< 5.1	< 6.4	< 4.1
Mn-54		< 2.9	< 3.0	< 5.8	< 2.0
Zn-65		< 3.3	< 7.7	< 17.5	< 7.2
Fe-59		< 8.3	< 14.0	< 13.4	< 16.1
Co-60	**7.5**	< 2.6	< 2.3	< 6.0	< 3.1
Ba/La-140		< 21.9	< 21.4	< 37.4	< 12.4
Ru-103		< 5.5	< 6.4	< 8.3	< 5.2
Ru-106		< 29.0	< 26.7	< 39.3	< 30.1
Ce-141		< 12.2	< 10.8	< 13.7	< 1.0
Ce-144		< 25.1	< 23.3	< 26.9	< 21.0
AcTh-228		< 11.2	< 10.7	< 15.0	< 10.4
Ra-226		128.0 +/- 55.4	< 59.9	< 86.0	< 58.6
K-40		126.6 +/- 25.9	98.7 +/- 27.7	< 55.4	277.6 +/- 34.2

TABLE B-18
CONCENTRATIONS OF RADIONUCLIDES IN RAINWATER SAMPLES – 2007
Results in Units of pCi/L ± 1 Sigma

Sample Location Date		PEEKSKILL RAINWATER 03/26/2007	PEEKSKILL RAINWATER 06/28/2007	PEEKSKILL RAINWATER 10/01/2007	PEEKSKILL RAINWATER 12/31/2007
Client ID		IRF44Q107	IRF44Q207	IRF44Q307	IRF44Q407
Radionuclide	Req. CL				
H-3		< 474.0	< 443.0	< 448.0	< 443.0
Be-7		< 43.3	< 48.0	< 44.9	< 40.2
I-131		< 39.0	< 35.1	< 34.9	< 39.5
Cs-134	**7.5**	< 3.3	< 2.0	< 4.3	< 2.4
Cs-137	**9**	< 3.5	< 3.9	< 4.5	< 3.2
Zr-95		< 11.3	< 8.7	< 9.3	< 4.1
Nb-95		< 8.6	< 7.7	< 8.7	< 7.9
Co-58		< 4.9	< 4.9	< 4.9	< 6.1
Mn-54		< 3.4	< 3.2	< 4.3	< 4.6
Zn-65		< 7.1	< 5.0	< 7.4	< 3.3
Fe-59		< 12.1	< 17.7	< 21.6	< 21.6
Co-60	**7.5**	< 4.0	< 3.1	< 5.8	< 4.3
Ba/La-140		< 15.4	< 35.6	< 36.4	< 32.4
Ru-103		< 6.0	< 6.8	< 8.6	< 8.8
Ru-106		< 25.5	< 27.5	< 37.0	< 42.6
Ce-141		< 9.4	< 11.3	< 14.1	< 11.2
Ce-144		< 21.5	< 21.1	< 26.6	< 22.8
AcTh-228		< 10.9	< 10.3	< 12.8	< 16.9
Ra-226		< 70.2	< 70.4	< 77.1	81.1 +/- 51.3
K-40		194.6 +/- 39.3	198.5 +/- 38.0	182.2 +/- 46.7	< 42.7

TABLE B-19
CONCENTRATIONS OF GAMMA EMITTERS IN SOIL SAMPLES – 2007
Results in Units of pCi/kg ± 1 Sigma

Sample Location Date		ROSETON 10/01/2007	MET TOWER 10/02/2007	TRAINING BLDG 10/02/2007
Client ID		ISO234007	ISO954007	ISO944007
Radionuclide	Req. CL			
Be-7		876.0 +/- 195.2	1596.0 +/- 252.1	1458.0 +/- 206.2
I-131		< 31.7	< 31.0	< 33.1
Cs-134	**75**	< 33.2	< 33.4	< 32.9
Cs-137	**90**	< 27.3	< 27.4	136.5 +/- 22.5
Zr-95		< 49.5	< 54.2	< 52.8
Nb-95		< 36.0	< 33.4	< 38.9
Co-58		< 32.8	< 30.8	< 31.8
Mn-54		< 28.9	< 31.0	< 26.6
Zn-65		< 37.9	< 94.0	< 42.4
Fe-59		< 70.3	< 117.6	< 84.3
Co-60		< 21.8	< 42.1	< 37.0
Ba/La-140		< 36.4	< 40.9	< 25.4
Ru-103		< 28.2	< 24.5	< 24.4
Ru-106		< 279.4	< 316.8	< 261.0
Ce-141		< 39.2	< 38.4	< 43.2
Ce-144		< 169.6	< 185.4	< 187.0
AcTh-228		829.1 +/- 117.3	694.9 +/- 126.3	1037.0 +/- 128.4
Ra-226		1965.0 +/- 526.2	2193.0 +/- 490.7	2293.0 +/- 505.4
K-40		13870.0 +/- 701.3	16750.0 +/- 938.9	23110.0 +/- 854.3

TABLE B-20
CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES – 2007
Results in Units of pCi/liter ± 1 Sigma
ALGONQUIN OUTFALL

Date	01/23/2007	02/13/2007	03/20/2007	04/16/2007	05/15/2007	06/19/2007
NUCLIDE						
I-131	< 3.73	< 5.28	< 2.82	< 3.31	< 4.09	< 3.67
Cs-134	< 4.28	< 3.22	< 2.58	< 1.57	< 3.70	< 2.66
Cs-137	< 3.79	< 3.05	< 2.32	< 2.77	< 3.78	< 3.08
Zr-95	< 6.07	< 6.10	< 4.02	< 3.78	< 5.08	< 4.19
Nb-95	< 2.66	< 3.47	< 2.48	< 1.81	< 4.44	< 3.23
Co-58	< 3.63	< 3.15	< 2.52	< 2.61	< 2.85	< 3.16
Mn-54	< 2.76	< 3.33	< 2.39	< 2.50	< 3.54	< 3.22
Fe-59	< 7.14	< 6.88	< 6.20	< 5.73	< 7.99	< 4.62
Zn-65	< 4.68	< 4.26	< 4.81	< 2.75	< 3.87	< 4.02
Co-60	< 3.06	< 2.73	< 2.66	< 2.35	< 3.42	< 2.97
K-40	389.6 +/- 45.28	259.7 +/- 38.73	183.9 +/- 26.41	109.4 +/- 22.55	253.6 +/- 39.58	170.5 +/- 30.22
Ba/La-140	< 4.81	< 5.81	< 2.85	< 2.66	< 3.54	< 2.15
Date	07/17/2007	08/21/2007	09/25/2007			
NUCLIDE						
I-131	< 3.60	< 3.27	< 3.82			
Cs-134	< 3.21	< 3.05	< 3.15			
Cs-137	< 2.93	< 3.15	< 4.10			
Zr-95	< 5.07	< 4.47	< 6.16			
Nb-95	< 3.96	< 3.23	< 2.20			
Co-58	< 3.14	< 2.67	< 3.73			
Mn-54	< 3.14	< 2.60	< 2.74			
Fe-59	< 6.63	< 7.10	< 8.63			
Zn-65	< 3.84	< 8.31	< 2.92			
Co-60	< 3.48	< 2.27	< 3.28			
K-40	126.2 +/- 30.28	191.2 +/- 33.92	115 +/- 30.54			
Ba/La-140	< 3.97	< 2.54	< 3.03			

TABLE B-20
CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES – 2007
Results in Units of pCi/liter ± 1 Sigma
GYPSUM PLANT

Date	01/23/2007	02/13/2007	03/20/2007	04/16/2007	05/15/2007	06/19/2007
NUCLIDE						
I-131	< 5.06	< 5.75	< 4.01	< 3.29	< 3.11	< 2.91
Cs-134	< 3.90	< 3.93	< 3.44	< 2.86	< 2.92	< 2.57
Cs-137	< 2.38	< 4.38	< 1.54	< 2.61	< 3.50	< 2.94
Zr-95	< 6.75	< 6.64	< 6.22	< 4.11	< 5.91	< 4.76
Nb-95	< 2.75	< 2.63	< 2.73	< 2.60	< 3.07	< 3.15
Co-58	< 4.81	< 3.78	< 4.21	< 2.48	< 2.64	< 2.81
Mn-54	< 3.78	< 3.29	< 3.97	< 2.77	< 3.46	< 2.99
Fe-59	< 9.55	< 11.75	< 7.81	< 6.81	< 6.51	< 9.63
Zn-65	< 5.26	< 4.39	< 4.86	< 3.76	< 6.35	< 9.20
Co-60	< 4.99	< 3.65	< 3.63	< 1.94	< 2.42	< 3.44
K-40	244.5 +/- 46.13	130.7 +/- 35.72	149.7 +/- 31.47	300 +/- 35.31	129.6 +/- 37.81	266.3 +/- 42.45
Ba/La-140	< 4.75	< 5.39	< 4.44	< 3.20	< 3.01	< 4.17
Date	07/17/2007	08/21/2007	09/25/2007			
NUCLIDE						
I-131	< 2.49	< 3.43	< 2.81			
Cs-134	< 2.12	< 3.39	< 2.35			
Cs-137	< 2.24	< 1.70	< 2.67			
Zr-95	< 4.03	< 5.22	< 5.07			
Nb-95	< 2.16	< 2.65	< 3.43			
Co-58	< 2.06	< 1.88	< 2.04			
Mn-54	< 2.42	< 3.14	< 2.69			
Fe-59	< 6.56	< 7.04	< 8.12			
Zn-65	< 6.06	< 4.02	< 6.05			
Co-60	< 3.02	< 3.73	< 2.84			
K-40	402.3 +/- 38.66	169.5 +/- 27.58	197.4 +/- 32.26			
Ba/La-140	< 2.89	< 3.02	< 4.35			

TABLE B-20
CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES – 2007
Results in Units of pCi/liter ± 1 Sigma
TRAP ROCK QUARRY

Date	01/23/2007	02/13/2007	03/20/2007	04/16/2007	05/15/2007	06/19/2007
NUCLIDE						
I-131	< 3.12	< 4.34	< 2.56	< 3.64	< 3.95	< 3.87
Cs-134	< 1.78	< 3.27	< 1.91	< 2.24	< 3.30	< 4.33
Cs-137	< 2.67	< 2.90	< 2.28	< 2.35	< 3.97	< 3.63
Zr-95	< 4.02	< 5.16	< 3.90	< 4.58	< 5.03	< 4.59
Nb-95	< 1.98	< 3.00	< 2.04	< 3.37	< 4.16	< 3.13
Co-58	< 2.72	< 3.15	< 2.20	< 1.81	< 2.94	< 4.60
Mn-54	< 2.50	< 3.04	< 2.06	< 3.59	< 3.22	< 2.74
Fe-59	< 5.85	< 9.25	< 5.05	< 7.48	< 4.53	< 4.91
Zn-65	< 5.31	< 8.64	< 4.96	< 6.74	< 9.37	< 7.21
Co-60	< 1.51	< 4.38	< 1.95	< 2.74	< 2.38	< 4.24
K-40	122.5 +/- 26.20	267.9 +/- 38.23	277.1 +/- 29.28	103.8 +/- 30.27	134.9 +/- 37.84	127.7 +/- 36.36
Ba/La-140	< 2.57	< 6.51	< 2.68	< 3.29	< 4.53	< 4.53
Date	07/17/2007	08/21/2007	09/25/2007			
NUCLIDE						
I-131	< 3.12	< 3.25	< 3.40			
Cs-134	< 3.89	< 2.07	< 3.03			
Cs-137	< 2.65	< 3.07	< 3.65			
Zr-95	< 5.28	< 5.03	< 4.89			
Nb-95	< 3.15	< 2.79	< 3.01			
Co-58	< 2.90	< 3.63	< 3.08			
Mn-54	< 3.25	< 2.81	< 2.72			
Fe-59	< 8.01	< 9.26	< 6.54			
Zn-65	< 7.91	< 4.08	< 11.33			
Co-60	< 3.24	< 3.03	< 3.97			
K-40	234.6 +/- 39.31	218.6 +/- 43.43	241.2 +/- 45.51			
Ba/La-140	< 5.37	< 6.14	< 4.80			

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES – 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-51	MW-40	MW-51	MW-40
Sample Name:		MW-51-012	MW-40-011	MW-51-012	MW-40-011
Sample Date:		02/21/2007	02/21/2007	06/26/2007	06/26/2007
Client ID		IMW510707	IMW400707	IMW512607	IMW402607
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**	**Result**
H-3		< 467.00	< 467.00	< 444.00	< 444.00
Be-7		< 24.13	< 32.89	< 22.14	< 21.13
K-40		197.3 +/- 26.5	191.8 +/- 35.5	115.8 +/- 31.4	173.7 +/- 33.9
Mn-54		< 1.76	< 3.52	< 2.83	< 2.48
Co-58		< 1.68	< 2.29	< 2.66	< 2.39
Fe-59		< 7.45	< 8.61	< 10.66	< 9.38
Co-60		< 2.98	< 4.07	< 4.72	< 4.19
Zn-65		< 3.37	< 4.46	< 5.19	< 4.95
Sr-90	**1**	< 1.5	< 1.5		
Nb-95		< 1.83	< 2.84	< 3.71	< 2.59
Zr-95		< 4.83	< 6.57	< 7.10	< 7.04
Ru-103		< 2.70	< 3.94	< 4.25	< 4.00
Ru-106		< 25.65	< 33.20	< 39.68	< 34.76
I-131		< 5.52	< 7.04	< 4.85	< 5.13
Cs-134	**15**	< 3.05	< 3.52	< 4.46	< 3.93
Cs-137	**18**	< 1.37	< 1.99	< 2.28	< 2.41
Ba/La-140		< 4.69	< 6.69	< 5.59	< 5.05
Ce-141		< 5.88	< 6.78	< 9.16	< 7.58
Ce-144		< 22.65	< 26.74	< 39.34	< 31.12
Ra-226		104.9 +/- 63.3	< 99.42	< 122.10	< 118.50
AcTh-228		< 10.07	< 13.36	< 14.74	19.4 +/- 11.5

Note 1: Less than values "<" are the Critical Level values
Note 2: A sample is positive if the result is greater than the critical level

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-40	MW-40
Sample Name:		MW-40-27-(001)	MW-40-27-(002)
Sample Date:		06/05/2007	07/23/2007
Radionuclide	**Req. MDC**	**Result**	**Result**
H-3		< 163	< 169
Be-7		< 64.4	< 37.7
K-40		< 37.8	< 56.4
Mn-54		< 3.09	< 3.71
Co-58		< 5.51	< 4.05
Fe-59		< 17.4	< 9.58
Co-60		< 3.17	< 3.83
Zn-65		< 6.93	< 8.51
Sr-90	1	< 0.85	< 0.662
Nb-95		< 10.8	< 4.68
Zr-95		< 10	< 6.03
Ru-106		< 30.1	< 32.1
Cs-134	15	< 3.66	< 4.36
Cs-137	18	< 3.39	< 3.88
Ba-140		< 346	< 33.1
La-140		< 117	< 11.1
Ce-141		< 18.3	< 8.84
Ce-144		< 24.4	< 26.7
Ac-228		< 13.6	< 14.9

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-40	MW-40	MW-40
Sample Name:		MW-40-46-(001)	MW-40-46-(002)	MW-40-46-(003)
Sample Date:		06/05/2007	07/23/2007	10/12/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**
H-3		< 166	< 171	< 174
Be-7		< 60.6	< 40.4	< 40.1
K-40		< 40.8	< 47	< 37.4
Mn-54		< 3.59	< 3.43	< 4.09
Co-58		< 4.95	< 5.22	< 4.31
Fe-59		< 15.7	< 8.52	< 10.1
Co-60		< 2.27	< 2.9	< 4.26
Zn-65		< 7.33	< 7.05	< 8.08
Sr-90	1	< 0.888	< 0.628	< 0.685
Nb-95		< 10.8	< 6.17	< 7.06
Zr-95		< 8.89	< 7.9	< 7.58
Ru-106		< 27.3	< 35.2	< 33.5
Cs-134	15	< 3.95	< 3.94	< 4.46
Cs-137	18	< 3.39	< 4.09	< 3.59
Ba-140		< 324	< 30.7	< 37.5
La-140		< 118	< 12	< 15.2
Ce-141		< 19.2	< 9.35	< 9.68
Ce-144		< 23.6	< 29.4	< 28.7
Ac-228		< 12.3	< 17	< 16.1

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-40	MW-40	MW-40
Sample Name:		MW-40-81-(001)	MW-40-81-(002)	MW-40-81-(003)
Sample Date:		06/05/2007	07/23/2007	10/12/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**
H-3		< 163	< 172	< 173
Be-7		< 56.4	< 42.3	< 44.2
K-40		< 38.1	< 69.8	< 48.7
Mn-54		< 3.35	< 3.69	< 3.89
Co-58		< 5.01	< 5.22	< 3.58
Fe-59		< 15.2	< 10.8	< 8.81
Co-60		< 3.62	< 4.95	< 4.64
Zn-65		< 7.49	< 8.1	< 10.5
Sr-90	1	< 0.911	< 0.694	< 0.71
Nb-95		< 11	< 6.65	< 7.32
Zr-95		< 11.7	< 8.64	< 8.14
Ru-106		< 30.2	< 37.6	< 35.2
Cs-134	15	< 3.88	< 4.47	< 4.12
Cs-137	18	< 3.22	< 5.2	< 4.48
Ba-140		< 330	< 39	< 37.5
La-140		< 150	< 11.1	< 12.4
Ce-141		< 21.2	< 11.2	< 10.2
Ce-144		< 27.5	< 35.8	< 30.7
Ac-228		< 12.1	< 18.4	< 16.3

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-40	MW-40	MW-40
Sample Name:		MW-40-100-(001)	MW-40-100-(002)	MW-40-100-(003)
Sample Date:		06/05/2007	07/23/2007	10/12/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**
H-3		176 ± 53.5	< 175	< 173
Be-7		< 64.6	< 20.4	< 40.3
K-40		< 49.7	< 25	< 39.3
Mn-54		< 3.55	< 2.16	< 3.78
Co-58		< 6.59	< 2.11	< 4.02
Fe-59		< 19.1	< 5.09	< 8.19
Co-60		< 3.59	< 2.2	< 3.61
Zn-65		< 7.93	< 4.47	< 8.16
Sr-90	1	< 0.694	< 0.696	< 0.769
Nb-95		< 11.9	< 2.92	< 6.55
Zr-95		< 12.4	< 4.15	< 7.79
Ru-106		< 35.3	< 18.2	< 34.4
Cs-134	15	< 4.19	< 2.34	< 4.06
Cs-137	18	< 3.04	< 2.1	< 3.87
Ba-140		< 377	< 17.9	< 35.6
La-140		< 115	< 6.81	< 14.1
Ce-141		< 16.8	< 4.92	< 10.2
Ce-144		< 24.1	< 15.1	< 30.1
Ac-228		< 15.1	< 8.97	< 12.7

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-40	MW-40	MW-40
Sample Name:		MW-40-127-(001)	MW-40-127-(002)	MW-40-127-(003)
Sample Date:		06/05/2007	07/23/2007	10/12/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**
H-3		187 ± 54	< 168	< 164
Be-7		< 57.7	< 17.1	< 35.9
K-40		< 41.2	< 17.7	< 44.4
Mn-54		< 3.59	< 1.67	< 4.19
Co-58		< 6.06	< 1.74	< 4.49
Fe-59		< 17.7	< 4.06	< 9.26
Co-60		< 3.26	< 1.77	< 3.79
Zn-65		< 7.83	< 3.57	< 8.23
Sr-90	1	< 0.571	< 0.573	< 0.624
Nb-95		< 11.3	< 2.41	< 5.09
Zr-95		< 10.8	< 3.5	< 7.84
Ru-106		< 31.8	< 16.3	< 38
Cs-134	15	< 3.98	< 2.01	< 5.04
Cs-137	18	< 3.41	< 1.76	< 4.06
Ba-140		< 359	< 15.5	< 40
La-140		< 118	< 5.48	< 13.9
Ce-141		< 20.8	< 4.03	< 10.1
Ce-144		< 27.6	< 13.1	< 30.7
Ac-228		< 16.4	30.3 ± 3.71	30 ± 8.75

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-40	MW-40	MW-40
Sample Name:		MW-40-162-(001)	MW-40-162-(002)	MW-40-162-(003)
Sample Date:		06/05/2007	07/23/2007	10/12/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**
H-3		< 164	< 173	< 169
Be-7		< 76	< 16.6	< 36.1
K-40		< 37.1	< 22.5	< 33.1
Mn-54		< 5.44	< 1.65	< 3.57
Co-58		< 8.48	< 1.74	< 3.71
Fe-59		< 21.9	< 3.88	< 8.41
Co-60		< 4.53	< 1.69	< 3.47
Zn-65		< 10.2	< 3.4	< 9
Sr-90	1	< 0.504	< 0.507	< 0.819
Nb-95		< 17	< 2.43	< 5.24
Zr-95		< 14.4	< 3.43	< 7.49
Ru-106		< 45.6	< 14.7	< 30.3
Cs-134	15	< 5.48	< 1.99	< 4.47
Cs-137	18	< 4.95	< 1.75	< 4.05
Ba-140		< 433	< 14.8	< 30.7
La-140		< 172	< 4.85	< 12.4
Ce-141		< 17.5	< 3.92	< 9.42
Ce-144		< 25.8	< 12.1	< 27
Ac-228		< 15.2	33.1 ± 4.42	35.5 ± 6.5

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-51	MW-51	MW-51	MW-51
Sample Name:		MW-51-40-(001)	MW-51-40-(002)	MW-51-40-(003)	MW-51-40-(004)
Sample Date:		05/30/2007	07/24/2007	10/02/2007	11/09/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**	**Result**
H-3		198 ± 55	223 ± 53	< 196	< 170
Be-7		< 37.7	< 36.8	< 29.1	< 33
K-40		< 46.7	< 35.3	< 37.3	< 50.5
Mn-54		< 3.14	< 3.71	< 2.68	< 2.95
Co-58		< 3.51	< 3.54	< 2.43	< 3.39
Fe-59		< 8.68	< 8.97	< 7.36	< 7.2
Co-60		< 3.77	< 4.13	< 2.55	< 3.49
Zn-65		< 7.33	< 7.48	< 5.37	< 7.15
Sr-90	1	< 0.982	< 0.538	< 0.373	< 0.452
Nb-95		< 5.39	< 6.14	< 3.44	< 4.88
Zr-95		< 6.6	< 7.41	< 4.98	< 6.97
Ru-106		< 32.4	< 30.1	< 21.3	24.2 ± 6.35
Cs-134	15	< 3.49	< 3.97	< 2.63	< 3.68
Cs-137	18	< 3.77	< 3.85	5.15 ± 1.35	< 3.52
Ba-140		< 28.6	< 33.5	< 27.2	< 33.7
La-140		< 11.1	< 11	< 7.96	< 15.1
Ce-141		< 8.24	< 7.66	< 7.13	< 8.15
Ce-144		< 26.1	< 26.4	< 21.5	< 21.4
Ac-228		< 13.7	< 15.6	< 10.6	< 12.7

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-51	MW-51	MW-51	MW-51
Sample Name:		MW-51-79-(001)	MW-51-79-(002)	MW-51-79-(003)	MW-51-79-(004)
Sample Date:		05/30/2007	07/24/2007	10/02/2007	11/09/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**	**Result**
H-3		< 172	< 167	< 194	< 171
Be-7		< 34.3	< 41.6	< 36.8	< 45.4
K-40		< 32.5	< 65.4	< 28.7	< 50
Mn-54		< 3.06	< 4.51	< 3.35	< 4.22
Co-58		< 4.45	< 4.15	< 3.61	< 4.66
Fe-59		< 7.97	< 10.7	< 7.74	< 9.73
Co-60		< 3.76	< 4.93	< 3.27	< 4.45
Zn-65		< 7.16	< 9.78	< 6.51	< 7.85
Sr-90	1	< 0.956	< 0.615	< 0.327	< 0.352
Nb-95		< 4.58	< 4.87	< 5.49	< 6.5
Zr-95		< 7.26	< 6.89	< 6.48	< 7.83
Ru-106		< 31.4	< 33.4	< 29.5	< 34
Cs-134	15	< 4.15	< 4.49	< 3.92	< 4.21
Cs-137	18	< 3.9	< 4.21	5.37 ± 1.69	< 3.56
Ba-140		< 33.3	< 34.1	< 36.2	< 52.3
La-140		< 10.9	< 13.6	< 10.7	< 17.8
Ce-141		< 7.46	< 10.9	< 8.04	< 11
Ce-144		< 22	< 32.1	< 23.5	< 28.1
Ac-228		< 13.6	< 18.5	< 10.9	< 16.3

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-51	MW-51	MW-51	MW-51
Sample Name:		MW-51-104-(001)	MW-51-104-(002)	MW-51-104-(003)	MW-51-104-(004)
Sample Date:		05/30/2007	07/24/2007	10/02/2007	11/09/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**	**Result**
H-3		< 171	< 164	< 194	< 170
Be-7		< 31.2	< 49.4	< 41.7	< 28
K-40		< 40.1	< 41.2	< 55.9	< 40.8
Mn-54		< 3.15	< 4.33	< 4.42	< 2.77
Co-58		< 3.21	< 5.71	< 4.55	< 2.97
Fe-59		< 7.38	< 10.8	< 9.58	< 7.36
Co-60		< 3.62	< 5.33	< 3.68	< 3.18
Zn-65		< 6.8	< 10.7	< 9.79	< 7.06
Sr-90	1	< 0.99	< 0.541	< 0.508	< 0.386
Nb-95		< 4.48	< 5.92	< 7.41	< 4.72
Zr-95		< 5.79	< 9.53	< 8.29	< 5.02
Ru-106		< 29.7	< 44.8	< 34.6	< 25.9
Cs-134	15	< 3.24	< 6.04	< 4.9	< 3.3
Cs-137	18	< 3.35	< 3.92	< 4.25	< 2.92
Ba-140		< 29.3	< 37	< 39.1	< 34.7
La-140		< 11.2	< 14.2	< 15.3	< 12.1
Ce-141		< 7.93	< 10.9	< 10.1	< 7.33
Ce-144		< 24.1	< 36.1	< 30.7	< 18.6
Ac-228		< 15.3	< 22.8	< 13.7	17.6 ± 4.72

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-51	MW-51	MW-51	MW-51
Sample Name:		MW-51-135-(001)	MW-51-135-(002)	MW-51-135-(003)	MW-51-135-(004)
Sample Date:		05/30/2007	07/24/2007	10/02/2007	11/09/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**	**Result**
H-3		< 170	< 159	< 196	< 172
Be-7		< 42	< 39.7	< 27.3	< 37.8
K-40		< 52	< 33	< 25.7	< 51.8
Mn-54		< 3.94	< 4.4	< 2.69	< 3.79
Co-58		< 4.27	< 5.18	< 3.22	< 3.96
Fe-59		< 10.2	< 8.49	< 6.97	< 7.85
Co-60		< 4.48	< 3.84	< 2.92	< 3.66
Zn-65		< 6.69	< 11.1	< 6.38	< 6.88
Sr-90	1	< 0.84	< 0.576	< 0.549	< 0.318
Nb-95		< 6.3	< 5.32	< 3.22	< 5.59
Zr-95		< 7.32	< 8.52	< 5.35	< 7.11
Ru-106		< 28.6	< 40	< 23.7	< 34.5
Cs-134	15	< 4.37	< 5.09	< 3.05	< 4.13
Cs-137	18	< 4.03	< 4.36	21.6 ± 1.92	< 3.7
Ba-140		< 36.3	< 34.7	< 27.6	< 40.2
La-140		< 14.2	< 14.9	< 9.69	< 16.1
Ce-141		< 9.95	< 10.1	< 5.45	< 9.56
Ce-144		< 29.1	< 30.1	< 15.9	< 29.4
Ac-228		< 19.4	< 14.1	18 ± 4.89	22.6 ± 6.95

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-51	MW-51	MW-51	MW-51
Sample Name:		MW-51-163-(001)	MW-51-163-(002)	MW-51-163-(003)	MW-51-163-(004)
Sample Date:		05/30/2007	07/24/2007	10/02/2007	11/09/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**	**Result**
H-3		< 169	< 166	< 196	< 171
Be-7		< 32.2	< 42	< 44.4	< 33.3
K-40		< 33.3	< 45.8	< 51.4	< 50.5
Mn-54		< 2.92	< 4.04	< 4.94	< 3.41
Co-58		< 3.83	< 4.01	< 5.49	< 3.91
Fe-59		< 9.68	< 8.47	< 11.4	< 8.56
Co-60		< 3.2	< 3.63	< 4.89	< 3.11
Zn-65		< 7.44	< 9.18	< 7.87	< 6.11
Sr-90	1	< 1.36	< 0.521	< 0.364	< 0.312
Nb-95		< 5.71	< 5.38	< 6.74	< 5.5
Zr-95		< 6.32	< 7.51	< 9.42	< 7.59
Ru-106		< 32.9	< 40.5	< 41.6	< 31.8
Cs-134	15	< 3.89	< 3.82	< 5.88	< 4.27
Cs-137	18	< 3.45	< 3.78	11.6 ± 2.4	< 3.51
Ba-140		< 33.2	< 33.6	< 47.2	< 39.2
La-140		< 12.5	< 10.2	< 13.9	< 14.3
Ce-141		< 7.26	< 9.32	< 7.63	< 8.57
Ce-144		< 24.8	< 29.3	< 22.8	< 23.5
Ac-228		< 15.1	< 20.1	24.4 ± 7.8	23.7 ± 6.1

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-21
CONCENTRATIONS OF RADIONUCLIDES IN MONITORING WELL SAMPLES - 2007
Results in Units of pCi/L ± 1 Sigma

Monitoring Well:		MW-51	MW-51	MW-51	MW-51
Sample Name:		MW-51-189-(001)	MW-51-189-(002)	MW-51-189-(003)	MW-51-189-(004)
Sample Date:		05/30/2007	07/24/2007	10/02/2007	11/09/2007
Radionuclide	**Req. MDC**	**Result**	**Result**	**Result**	**Result**
H-3		187 ± 55.5	< 163	< 196	< 171
Be-7		< 44.4	< 38.2	< 31.8	< 44.9
K-40		< 57	< 45.4	< 37	< 50.9
Mn-54		< 4.26	< 3.93	< 3.21	< 4.38
Co-58		< 4.25	< 4.08	< 3.6	< 4.56
Fe-59		< 10.9	< 8.91	< 8.28	< 10.4
Co-60		< 4.63	< 4.31	< 3.04	< 4.05
Zn-65		< 10.3	< 6.95	< 5.9	< 8.58
Sr-90	1	< 1.11	< 0.448	< 0.258	< 0.408
Nb-95		< 6.32	< 4.62	< 5.27	< 6.12
Zr-95		< 8.85	< 7.7	< 5.88	< 7.78
Ru-106		< 39.7	< 30.3	< 30.6	< 29.7
Cs-134	15	< 4.86	< 4.07	< 3.3	< 4.8
Cs-137	18	< 3.82	< 3.58	13.8 ± 1.81	< 4.07
Ba-140		< 38.1	< 26.5	< 34.8	< 50.2
La-140		< 15.5	< 9.8	< 12.9	< 16.3
Ce-141		< 9.6	< 7.8	< 8.07	< 10.4
Ce-144		< 29.1	< 26	< 23.1	< 28.1
Ac-228		< 18.6	< 15.6	< 15.1	< 17.7

Note 1: Less than values "<" are the MDC values
Note 2: A sample is positive if the result is both greater than 3 standard deviations and greater than the MDC.

TABLE B-22
MILCH ANIMAL CENSUS
2007

THERE ARE NO ANIMALS PRODUCING MILK FOR HUMAN CONSUMPTION WITHIN FIVE MILES OF INDIAN POINT.

LAND USE CENSUS DESCRIPTION
2007

A comprehensive survey of the of the 5 mile (8 kilometer) area surrounding the Indian Point Site was conducted during the 2007 Spring, Summer and Fall months in accordance with the ODCM Section D 3.5 Radiological Environmental Monitoring Land Use Census
Methodology:

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.

Obtained information from the New York Agricultural Statistic Service on milching animals within the 5-mile area surrounding Indian Point Energy Center.

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: This was done while performing quarterly environmental badge change out and field inspections through out the 4 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.

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

Results:

The 2007 land use census indicated there were no new residences that were closer in proximity to IPEC. NEM performed a complete nearest residence survey with updated distances.
No milch animals were observed during this reporting period within the 5-mile zone or listed in the New York Agricultural Statistic Service.

TABLE B-23
LAND USE CENCUS
2007

INDIAN POINT ENERGY CENTER

UNRESTRICTED AREA BOUNDARY AND NEAREST RESIDENCES 2007

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	1788.1	41 River Road Tomkins Cove
2	NNE	RIVER	RIVER	3111.3	Chateau Rive Apts. John St. Peekskill
3	NE	550	636	1907.3	122 Lower South St. Peekskill
4	ENE	600	775	1478.2	1018 Lower South St. Peekskill
5	E	662	785	1370.9	1103 Lower South St. Peekskill
6	ESE	569	622	715.2	461 Broadway Buchanan
7	SE	553	564	1168.2	223 First St. Buchanan
8	SSE	569	551	1239.7	5 Pheasant's Run Buchanan
9	S	700	566	1132.5	320 Broadway Verplanck
10	SSW	755	480	1573.5	240 Eleventh St. Verplanck
11	SW	544	350	3015.9	29 Church St. Tomkins Cove
12	WSW	RIVER	RIVER	2169.6	9 West Shore Dr. Tomkins Cove
13	W	RIVER	RIVER	1918.7	712 Rt. 9W Tomkins Cove
14	WNW	RIVER	RIVER	1752.4	770 Rt. 9W Tomkins Cove
15	NW	RIVER	RIVER	1692.7	807 Rt. 9W Tomkins Cove
16	NNW	RIVER	RIVER	1609.3	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 2007 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 SUMMARY
1997 - 2007

Average Quarterly Dose (mR/Quarter)			
Year	Inner Ring	Outer Ring	Control Location
1997	15.0	15.0	18.0
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**
Historical Average 1997-2006	14.3	14.5	16.2

FIGURE C-1
DIRECT RADIATION
1997 to 2007

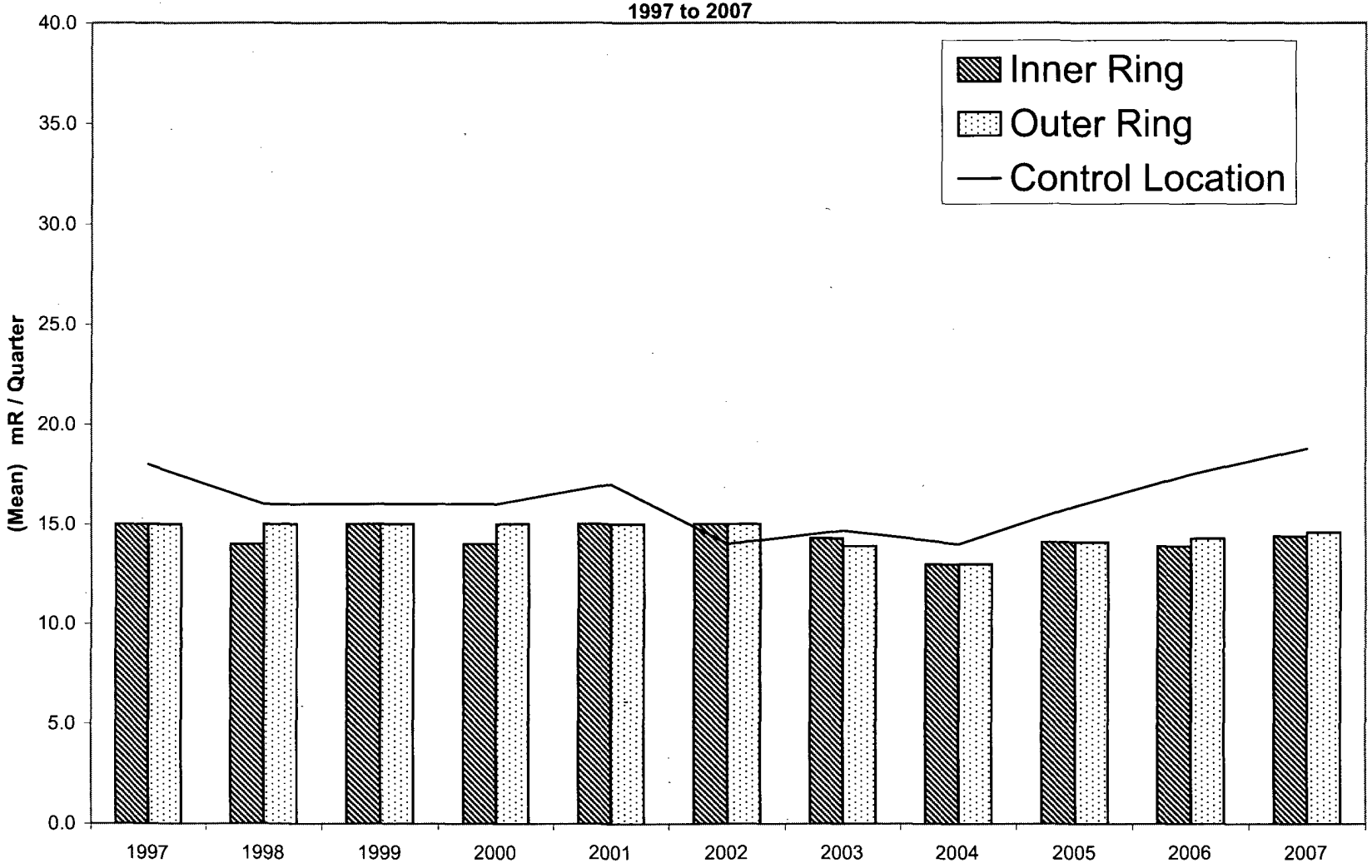


TABLE C-2

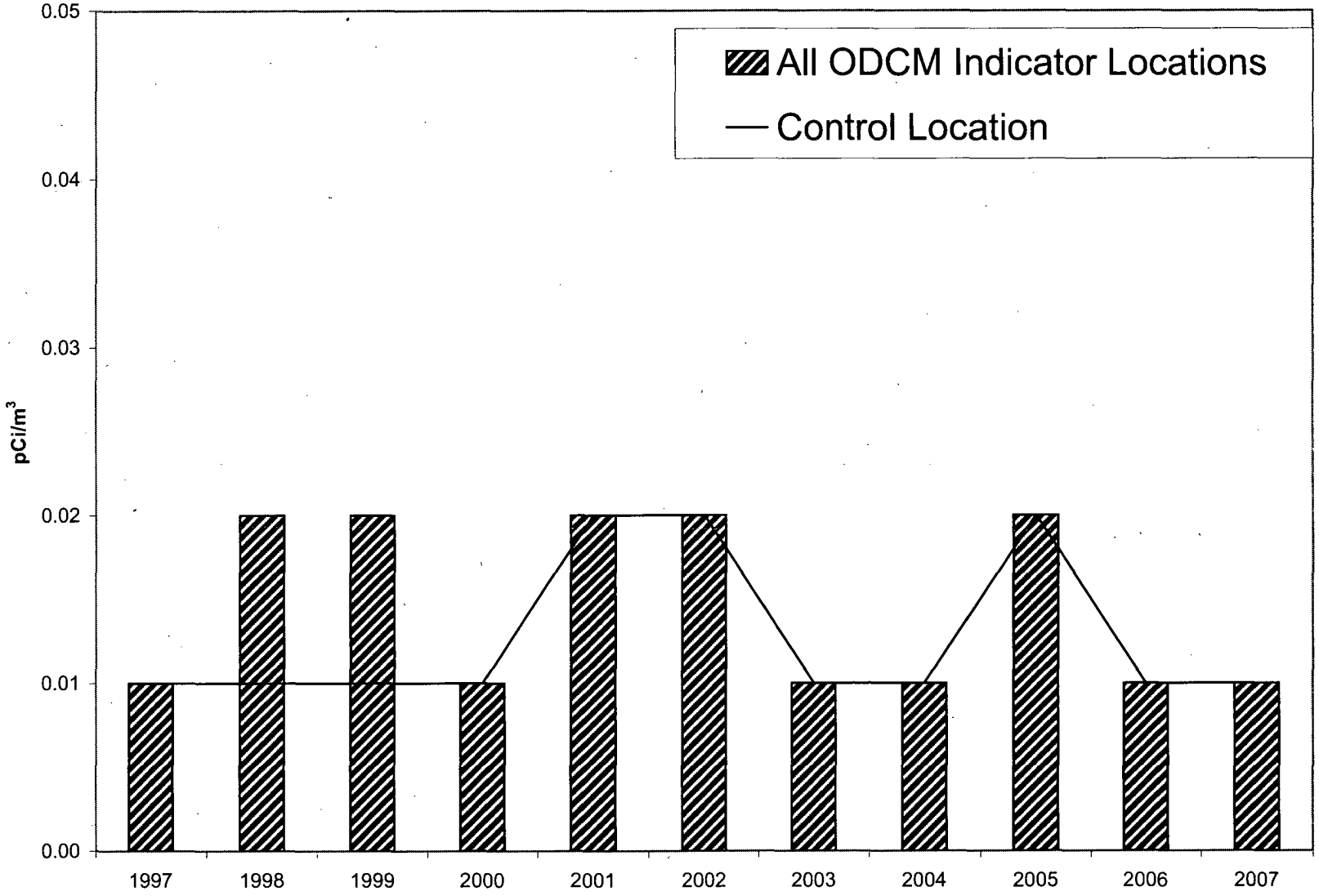
RADIONUCLIDES IN AIR
1997 to 2007
(pCi/m^3)

Year	Gross Beta		Cs-137	
	All ODCM Indicator Locations	Control Location	All ODCM Indicator Locations	Control Location
1997	0.01	0.01	$< L_c$	$< L_c$
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**	**$< L_c$**	**$< L_c$**
Historical Average 1997-2006	0.01	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
1997 to 2007



* Includes ODCM and non-ODCM indicator locations.

Gross Beta ODCM required LLD = 0.01 pCi/m^3

TABLE C-3

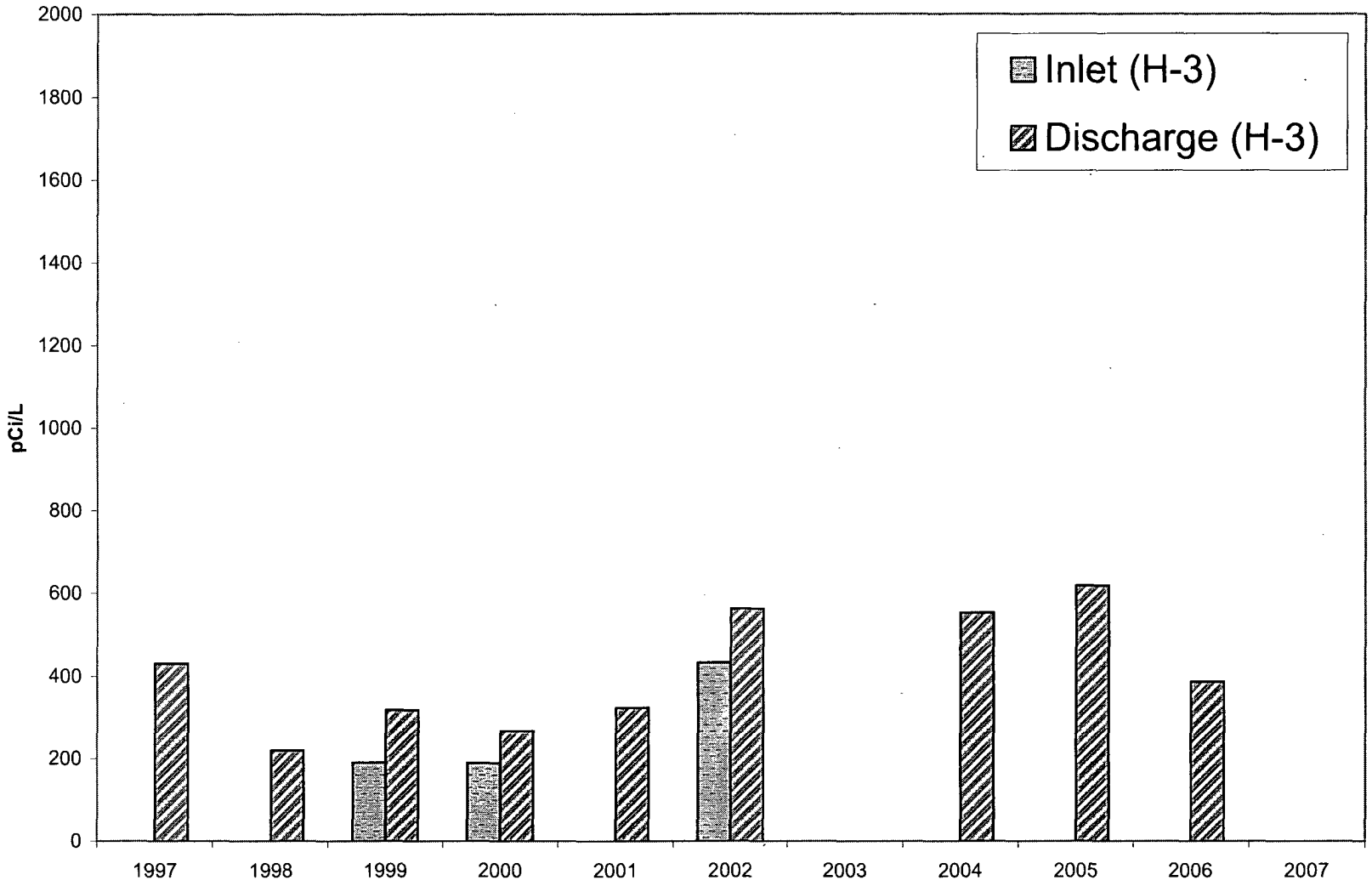
RADIONUCLIDES IN HUDSON RIVER WATER
1997 to 2007
(pCi/L)

	Tritium (H-3)		Cs-137	
Year	Inlet	Discharge	Inlet	Discharge
1997	< L_c	430	< L_c	< L_c
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	< Lc	386	< Lc	< Lc
2007	**< L_c**	**< L_c**	**< L_c**	**< L_c**
Historical Average 1997-2006	271	409	**< Lc**	**< Lc**

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

<L_c indicates no positive values above sample critical level.

FIGURE C-3
HUDSON RIVER WATER - TRITIUM
1997 to 2007



Tritium ODCM required LLD = 3000 pCi/L

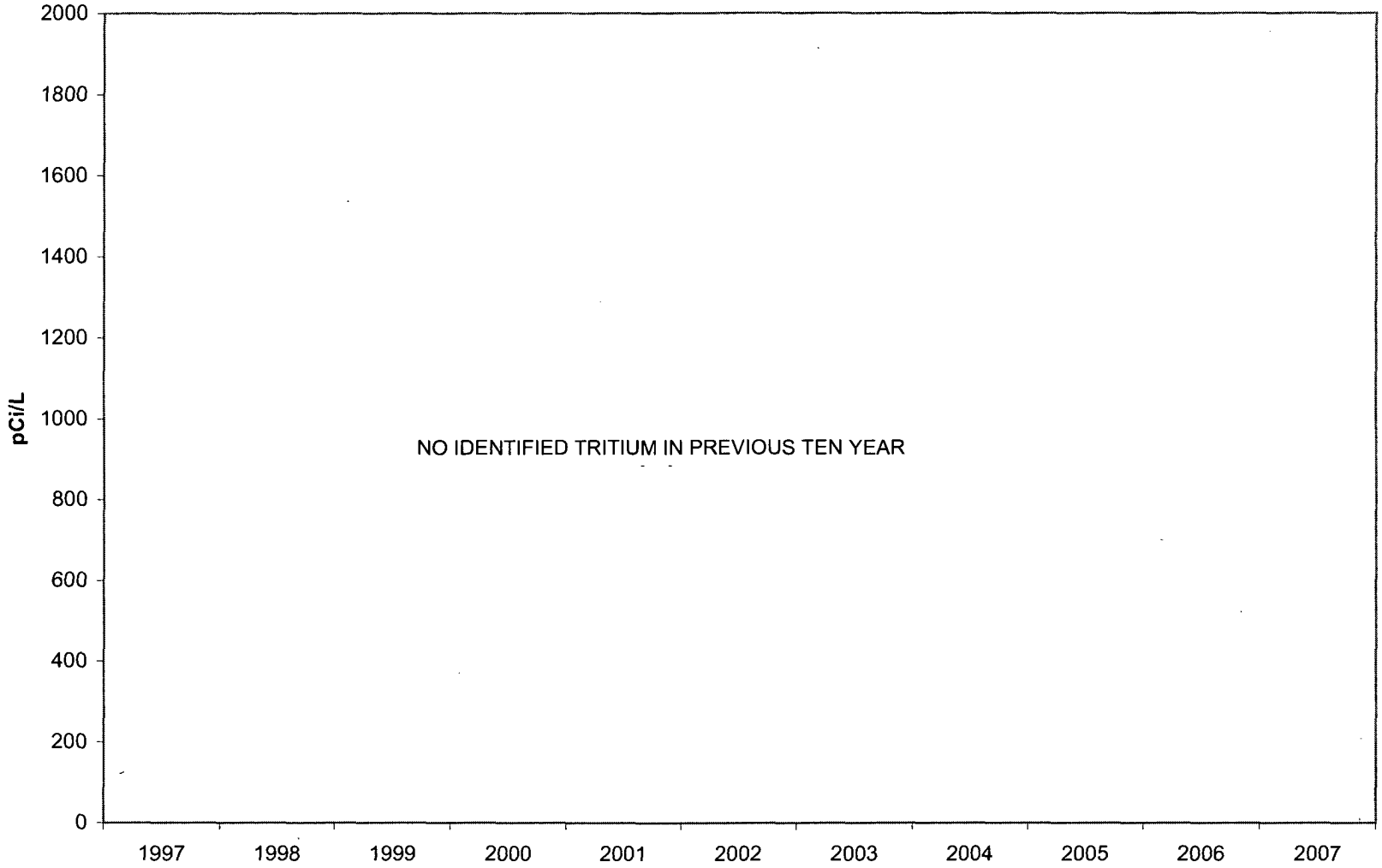
TABLE C-4

RADIONUCLIDES IN DRINKING WATER
1997 to 2007
(pCi/L)

Year	Tritium (H-3)	Cs-137
1997	$< L_c$	$< L_c$
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	**$< L_c$**	**$< L_c$**
Historical Average 1997-2006	$< L_c$	$< L_c$

Critical Level (L_c) is less than the ODCM required LLD.
$<L_c$ indicates no positive values above sample critical level.

FIGURE C-4
DRINKING WATER - TRITIUM
1997 to 2007



Tritium ODCM required LLD = 2000 pCi/L

TABLE C-5

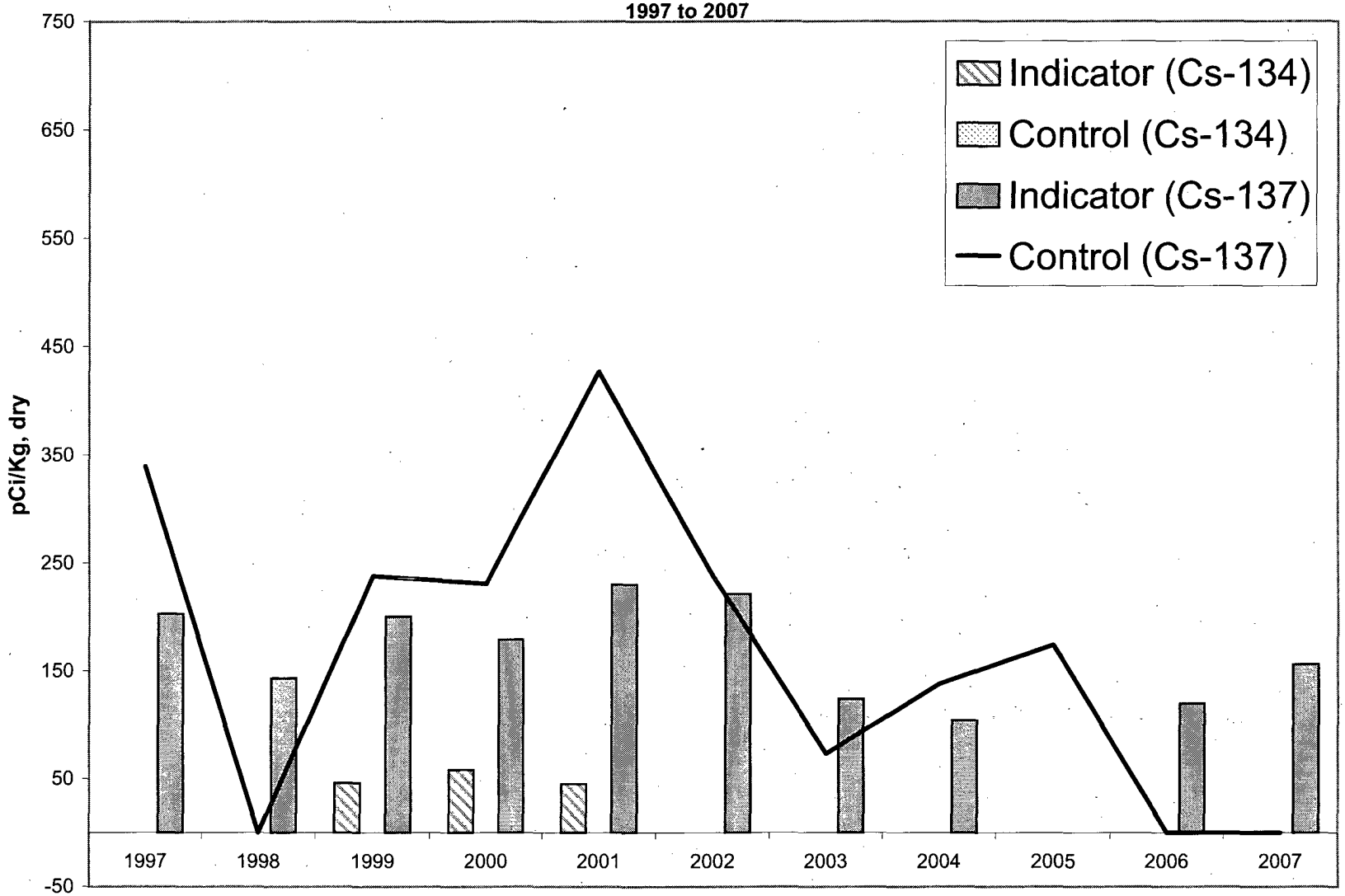
RADIONUCLIDES IN SHORELINE SOIL
1997 to 2007
(pCi/Kg, dry)

	Cs-134		Cs-137	
Year	Indicator	Control	Indicator	Control
1997	< L_c	< L_c	203	340
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	< L_c	174
2006	< Lc	< Lc	120	< Lc
2007	**< Lc**	**< Lc**	**156**	**< Lc**
Historical Average 1997-2006	50	< Lc	168	232

Critical Level (L_c) is less than the RETS required LLD.

<L_c indicates no positive values above sample critical level.

FIGURE C-5
RADIONUCLIDES IN SHORELINE SOIL
1997 to 2007



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

TABLE C-6

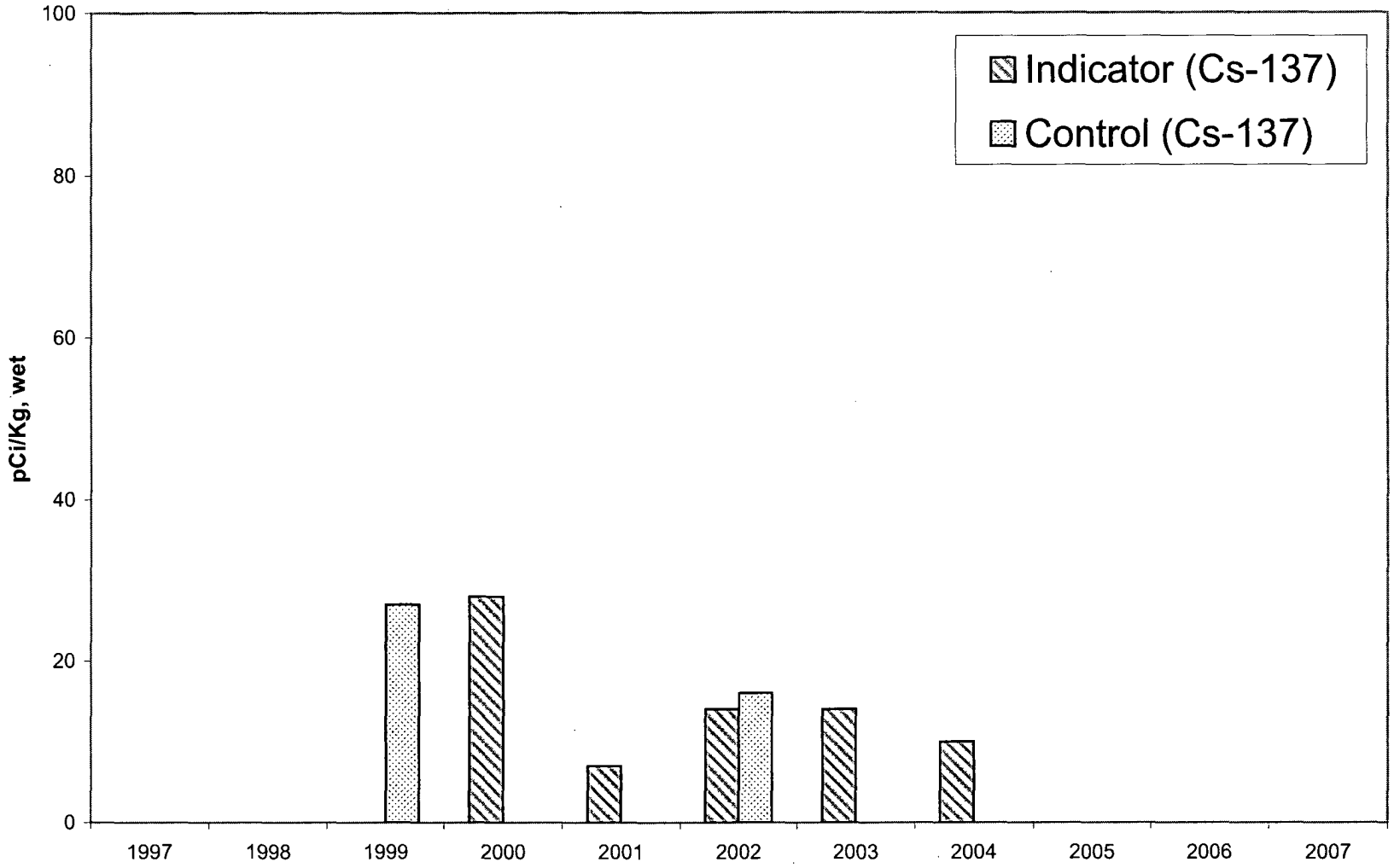
RADIONUCLIDES IN BROAD LEAF VEGETATION
1997 to 2007
(pCi/Kg, wet)

Cs-137		
Year	**Indicator**	**Control**
1997	< L_c	< L_c
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	< Lc	< Lc
2007	**< Lc**	**< Lc**
Historical Average 1997-2006	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
1997 to 2007



ODCM required LLD = 80 pCi/Kg, wet

TABLE C-7

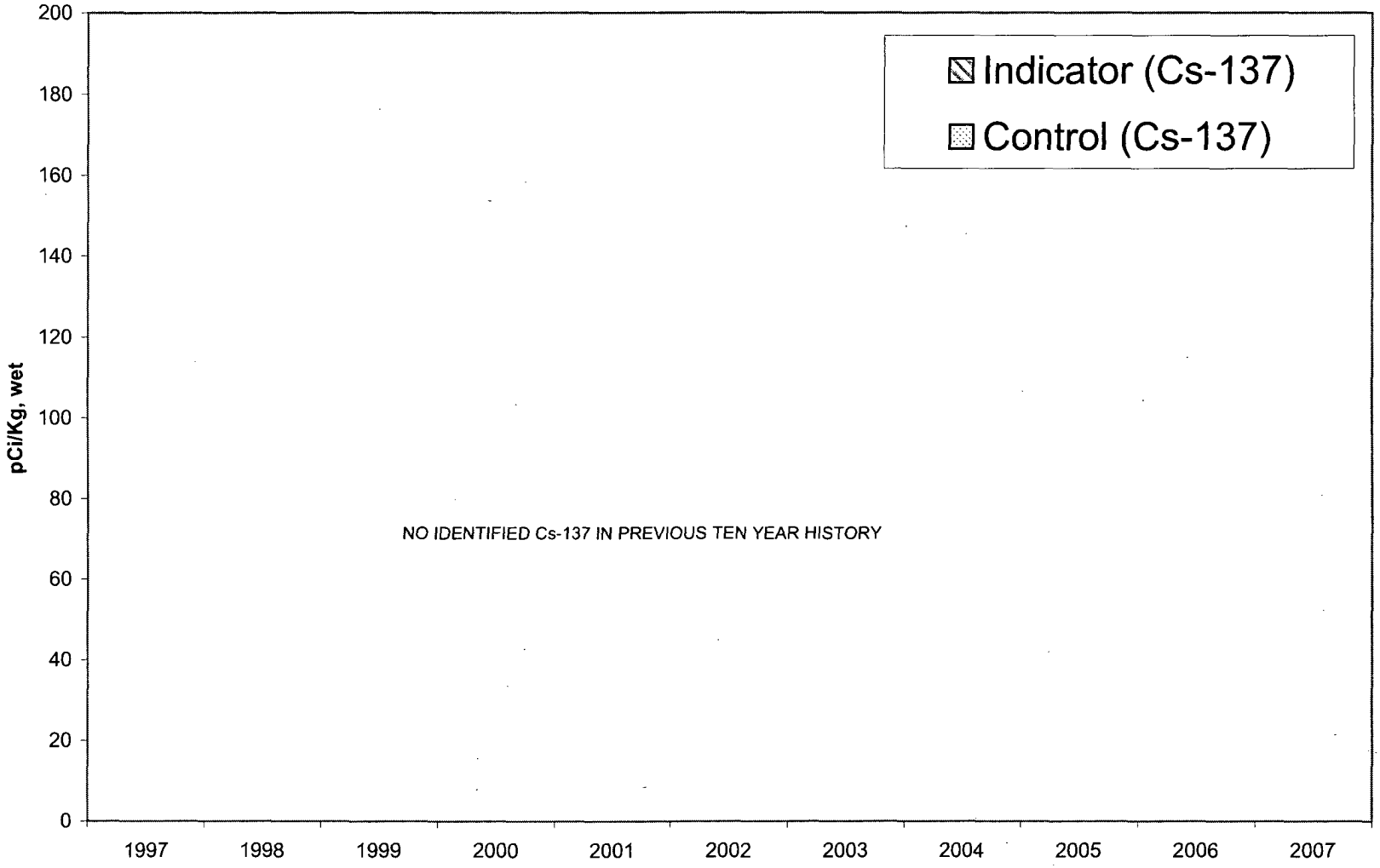
RADIONUCLIDES IN FISH AND INVERTEBRATES
1997 to 2007

	Cs-137	
Year	Indicator	Control
1997	< L_c	< L_c
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	< Lc	< Lc
2004	< L_c	< L_c
2005	< L_c	< L_c
2006	< L_c	< L_c
2007	**< L_c**	**< L_c**
Historical Average 1997-2006	< Lc	< Lc

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
1997 to 2007



Cs-137 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 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 two independent laboratories to provide quality assurance comparison samples. The two laboratories are Analytics, Incorporated in Atlanta, Georgia and the U.S. Department of Commerce's National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland.

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.

In addition to the Analytics Program, the JAF Environmental Laboratory participates in the NEI/NIST Measurement Assurance Program. In 1987, the nuclear industry established a Measurement Assurance Program at the National Bureau of Standards (now the National Institute of Standards and Technology) to provide sponsoring nuclear utilities an independent verification, traceable to NIST, of their capability to make accurate measurements of radioactivity, as described in NRC Regulatory Guide 4.15. The program includes distribution to sponsoring utilities. The samples are prepared by NIST to present specific challenges to participating laboratories. NIST supplies sample media as blind sample spikes. These samples are prepared and analyzed by the JAF Environmental Laboratory and the results are submitted to the Entergy Nuclear representative for evaluating the laboratory's performance. The performance results along with the NIST Report of Test (certifies what activities are present in the sample) are forwarded to the laboratory.

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.

D.2 PROGRAM SCHEDULE

TABLE D-1
QA PROGRAM SCHEDULE

SAMPLE MEDIA	LABORATORY ANALYSIS	SAMPLE PROVIDER ANALYTICS	SAMPLE PROVIDER NIST
Water	Gross Beta	1	
Water	Tritium	3	
Water	I-131	4	
Water	Mixed Gamma	4	1
Air	Gross Beta	3	
Air	I-131	4	
Air	Mixed Gamma	2	1
Milk	I-131	3	
Milk	Mixed Gamma	3	
Soil	Mixed Gamma	1	
Vegetation	Mixed Gamma	2	
TOTAL SAMPLE INVENTORY		**30**	**2**

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 and NIST 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 D.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 is 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 Analytics and NIST 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 ANALYTICS QA SAMPLES RESULTS

Thirty QA blind spike samples were analyzed as part of Analytics 2007 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 126 individual analyses on the 30 QA samples. Of the 126 analyses performed, 126 were in agreement using the NRC acceptance criteria for a 100% agreement ratio.

There were no non-conformities in the 2007 program.

D.4.2 NIST QA SAMPLES RESULTS

In 2007, JAF Environmental Laboratory participated in the NEI/NIST Measurement Assurance Program. Two QA blind spike samples were analyzed. The following sample media were evaluated as part of the comparison program.

- Air Particulate Filter: Mixed Gamma Emitters
- Water: Mixed Gamma Emitters

The JAF Environmental Laboratory performed 8 individual analyses on the two QA samples. Of the 8 analyses performed, 8 were in agreement using the NRC acceptance criteria for a 100% agreement ratio.

There were no non-conformities in the 2007 program.

D.4.3 NUMERICAL RESULTS TABLES

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi ±1 sigma				REFERENCE LAB* pCi ±2 sigma			RATIO (1)	
06/14/2007	E5352-05	Filter	GROSS BETA		78.3	±	2.2	72.8	±	2.43	1.07	A
					79.6	±	2.3					
					76.6	±	2.2					
				Mean =	78.2	±	1.3					
06/14/2007	E5346-09	Filter	GROSS BETA		78.0	±	2.2	75.0	±	3	1.07	A
					82.0	±	2.3					
					80.0	±	2.3					
				Mean =	80.0	±	1.3					
12/06/2007	E5767-05	Filter	GROSS BETA		76.6	±	2.2	73.8	±	2.46	1.06	A
					82.2	±	2.3					
					76.8	±	2.2					
				Mean =	78.5	±	1.3					

(1) Ratio = Reported/Analytics.
* Sample provided by Analytics, Inc.
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				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
3/22/2007	E5331-05	Water	H-3		5510		177	5010	±	167	1.10	A
					5584		179					
					5490		178					
				Mean =	5528	±	103					
12/6/2007	E5542-09	Water	H-3		9671	±	208	9000	±	300	1.09	A
					9901	±	210					
				Mean =	9786	±	148					
12/6/2007	E5543-09	Water	H-3		9684	±	209	9000	±	300	1.08	A
					9843	±	210					
				Mean =	9764	±	148					

(1) Ratio = Reported/Analytics.
* Sample provided by Analytics, Inc.
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	REFERENCE LAB* pCi/liter ±2 sigma	RATIO (1)
11/09/2007	A21998-05	Water	GROSS BETA	9.11E+05 ± 1.50E+04 8.95E+05 ± 1.49E+04 8.91E+05 ± 1.48E+04 Mean = 8.99E+05 ± 8.60E+03	9.30E+05 ± 5.58E+04	0.97 A

(1) Ratio = Reported/Analytics.
* Sample provided by Analytics, Inc.
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				REFERENCE LAB* pCi ±2 sigma			RATIO (1)	
E5315-09	3/22/2007	Air	I-131		66.8	±	4.46	70.0	±	2.3	0.97	A
					69.8	±	4.55					
					61.7	±	3.99					
					72.7	±	5.2					
				Mean =	67.8	±	2.29					
E5355-05	6/14/2007	Air	I-131		72.7	±	4.22	79.0	±	2.63	0.99	A
					79.7	±	5.09					
					83.0	±	4.16					
				Mean =	78.5	±	2.60					
E5466-05	9/13/2007	Air	I-131		74.4	±	3.46	69.6	±	2.32	0.98	A
					65.7	±	3.92					
					64.5	±	3.13					
				Mean =	68.2	±	2.03					
E5446-09	9/13/2007	Air	I-131		67.8	±	3.34	70.0	±	2	0.93	A
					61.8	±	3.27					
					66.3	±	3.18					
				Mean =	65.3	±	1.88					

(1) Ratio = Reported/Analytics.
* Sample provided by Analytics, Inc.
A=Acceptable
U=Unacceptable

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
4/18/2007	E5332-05	Water	Ce-141		153	±	7.98	140	±	4.65	1.08	A
					151	±	2.4					
					148	±	3.63					
				Mean =	151	±	3.0					
			Cr-51		115	±	12.1	104		3.47	1.22	A
					139	±	15.4					
				Mean =	127	±	9.8					
			Cs-134		83.0	±	6.11	91.2	±	3.04	1.02	A
					94.3	±	2.03					
					102	±	2.43					
				Mean =	93.1	±	2.3					
			Cs-137		201	±	7.53	196	±	6.53	1.01	A
					195	±	2.41					
					197	±	3.08					
				Mean =	198	±	2.8					
			Co-58		65.6	±	6.04	63.5	±	2.12	1.01	A
					67.0	±	1.71					
					59.8	±	2.27					
				Mean =	64.1	±	2.2					
			Mn-54		168	±	7.48	144	±	4.79	1.08	A
					146	±	2.36					
					154	±	2.89					
				Mean =	156	±	2.8					
			Fe-59		63.1	±	6.4	58.0	±	1.93	1.03	A
					58.1	±	2.26					
					58.6	±	2.5					
				Mean =	59.9	±	2.4					
			Zn-65		830	±	23	776	±	25.9	1.06	A
					817	±	7.46					
					825	±	9.26					
				Mean =	824	±	8.6					
			Co-60		123	±	4.79	126	±	4.2	1.01	A
					128	±	1.6					
					129	±	1.95					
				Mean =	127	±	1.8					
			I-131**		100	±	4.75	89.8	±	2.99	1.10	A
					99.4	±	4.9					
					90.9	±	4.32					
					104	±	4.32					
				Mean =	98.6	±	2.3					

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

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
6/14/2007	E5345-09	Water	Ce-141		158	±	3.78	160	±	5	1.06	A
					181	±	3.47					
					169	±	9.27					
				Mean =	169	±	3.5					
			Cr-51		428	±	20.1	411	±	14	1.06	A
					420	±	16.3					
					461	±	52.3					
				Mean =	436	±	19.5					
			Cs-134		208	±	3.6	194	±	6	1.05	A
					204	±	2.73					
					202	±	10.3					
				Mean =	205	±	3.7					
			Cs-137		132	±	2.99	135	±	5	1.01	A
					141	±	2.34					
					140	±	8.12					
				Mean =	138	±	3.0					
			Co-58		164	±	3.3	159	±	5	1.05	A
					166	±	2.49					
					170	±	8.93					
				Mean =	167	±	3.3					
			Mn-54		147	±	3.32	133	±	4	1.15	A
					154	±	2.41					
					159	±	8.67					
				Mean =	153	±	3.2					
			Fe-59		141	±	4.05	134	±	4	1.03	A
					145	±	2.81					
					130	±	10.4					
				Mean =	139	±	3.8					
			Zn-65		277	±	7.04	268	±	9	1.08	A
					293	±	5.05					
					300	±	18.7					
				Mean =	290	±	6.9					
			Co-60		192	±	2.79	191	±	6	1.01	A
					195	±	2					
					189	±	7.36					
				Mean =	192	±	2.7					
			I-131**		108	±	8.97	102	±	3	1.02	A
					102	±	2.13					
					103	±	2.37					
				Mean =	104	±	3.2					

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

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
9/13/2007	E5463-05	Water	Ce-141		198	±	9.06	182	±	6.05	1.03	A
					179	±	9.53					
					188	±	10.8					
				Mean =	188	±	5.7					
			Cr-51		253	±	37.5	249	±	8.29	0.93	A
					245	±	41.3					
					200	±	42.5					
				Mean =	233	±	23.4					
			Cs-134		134	±	8.9	127	±	4.22	1.10	A
					134	±	9.08					
					150	±	8.93					
				Mean =	139	±	5.2					
			Cs-137		105	±	6.75	112	±	3.74	0.96	A
					107	±	7.68					
					109	±	7.87					
				Mean =	107	±	4.3					
			Co-58		103	±	6.62	98.1	±	3.27	0.99	A
					103	±	7.11					
					86.5	±	7.35					
				Mean =	97.5	±	4.1					
			Mn-54		173	±	8.22	144	±	4.8	1.14	A
					161	±	8.73					
					158	±	8.93					
				Mean =	164	±	5.0					
			Fe-59		105	±	7.93	95.1	±	3.17	1.15	A
					106	±	8.51					
					117	±	9.07					
				Mean =	109	±	4.9					
			Zn-65		204	±	13.8	174	±	5.8	1.20	A
					212	±	15.9					
					208	±	16.3					
				Mean =	208	±	8.9					
			Co-60		121	±	5.3	127	±	4.24	1.03	A
					128	±	6.28					
					144	±	6.72					
				Mean =	131	±	3.5					
			I-131**		83.5	±	1.77	80.1	±	2.67	1.04	A
					80.3	±	2.51					
					86.1	±	2.38					
				Mean =	83.3	±	1.3					

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

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
12/6/2007	E5544-09	Water	Ce-141		156	±	10.7	157	±	5	0.99	A
					155	±	8.47					
					153	±	11.5					
				Mean =	155	±	5.9					
			Cr-51		657	±	52	572	±	19	1.06	A
					557	±	40.6					
					611	±	58.7					
				Mean =	608	±	29.4					
			Cs-134		168	±	8.91	153	±	5	1.05	A
					155	±	7.61					
					161	±	9.97					
				Mean =	161	±	5.1					
			Cs-137		191	±	8.36	185	±	6	0.97	A
					177	±	7.05					
					172	±	9.27					
				Mean =	180	±	4.8					
			Co-58		214	±	8.97	194	±	6	1.10	A
					223	±	7.81					
					202	±	10.1					
				Mean =	213	±	5.2					
			Mn-54		240	±	9.27	212	±	7	1.10	A
					228	±	7.81					
					231	±	10.9					
				Mean =	233	±	5.4					
			Fe-59		177	±	9.99	166	±	6	1.06	A
					182	±	8.84					
					169	±	11.6					
				Mean =	176	±	5.9					
			Zn-65		296	±	16.6	261	±	9	1.10	A
					287	±	14.3					
					278	±	19.3					
				Mean =	287	±	9.7					
			Co-60		229	±	6.95	236	±	8	0.98	A
					228	±	6.05					
					237	±	8.36					
				Mean =	231	±	4.1					
			I-131**		73.7	±	3.53	72.0	±	2	1.04	A
					74.5	±	1.97					
					76.3	±	3.37					
				Mean =	74.8	±	1.8					

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

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
3/22/2007	E5316-09	MILK	Ce-141		304	±	4.2	297	±	9.9	1.01	A
					304	±	5.4					
					293	±	5.5					
				Mean =	300	±	2.9					
			Cr-51		227	±	16.6	245	±	8.2	0.90	A
					204	±	22.1					
					227	±	22.9					
				Mean =	219	±	12.0					
			Cs-134		110	±	2.8	112	±	3.7	0.98	A
					111	±	3.2					
					107	±	3.5					
				Mean =	109	±	1.8					
			Cs-137		227	±	3.5	234	±	7.8	0.98	A
					232	±	4.1					
					232	±	4.7					
				Mean =	230	±	2.4					
			Co-58		95.6	±	3.1	99.0	±	3.3	0.99	A
					101	±	3.3					
					98.0	±	3.8					
				Mean =	98.2	±	2.0					
			Mn-54		189	±	3.6	182	±	6.1	1.04	A
					189	±	3.9					
					189	±	4.5					
				Mean =	189	±	2.3					
			Fe-59		114	±	3.8	106	±	3.5	1.12	A
					127	±	4.1					
					114	±	4.6					
				Mean =	118	±	2.4					
			Zn-65		1040	±	11.6	1000	±	33.3	1.06	A
					1090	±	12.9					
					1050	±	14.7					
				Mean =	1060	±	7.6					
			Co-60		144	±	2.4	152	±	5.1	0.95	A
					146	±	2.6					
					144	±	3.0					
				Mean =	145	±	1.5					
			I-131**		97	±	3.9	85.0	±	2.8	1.11	A
					91.2	±	4.1					
					95.5	±	5.3					
				Mean =	94.6	±	2.6					

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

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
6/14/2007	E5353-05	MILK	Ce-141		209	±	4.33	200	±	6.66	1.01	A
					205	±	5.94					
					192	±	4.16					
				Mean =	202	±	2.82					
			Cr-51		519	±	22.1	512	±	17.1	1.07	A
					575	±	26.9					
					543	±	19.2					
				Mean =	546	±	13.3					
			Cs-134		249	±	4.19	242	±	8.06	1.06	A
					257	±	4.55					
					260	±	3.47					
				Mean =	255	±	2.36					
			Cs-137		162	±	3.45	169	±	5.63	0.99	A
					169	±	3.86					
					170	±	3.06					
				Mean =	167	±	2.00					
			Co-58		198	±	3.81	198	±	6.61	1.04	A
					211	±	4.14					
					208	±	3.30					
				Mean =	206	±	2.17					
			Mn-54		177	±	3.55	166	±	5.53	1.10	A
					185	±	3.94					
					185	±	3.19					
				Mean =	182	±	2.06					
			Fe-59		184	±	4.42	167	±	5.56	1.09	A
					182	±	4.75					
					181	±	3.78					
				Mean =	182	±	2.50					
			Zn-65		352	±	7.63	334	±	11.1	1.08	A
					379	±	10.6					
					354	±	6.73					
				Mean =	362	±	4.90					
			Co-60		237	±	3.02	238	±	7.93	1.01	A
					242	±	3.27					
					240	±	2.62					
				Mean =	240	±	1.72					
			I-131**		65.4	±	2.07	70.1	±	2.34	0.94	A
					65.9	±	2.29					
					65.9	±	1.87					
				Mean =	65.7	±	1.20					

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

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/liter ±1 sigma				REFERENCE LAB* pCi/liter ±2 sigma			RATIO (1)	
9/13/2007	E5465-05	MILK	Ce-141		188	±	10.8	211	±	7.04	0.99	A
					239	±	10.5					
					198	±	9.94					
				Mean =	208	±	6.02					
			Cr-51		200	±	42.5	289	±	9.65	0.89	A
					250	±	41.4					
					320	±	42.1					
				Mean =	257	±	24.3					
			Cs-134		150	±	8.93	147	±	4.91	1.03	A
					156	±	8.74					
					149	±	8.69					
				Mean =	152	±	5.07					
			Cs-137		109	±	7.87	131	±	4.35	0.96	A
					144	±	8.32					
					126	±	7.38					
				Mean =	126	±	4.54					
			Co-58		86.5	±	7.35	114	±	3.80	0.95	A
					127	±	8.17					
					111	±	7.19					
				Mean =	108	±	4.38					
			Mn-54		158	±	8.93	168	±	5.59	1.03	A
					176	±	9.18					
					184	±	8.60					
				Mean =	173	±	5.14					
			Fe-59		117	±	9.07	111	±	3.69	1.04	A
					113	±	9.94					
					117	±	8.44					
				Mean =	116	±	5.29					
			Zn-65		208	±	16.3	202	±	6.74	1.10	A
					226	±	17.5					
					232	±	15.7					
				Mean =	222	±	9.54					
			Co-60		144	±	6.72	148	±	4.94	0.98	A
					151	±	6.83					
					139	±	5.89					
				Mean =	145	±	3.75					
			I-131**		77.6	±	2.52	85.2	±	2.84	0.89	A
					76.4	±	2.34					
					72.7	±	3.10					
				Mean =	75.6	±	1.54					

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

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi ±1 sigma				REFERENCE LAB* pCi ±2 sigma			RATIO (1)	
3/22/2007	E5333-05	FILTER	Ce-141		234	±	3.01	233	±	7.78	1.02	A
					230	±	2.54					
					246	±	8.32					
				Mean =	237	±	3.07					
			Cr-51		206	±	15.8	192	±	6.41	1.10	A
					197	±	15.6					
					230	±	40.0					
				Mean =	211	±	15.3					
			Cs-134		95.8	±	1.99	87.9	±	2.93	1.02	A
					76.8	±	3.02					
					95.6	±	5.43					
				Mean =	89.4	±	2.17					
			Cs-137		188	±	2.43	185	±	6.15	1.00	A
					179	±	2.04					
					186	±	6.48					
				Mean =	184	±	2.41					
			Co-58		76.9	±	2.18	77.7	±	2.59	0.99	A
					77	±	2.09					
					76.4	±	6.07					
				Mean =	76.8	±	2.26					
			Mn-54		160	±	2.62	144	±	4.78	1.08	A
					150	±	2.17					
					157	±	6.71					
				Mean =	156	±	2.51					
			Fe-59		93.1	±	3.46	83.1	±	2.77	1.08	A
					84.2	±	2.94					
					93.1	±	8.98					
				Mean =	90.1	±	3.35					
			Zn-65		870	±	8.82	787	±	26.2	1.09	A
					852	±	7.55					
					856	±	23.5					
				Mean =	859	±	8.74					
			Co-60		114	±	1.69	120	±	3.99	0.95	A
					118	±	1.46					
					111	±	4.42					
				Mean =	114	±	1.65					

(1) Ratio = Reported/Analytics.
* Sample provided by Analytics, Inc.
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U=Unacceptable

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi ±1 sigma				REFERENCE LAB* pCi ±2 sigma			RATIO (1)	
9/13/2007	E5464-05	FILTER	Ce-141		195	±	5.84	207	±	6.90	0.96	A
					194	±	5.05					
					209	±	6.01					
				Mean =	199	±	3.3					
			Cr-51		238	±	27.9	284	±	9.46	0.94	A
					256	±	23					
					307	±	33.5					
				Mean =	267	±	16.4					
			Cs-134		163	±	8.66	145	±	4.82	1.13	A
					151	±	6.52					
					177	±	10.2					
				Mean =	164	±	5.0					
			Cs-137		117	±	6.54	128	±	4.27	0.94	A
					123	±	5.42					
					120	±	7.64					
				Mean =	120	±	3.8					
			Co-58		109	±	7	112	±	3.73	0.99	A
					112	±	5.44					
					113	±	7.41					
				Mean =	111	±	3.9					
			Mn-54		179	±	8.69	164	±	5.48	1.04	A
					166	±	6.59					
					168	±	9.02					
				Mean =	171	±	4.7					
			Fe-59		117	±	8.96	108	±	3.61	1.10	A
					130	±	7.02					
					110	±	9.8					
				Mean =	119	±	5.0					
			Zn-65		211	±	15.1	198	±	6.61	1.16	A
					239	±	12.6					
					237	±	18.5					
				Mean =	229	±	9.0					
			Co-60		141	±	6.38	145	±	4.84	0.96	A
					140	±	4.88					
					135	±	7					
				Mean =	139	±	3.6					

(1) Ratio = Reported/Analytics.
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A=Acceptable
U=Unacceptable

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/g ±1 sigma				REFERENCE LAB* pCi/g ±2 sigma			RATIO (1)	
6/14/2005	E5354-05	SOIL	Ce-141		0.164	±	0.007	0.178	±	0.006	0.93	A
					0.144	±	0.014					
					0.190	±	0.012					
				Mean =	0.166	±	0.007					
			Cr-51		0.413	±	0.041	0.456	±	0.015	0.88	A
					0.401	±	0.071					
					0.387	±	0.057					
				Mean =	0.400	±	0.033					
			Cs-134		0.218	±	0.007	0.215	±	0.007	1.02	A
					0.218	±	0.013					
					0.220	±	0.009					
				Mean =	0.219	±	0.006					
			Cs-137		0.242	±	0.007	0.248	±	0.008	1.00	A
					0.249	±	0.013					
					0.251	±	0.008					
				Mean =	0.247	±	0.006					
			Co-58		0.166	±	0.006	0.176	±	0.006	0.93	A
					0.154	±	0.012					
					0.169	±	0.007					
				Mean =	0.163	±	0.005					
			Mn-54		0.137	±	0.006	0.148	±	0.005	1.01	A
					0.161	±	0.011					
					0.152	±	0.007					
				Mean =	0.150	±	0.005					
			Fe-59		0.141	±	0.009	0.148	±	0.005	0.97	A
					0.147	±	0.016					
					0.144	±	0.009					
				Mean =	0.144	±	0.007					
			Zn-65		0.315	±	0.013	0.297	±	0.010	1.04	A
					0.305	±	0.023					
					0.306	±	0.014					
				Mean =	0.309	±	0.010					
			Co-60		0.201	±	0.005	0.212	±	0.007	0.93	A
					0.192	±	0.010					
					0.196	±	0.005					
				Mean =	0.196	±	0.004					

(1) Ratio = Reported/Analytics.
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A=Acceptable
U=Unacceptable

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/g ±1 sigma				REFERENCE LAB* pCi/g ±2 sigma			RATIO (1)	
6/14/2007	E5356-05	VEG	Ce-141		0.158	±	0.010	0.161	±	0.005	0.95	A
					0.145	±	0.005					
					0.154	±	0.007					
				Mean =	0.152	±	0.004					
			Cr-51		0.404	±	0.050	0.413	±	0.014	0.92	A
					0.349	±	0.028					
					0.388	±	0.043					
				Mean =	0.380	±	0.024					
			Cs-134		0.210	±	0.010	0.195	±	0.007	1.11	A
					0.215	±	0.006					
					0.222	±	0.009					
				Mean =	0.216	±	0.005					
			Cs-137		0.132	±	0.008	0.136	±	0.005	0.96	A
					0.134	±	0.005					
					0.126	±	0.008					
				Mean =	0.131	±	0.004					
			Co-58		0.145	±	0.010	0.160	±	0.005	0.98	A
					0.151	±	0.005					
					0.173	±	0.008					
				Mean =	0.156	±	0.005					
			Mn-54		0.144	±	0.009	0.133	±	0.004	1.05	A
					0.137	±	0.005					
					0.138	±	0.008					
				Mean =	0.140	±	0.004					
			Fe-59		0.122	±	0.013	0.135	±	0.005	1.00	A
					0.141	±	0.007					
					0.143	±	0.011					
				Mean =	0.135	±	0.006					
			Zn-65		0.241	±	0.021	0.270	±	0.009	0.98	A
					0.275	±	0.011					
					0.279	±	0.018					
				Mean =	0.265	±	0.010					
			Co-60		0.188	±	0.008	0.192	±	0.006	0.98	A
					0.182	±	0.004					
					0.193	±	0.007					
				Mean =	0.188	±	0.004					

(1) Ratio = Reported/Analytics.
* Sample provided by Analytics, Inc.
A=Acceptable
U=Unacceptable

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS pCi/g ±1 sigma				REFERENCE LAB* pCi/g ±2 sigma			RATIO (1)	
9/13/2007	E5447-09	VEG	Ce-141		0.342	±	0.016	0.333	±	0.011	0.95	A
					0.298	±	0.015					
					0.312	±	0.014					
				Mean =	0.317	±	0.009					
			Cr-51		0.409	±	0.070	0.457	±	0.015	0.90	A
					0.392	±	0.068					
					0.433	±	0.063					
				Mean =	0.411	±	0.039					
			Cs-134		0.269	±	0.026	0.233	±	0.008	1.05	A
					0.221	±	0.018					
					0.243	±	0.016					
				Mean =	0.244	±	0.012					
			Cs-137		0.224	±	0.015	0.206	±	0.007	1.05	A
					0.206	±	0.014					
					0.220	±	0.014					
				Mean =	0.217	±	0.008					
			Co-58		0.161	±	0.013	0.180	±	0.006	0.94	A
					0.166	±	0.014					
					0.179	±	0.013					
				Mean =	0.169	±	0.008					
			Mn-54		0.282	±	0.016	0.265	±	0.009	1.00	A
					0.275	±	0.016					
					0.240	±	0.014					
				Mean =	0.266	±	0.009					
			Fe-59		0.178	±	0.017	0.175	±	0.006	1.01	A
					0.169	±	0.019					
					0.185	±	0.017					
				Mean =	0.177	±	0.010					
			Zn-65		0.346	±	0.032	0.319	±	0.001	1.17	A
					0.392	±	0.031					
					0.379	±	0.029					
				Mean =	0.372	±	0.018					
			Co-60		0.244	±	0.012	0.234	±	0.008	1.02	A
					0.235	±	0.012					
					0.235	±	0.012					
				Mean =	0.238	±	0.005					

(1) Ratio = Reported/Analytics.
* Sample provided by Analytics, Inc.
A=Acceptable
U=Unacceptable

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

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS Bq/g ±1 sigma				REFERENCE LAB* Bq/g ±2 sigma			RATIO (1)	
4/23/2007	1911-4	Water	Co-57		300.8	±	2.09	310.7	±	2.05	0.97	A
					299.7	±	2.09					
					303.4	±	2.10					
				Mean =	301.3	±	1.21					
			Ba-133		306.4	±	2.38	326.7	±	3.1	0.95	A
					312.7	±	2.35					
					312.3	±	2.27					
				Mean =	310.4	±	1.35					
			Cs-137		283.8	±	2.32	308.4	±	2.31	0.94	A
					290.1	±	2.31					
					291.9	±	2.22					
				Mean =	288.6	±	1.32					
			Co-60		190.6	±	1.69	202.4	±	1.01	0.96	A
					196.5	±	1.69					
					193.9	±	1.57					
				Mean =	193.6	±	0.95					

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

TABLE D-3 (Continued)
INTERLABORATORY COMPARISON PROGRAM
Gamma Analysis of NIST Filter

DATE	SAMPLE ID NO.	MEDIUM	ANALYSIS	JAF ELAB RESULTS Bq/filter ±1 sigma				REFERENCE LAB* Bq/filter ±2 sigma			RATIO (1)	
4/23/2007	1912-11	Filter	Co-57		1077	±	4.0	1089	±	10.9	1.01	A
					1073	±	4.6					
					1143	±	4.8					
				Mean =	1098	±	2.6					
			Ba-133		1006	±	5.2	1048	±	10.5	0.96	A
					1003	±	6.0					
					1006	±	5.4					
				Mean =	1005	±	3.2					
			Cs-137		743.7	±	4.9	766.1	±	7.7	0.98	A
					725.2	±	5.7					
					777.0	±	5.0					
				Mean =	748.6	±	3.0					
			Co-60		969.4	±	5.2	987.0	±	9.9	0.98	A
					962.0	±	6.1					
					976.8	±	4.9					
				Mean =	969.4	±	3.1					

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

D.5 REFERENCES

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