2007

Environmental Surveillance and Monitoring Report For the Environs of New Jersey's Nuclear Power Generating Stations

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New Jersey Department of Environmental Protection
Bureau of Nuclear Engineering
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LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and Management System
BNE	Bureau of Nuclear Engineering
CFR	Code of Federal Regulations
CREST	Continuous Radiological Environmental Surveillance Telemetry
CV	Coefficient of Variation
DEP	Department of Environmental Protection
ELCP	Environmental Laboratory Certification Program
EPA	U.S. Environmental Protection Agency
ESMP	Environmental Surveillance and Monitoring Program
GE	General Electric
MWt	Megawatts (thermal)
NAREL	National Air and Radiation Environmental Laboratory
NEES	Nuclear Engineering Environmental Section
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OQA	Office of Quality Assurance
PIC	Pressurized Ion Chamber
PSEG	Public Service Electric and Gas
RADNET	Environmental Radiation Ambient Monitoring System
REMP	Radiological Environmental Monitoring Program
SOP	Standard Operating Procedure
TLD	Thermoluminescent Dosimeter

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1.0 EXECUTIVE SUMMARY

For 2007, the New Jersey Department of Environmental Protection's Bureau of Nuclear Engineering (BNE) maintained and operated an independent Environmental Surveillance and Monitoring Program (ESMP) for the environs of the Oyster Creek and Salem/Hope Creek Nuclear Generating Stations. This activity was performed in accordance with the legislative authority of the New Jersey Radiation Accident Response Act (N.J.S.A. 26:2D-43.g.). Funding for these activities is provided through annual assessments against each owner of a nuclear facility located in New Jersey. By developing and implementing a comprehensive monitoring strategy, the BNE ensures that New Jersey citizens are aware of and if necessary, protected from harmful exposure to radioactive effluent discharges from New Jersey's nuclear power plants during normal or accident operations.

The specific objectives of the ESMP are to monitor pathways for entry of radioactivity into the environment in order to identify potential exposures to the population from routine and accidental releases of radioactive effluent, and to provide a summary and interpretation of this information to members of the public and government agencies. The ESMP is divided into: (1) the Radiological Environmental Monitoring Program (REMP); (2) the Thermoluminescent Dosimetry Program (TLD)[1]; and (3) the Continuous Radiological Environmental Surveillance Telemetry (CREST). The REMP consists of air and potable (drinking) water samples collected by BNE staff. Other media (aquatic sediment, milk, fish/shellfish, surface water and vegetation) are collected by each nuclear power plant owner and split with the BNE for analysis. The BNE's contract laboratories, Eberline Services and Teledyne Brown Engineering analyze all REMP samples. The BNE also operates an independent program to assess direct gamma radiation levels by deploying, collecting and analyzing TLD badges. Results obtained through the REMP and the TLD programs were compared to background readings, historical results, and to U.S. Nuclear Regulatory Commission (NRC) regulatory limits. Any readings above background are investigated by the BNE through historical data comparisons and confirmation of these results with the contract laboratory. Data tables containing results of all REMP and TLD analyses can be found in the appendices of this report. The BNE CREST program is a real-time remote network of radiation detectors that monitors ambient radiation levels in the environment around the nuclear generating stations in New Jersey. They are located from just beyond the fence line of the plant to more than eight miles away.

This report contains information on the environmental sampling conducted during the time period of January 1, 2007 through December 31, 2007. During 2007, the scope of the ESMP included the collection and analysis of 524 TLD badges and the collection and analysis of 812 REMP samples. Overall, the data collected by the BNE's ESMP

[1] A Thermoluminescent Dosimeter is a small device used to measure direct radiation by measuring the amount of visible light emitted from a crystal in the detector when exposed to ionizing radiation.

throughout 2007 indicate that residents living in the area around Oyster Creek and Salem/Hope Creek nuclear power plants have not received measurable exposures of radiation above normal background.

In 2007, the Bureau initiated a number of improvements to its Environmental Surveillance and Monitoring Program.

For the collection and analysis of TLD's these improvements included:

- fully automating the preparation, processing, and reporting of state environmental TLD data using Dosimetry Resources, International, software;
- completion of eight standard operating procedures; and
- completion of an internal technical systems audit with the Department's Office of Quality Assurance to self-identify any weaknesses or areas for improvement in the current program. The audit included a review and evaluation of the program's standard operating procedures and ability to collect, process, analyze and report TLD data.

Throughout 2007, the BNE continued to operate a comparison study whereby TLD badges obtained from an independent laboratory, are co-located side-by-side with BNE TLD badges at specific locations. A comparison study provides a way for the BNE to compare its own results against those of the independent laboratory for precision and accuracy. The BNE currently uses Global Dosimetry Solutions for the independent laboratory. In 2008, the BNE plans to add more co-located TLD badges to the comparison study and to complete a Quality Assurance Manual for the TLD Program. A Quality Assurance Manual includes documentation of a program's objectives, organizational responsibilities, and policies and procedures for the generation, compilation, review and use of data.

In addition to operating a comparison study, the BNE plans to initiate proficiency testing by obtaining periodic blind samples from a recognized proficiency test provider[2] in order to further evaluate the performance of the BNE's TLD Program. A blind sample is a sample submitted for analysis with results known only to the proficiency test provider but unknown to the BNE. This will test the BNE's proficiency and reproducibility in processing and reporting TLD results.

For the REMP, the Bureau accomplished several improvements throughout 2007. All of the program's original steel box air sampling units were replaced with an aluminum design that is more resistant to harsh environmental conditions. Collection of fish samples from the environs of the Oyster Creek Nuclear Generating Station (Oyster Creek) was initiated to begin in the autumn of 2007. Historically, the BNE only obtained

[2] A recognized proficiency test provider is one that is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is a voluntary, fee supported program, established by the National Institute of Standards and Technology, to accredit laboratories that are found to be competent to perform specific tests or calibrations.

shellfish samples from these locations. The collection of split vegetation samples from an onsite garden at the Salem/Hope Creek Nuclear Generating Station (Salem/Hope Creek) began in December of 2007. Since the nearest offsite farm is over six miles away, this onsite garden provides the closest vegetation sample that is able to be obtained. The BNE also initiated the development of automated sample collection and analysis databases that will provide queries of historical sampling results, flags for any exceedances of set minimum detectable concentrations, and easier reporting of sampling results to the general public. Throughout the upcoming year, staff will continue to work towards its goal to create a near paperless REMP program for sample collection, shipping, processing, analysis, tracking, importation of raw data, processing of invoices, and review of laboratory data results.

Finally, the DEP has purchased a new central computer system for the Air Pollution/ Radiation Data Acquisition and Early Warning System, located at the DEP headquarters in Trenton, New Jersey. The system acquires minute by minute radiation data from a network of highly sensitive radiation detectors that surround New Jersey's four nuclear power plants.

The data collected by the BNE's ESMP throughout 2007 does not indicate any discharges to the environment above the NRC regulatory requirements. There also is no upward trend of radioactivity for those radionuclides associated with the commercial nuclear process (such as radionuclides of cobalt, cesium, and iodine) reported during 2007. There are expected and historically noted normal fluctuations in environmental radiation data.

Bi-weekly air particulate samples were analyzed for gross beta activity and gamma emitting radionuclides. The concentrations of radionuclides measured in air were not significantly different than ambient background concentrations. These air samples were analyzed quarterly for strontium-90 (Sr-90). The analyses indicated no measurable Sr-90 concentrations in air within 10 miles of either Oyster Creek or Salem/Hope Creek.

Surface water samples were taken monthly and potable (drinking) well water samples were taken quarterly. All water samples were analyzed for gamma emitting radionuclides and tritium. No fission or activation products that emit gamma radiation (radionuclides of cobalt, iodine or cesium) were found in any sample analyzed. Tritium was found in one surface water sample in the environs of the Salem/Hope Creek nuclear plant (476±147 pCi/L). However, the tritium found in the surface water sample was below the New Jersey Surface Water Quality Standard[3] limit of 20,000 pCi/L, which is the same as the EPA's Safe Drinking Water Standard and the same as the New Jersey Groundwater Quality Standard for tritium.

Fish (striped bass, white perch, bluefish, catfish, eel, and carp) and shellfish (crabs) were sampled at locations surrounding the Salem/Hope Creek facility. Hardshell clams and fish (striped bass, bluefish and drum) were sampled around Oyster Creek. Actual sample

[3] NJDEP Surface Water Quality Standards, N.J.A.C. 7:9B, http://www.state.nj.us/dep/wms/bwqsa/swqsdocs.html

collection was done by the nuclear power plant operator. Clams and fish from Oyster Creek, fish from Salem/Hope Creek and hard-shell crabs from Salem/Hope Creek were split and analyzed by the BNE. These samples were collected semi-annually and analyzed for gamma emitting radionuclides and Sr-90. No Sr-90, fission, or activation products were found in any sample.

Routine vegetation samples (cabbages, collards, kohlrabi, peppers, tomato and corn) were taken from onsite gardens and local farms in the vicinity of each nuclear plant during the harvest season and analyzed for gamma emitting radionuclides. All vegetation samples were split with the BNE. No fission or activation products were found in these samples.

Monthly milk samples were taken only in the vicinity of Salem/Hope Creek and from the BNE's control location outside of Trenton, New Jersey. Since there are no dairy farms within a 10-mile radius of Oyster Creek, no samples were taken. Samples were analyzed for gamma emitting radionuclides and Sr-90. Strontium-90, ranging from no activity to 3.03 ± 0.66 pCi/L, was detected at all dairy farms in the vicinity of the Salem/Hope Creek nuclear power plant, as well as at the background farm location in Trenton. Activity was well below the U.S. Environmental Protection Agency's (EPA) regional average of 9.3 pCi/L and the EPA's acceptable risk level of 1 in 10,000 or 780 pCi/L. About 99.9% of strontium in the environment comes from fallout from atmospheric nuclear weapons testing conducted in the 1950's-1960's[4].

Direct gamma radiation measurements were performed quarterly using TLD badges. TLD results ranged from 9.0 to 20.8 milliRoetgens per standard quarter (mR/Std. Qtr.)[4] for the surrounding areas of Oyster Creek and Salem/Hope Creek. These results are consistent with those observed in previous years and are considered normal background levels for those areas of New Jersey.

CREST provides monthly average gamma radiation levels based on one- minute average radiation readings. Monthly CREST results in the environment around Oyster Creek and Salem/Hope Creek indicated average ambient radiation levels in the range of normal background (0.0050 to 0.0090 milliRoetgens per hour (mR/hr).

[4] NRC Backgrounder: "Radiation Protection and the Tooth Fairy Issue"

2.0 UNDERSTANDING SOURCES OF IONIZING RADIATION AND PATHWAYS TO EXPOSURE

2.1 What is ionizing radiation?

People are exposed to radiation every day from naturally occurring background and man-made sources (approximately 360 millirem per year[5]). Radiation is used beneficially to diagnose and treat disease, but it can also produce harmful effects, such as cancer. There are two basic types of radiation – ionizing and non-ionizing. Ionization occurs when a charged portion of a molecule (usually an electron) is given enough energy to break away from the atom. This disruption of the atom can cause biological harm, such as cancer. Types of ionizing radiation include x-rays, gamma rays, alpha and beta particles, neutrons and certain types of cosmic rays. Examples of non-ionizing radiation include electro-magnetic fields, radio frequency, diathermy (physical therapy), power lines and microwaves.

People living in New Jersey receive an annual ionizing radiation dose of approximately 360 millirem. Of that dose, approximately (82%), or 300 millirem, is from natural background sources (Figure 1). The remaining (18%), or 60 millirem, is from man made sources. Radon accounts for the largest portion of natural radiation exposure. Radon is a gas that occurs from the decay of natural uranium and is found in soil, rock, well water, and building materials. Radon can enter buildings through the cracks in floors and walls. Other sources include carbon-14, beryllium-7, and potassium-40, found naturally in food and drinking water. Building materials contain minerals and rock from the earth's crust that naturally emit radiation and contribute to the annual exposure rate. Annual dose also includes radiation received from cosmic sources such as the sun. Individuals who reside in high altitude regions will receive a larger amount of radiation from cosmic sources since there is less atmosphere and ozone to shield them from cosmic radiation. The major contributors from man-made radiation sources include medical x-rays (58%) and nuclear medicine procedures (21%). Use of consumer products contributes approximately (16%) to an individual's exposure from man-made radiation sources. Examples of such products include smoke detectors, lawn fertilizers, and ceramics.

A small portion of man-made radiation contribution is due to a variety of sources including the commercial nuclear power plant operation and the uranium fuel cycle (1%), fallout from previous years of weapons testing (2%) and occupational sources (2%).

[5] A millirem is a unit of dose, which takes into account the amount of energy absorbed by the body from the radionuclide and its effectiveness in causing harmful biological effects.

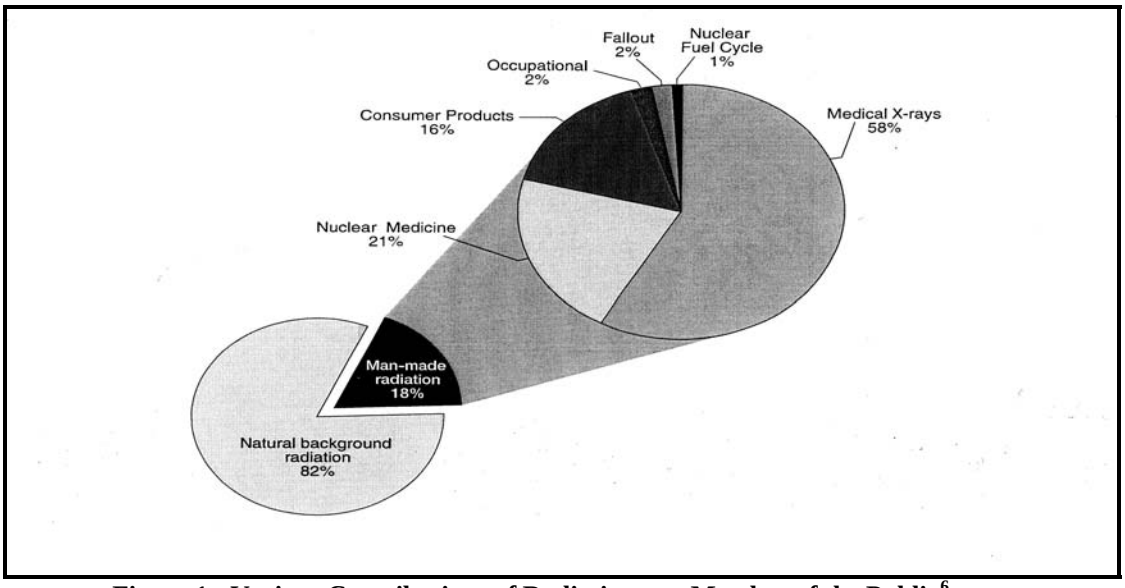


Figure 1 - Various Contributions of Radiation to a Member of the Public[6]

2.2 Plant Effluents and Release Limits

A nuclear power plant operates on the same principle as a power plant that utilizes fossil fuel (coal, oil and natural gas). In a fossil fuel power plant, the combustion of the fossil fuel provides the heat that generates steam that turns a turbine to produce electricity. A nuclear power plant generates heat through the process of nuclear fission. Through the fission process, the uranium atom absorbs a neutron and splits to produce smaller atoms known as fission products, along with heat and radiation. This process continues producing additional fission products, heat, radiation, and neutrons, creating a continuous reaction. The majority of these fission products are radioactive. Cesium-134, cesium-137, iodine-131 and strontium-90 are examples of fission products. Neutrons which are not absorbed by uranium fuel may be absorbed by stable atoms in the materials that make up the components within the reactor. Stable atoms within the reactor become radioactive as a result of neutron activation. These radioactive atoms are referred to as activation products. Cobalt-58, cobalt-60 and tritium are examples of activation products.

As a part of normal operations, a nuclear power plant will release radionuclides. The majority of radioactive effluent released from a commercial power plant to the environment is in the form of gaseous radionuclides. Gaseous iodine-131 is of particular interest because it has an affinity for the thyroid gland, a critical exposure organ. Radionuclides such as cobalt-60, cobalt-58, cesium-134, cesium-

[6] The National Academies, BEIR VII: Health Risks From Exposure to Low Levels of Ionizing Radiation. Figure based on data from Ionizing Radiation Exposure of the Population of the United States, National Council on Radiation Protection and Measurements, 2006.

137 and strontium-90 are reported by the BNE due to their long half-lives[7] and the fact that these radionuclides are a direct product of the nuclear fission process.

Noble gas fission products such as krypton, xenon and argon have low solubility in the reactor coolant and remain as a gas, not becoming soluble. Total radioactivity (including noble gases) in liquid and gaseous effluent is measured by the nuclear power plant operator, who own and maintain the monitoring equipment. For gaseous effluent, a continuous sample is drawn and analyzed from all monitored release points. Actual measurements of gross radioactivity can be read directly from an in-line monitor or remotely in the plant's control room and on their in-house computer system. Weekly grab samples of gaseous effluent, gaseous iodine and particulate filters, and liquid effluent are analyzed using gamma spectroscopy. The utility provides the DEP with results of all liquid and gaseous effluents on a monthly basis. These data are included in the DEP monthly reports which are available to the public. The BNE staff investigates any elevated readings or fluctuations in data, but the BNE never measures for noble gases.

Routine liquid and gaseous releases of radionuclides to the environment during normal operation of a nuclear power plant will contribute some radiation exposure to populations in close proximity to the nuclear power plant site. However, regulatory limits are imposed by the NRC to ensure that the health and safety of the public are protected. The NRC requires all nuclear power plant operators to monitor daily radioactive effluent emissions (airborne and liquid discharges) from the plant and to file reports on an annual basis. The nuclear power plant operator is required to monitor the concentration of radionuclides that are released to the environment in accordance with the NRC's Appendix B to Title 10 of the Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation" and the nuclear power plant's procedures. There is an additional requirement by the NRC, through Regulatory Guidance 1.21[8], that all nuclear power plants report their radionuclide releases in their Annual Radiological Effluent Release Report. In addition to the total radioactivity measurements, the report includes the limits of release established in the nuclear power plant's procedures[9].

The assessment of the radiological impact on members of the public is performed by the nuclear power plant operator in their Annual Radiological Environmental Monitoring Report as well as the aforementioned Effluent Release Report. The calculation of potential radiological impact through the use of a hypothetical offsite dose assessment is performed by the power plant for gaseous and liquid

[7] The time in which one half of the atoms of a particular radioactive substance disintegrate into another nuclear form. Measured half-lives vary from millionths of a second to billions of years.
[8] Regulatory Guide 1.21; Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power
[9] Effluent release limits are set forth in the nuclear plant's procedure entitled, "Offsite Dose Calculation Manual"

effluents and compared to NRC dose limits prescribed in Appendix I to 10CFR50[10]. These assessments and copies of the nuclear power plant's environmental monitoring and effluent release reports are available on the NRC's web-based library system, Agency Wide Documents Access and Management System (ADAMS), at http://www.nrc.gov.

In assessing the impact of radioactivity on the public or the environment, it is important to consider the amount of radioactivity released to the environment by the nuclear plant; the properties (half-life) of those radionuclides released; the transport method (dispersion in the atmosphere and deposition of particulates in the environment); how the radioactive material enters the body; and the potential biological effect of each radionuclide.

2.3 Pathways of Exposure to Humans

Human exposure to radionuclides can occur through three different pathways: inhalation, ingestion, and direct exposure which includes skin absorption (Figure 2).

Airborne releases to the environment are diluted as they are carried away from the site by the wind, which continuously acts to disperse radioactivity. Airborne releases are normally through a monitored release point such as a stack or vent. When released, the airborne radionuclides are inhaled into the lung or deposited in the environment and ingested through the consumption of water, fish/shellfish, vegetation, or milk. Direct (external) radiation exposure from airborne releases could also occur. In this type of radiation exposure, alpha particles may penetrate the outer layer of skin through an open wound. Beta particles can burn the skin or damage the eyes. The greatest concern in direct exposure is gamma radiation which can travel long distances and penetrate the body.

Liquid releases to the environment are diluted and carried away from the site by groundwater and surface waters such as streams and rivers. Radioactive elements can deposit on the soil and settle in groundwater. Radioactivity can enter the human body through the consumption of drinking water. Potential sources of liquid releases include plant-monitored discharge points. Any releases are documented and regulated in accordance with the nuclear plant's Offsite Dose Calculation Manual (ODCM) and subject to federal limits. The exposure pathway to humans through liquid effluents would be through the ingestion of aquatic biota (fish/shellfish), shoreline exposure from sediments and swimming, and the ingestion of surface and potable well water.

[10] 10CFR50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Reasonably Achievable" for Radioactive Material in Light-Water Cooled Nuclear Power Reactor Effluents

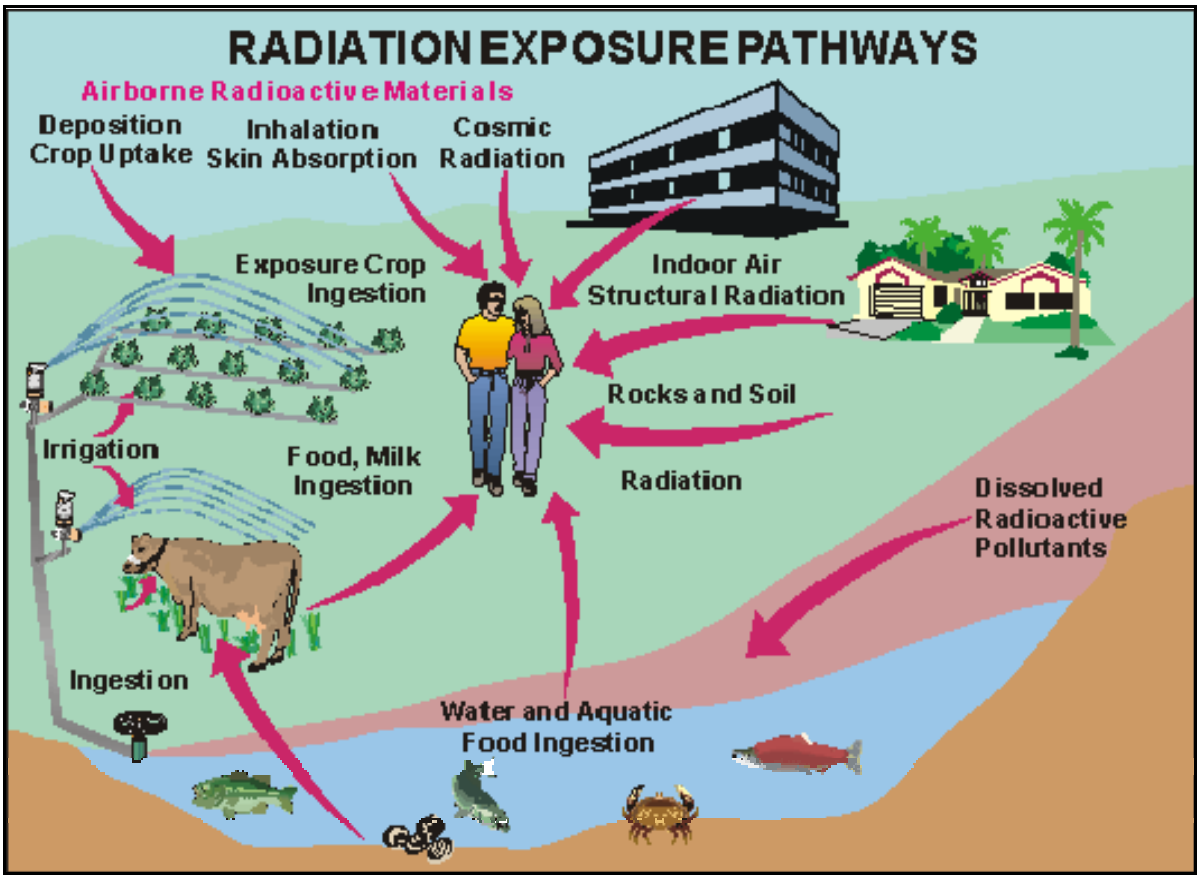


Figure 2 - Radiation Exposure Pathways[11]

3.0 OVERVIEW OF THE ENVIRONMENTAL SURVEILLANCE AND MONITORING PROGRAM

The purpose of the ESMP is to monitor the various pathways by which people and the environment could be exposed to radiation. Most ESMP data are collected at and beyond the site boundaries of New Jersey's nuclear power plants. Environmental samples are obtained for the determination of radioactivity in air, drinking water, surface water, milk, fish/shellfish, vegetation, aquatic sediment, and occasionally soil. Direct gamma radiation measurements are taken using TLD badges.

The specific objectives of the ESMP are to monitor pathways for entry of radioactivity into the environment in order to identify potential exposures to the population from routine and accidental releases of radioactive effluent by the nuclear reactors; and to provide this information to members of the public and government agencies.

To carry out these objectives, the BNE:

[11] Bobby Scott, Ph.D, The Lovelace Respiratory Research Institute, Radiation Sources and Effects In People, http://www.radiation-scott/radsource/1-0.htm

- Deploys TLD badges on a quarterly basis at 30 offsite locations plus 2 background locations. The TLD provides direct gamma radiation measurements in the environs of the Oyster Creek and Salem/Hope Creek nuclear power plants, as well as background locations over 20 miles from either nuclear plant. There are 20 locations around the Oyster Creek nuclear power plant (Table A-4), 10 in the environs of the Salem/Hope Creek nuclear power plant (Table A-6), and 2 background locations (Table A-2).

- Monitors the nearby environment surrounding the nuclear power plants in New Jersey through remote gamma radiation monitoring systems called the Continuous Radiological Environmental Surveillance Telemetry (CREST) system.

- Collects and analyzes approximately 700 samples annually around the Oyster Creek and Salem/Hope Creek nuclear power plants as part of the Radiological Environmental Monitoring Program (REMP). An additional 108 samples are collected annually to provide comparative background radiation data for air and milk media.

3.1 Thermoluminescent Dosimetry Program

The BNE maintains a Thermoluminescent Dosimetry Program (TLD) program, independent from that of each nuclear power plant operator, in order to determine the ambient gross gamma radiation levels in the vicinity of the Oyster Creek and Salem/Hope Creek nuclear plants. A TLD is a passive radiation detector that requires no power source and is designed to have the same sensitivity to radiation as human tissue. The BNE utilizes Panasonic TLD badges[12]. TLD badges are placed at specified locations and exchanged on a quarterly basis by BNE staff. TLD badges collect data from the environment continuously 24 hours a day, 7 days a week, 365 days a year. Once collected, BNE staff use a Panasonic TLD reader[13] to obtain data from the TLD badges. Control and transit TLD badges are read along with each set of field TLD badges to estimate storage and transit exposures.

Site selection follows NRC's criteria described in NUREG-0837, "NRC TLD Direction Radiation Monitoring Network", and is summarized as follows:

- Within five miles of each nuclear plant site, TLD badges are located offsite in each standard wind compass sector (such as North, South, North Northeast, and South-Southwest). TLD badges are not placed in sectors that consist entirely of open water or are unoccupied or inaccessible.
- Additional TLD stations are selected relative to major population centers and areas of interest such as government buildings, schools and/or hospitals. The population center closest to the Oyster Creek is in Forked River, approximately 2 miles from the nuclear plant. There are several TLD badges

[12] Model UD-814
[13] Panasonic Model UD-716

located in Forked River. The closest population center to Salem/Hope Creek is approximately 9.5 miles from the site, in Salem, New Jersey.

The locations, site descriptions, and distances from the plant of the BNE's TLD monitoring locations are provided in Appendix A. Figure 3 shows a BNE field TLD located in the area of the Hope Creek nuclear generating station.

During 2007, the BNE made improvements to the TLD program that included purchasing new dosimetry software to operate the TLD reader and writing standard operating procedures (SOP's). These improvements will assist with our goal of fully automating the preparation, processing, and reporting of the environmental TLD data. Throughout 2007, the DEP's Office of Quality Assurance (OQA) performed an internal Technical Systems Audit (TSA) of the BNE's TLD program. The audit included a review of the program's standard operating procedures and field/laboratory visits to evaluate the program's ability to collect, process, analyze and report TLD data.

Figure 3– TLD Used in the Environment

3.2 Continuous Radiological Environmental Surveillance Telemetry

The Continuous Radiological Environmental Surveillance Telemetry System (CREST) is a near real-time remote network of highly sensitive radiation detectors surrounding New Jersey's four nuclear power plants. It serves to monitor the environment for any unexpected releases of radiation from the Salem/Hope Creek Generating Station and the Oyster Creek Generating Station. Ten CREST stations are located around the Salem/Hope Creek Generating Stations, and sixteen station locations around the Oyster Creek Generating

Station. The stations are positioned to maximize coverage across every available wind compass sector, from just outside the fence-line up to eight miles from the Salem/Hope Creek Generating Stations, and up to 2.7 miles away from the Oyster Creek Generating Station.

Each CREST site includes a GE Reuter Stokes RSS-131 pressurized ion chamber (PIC) filled with argon gas. The PIC is able to accurately detect changes in ambient gamma radiation levels, from naturally occurring background radiation to what might be encountered during an emergency event at one of the nuclear power plants. In addition to measuring radiation, the CREST sites are equipped with Climatronics meteorological sensors that measure wind speed and wind direction at every station. These data would be used in conjunction with measured radiation levels during a nuclear event to determine what areas might be impacted and how quickly.

Figure 4: Servicing a CREST Monitoring Station

The CREST system is part of the DEP's Air Pollution/Radiation Data Acquisition and Early Warning System. It is supported by BNE staff utilizing a bucket truck dedicated to its operation and maintenance. The CREST radiation and meteorological data are transmitted on a minute-by-minute basis to a central computer in Trenton. If radiation levels exceed a predetermined threshold, an alarm is triggered and the BNE staff is notified to investigate. The threshold is set above normal background levels, but well below what would pose a health risk.

In addition to providing continuous monitoring of ambient radiation levels, CREST also serves as an emergency response system should a radioactive release occur at any of the nuclear plant sites.

Over the past several years, BNE staff has worked to upgrade the entire CREST system from detecting radiation levels in the environment to collecting and processing the data. Field monitoring sites were upgraded first, using the latest generation of radiation detectors, Reuter-Stokes RS-131s. The next major undertaking was a replacement of the central computing system. A contract was awarded to Envitech, Ltd. to provide a new data acquisition system to support both the BNE's radiation monitoring sites, as well as the Bureau of Air Monitoring's air quality monitoring stations. The new central computer system is largely in place, with contract completion scheduled for December 31, 2008. The contract with Envitech also includes exploration of potential upgrades to communications from the sites. Wireless data transmission has been piloted at one of the CREST stations during 2007. The successful test site was set up in September 2007 and continues to wirelessly transmit data from the field monitoring station to the central system. Additional sites will be upgraded to wireless technology depending on service coverage and availability of equipment.

Locations and descriptions of the BNE CREST stations can be found in Appendix A, Table A-4 (Oyster Creek) and Table A-6 (Salem/Hope Creek).

3.3 Radiological Environmental Monitoring Program

Through its Radiological Environmental Monitoring Program (REMP), the BNE independently monitors environmental radiation in areas surrounding New Jersey's nuclear generating stations. During 2007, the BNE's REMP program included the collection and analysis of 356 air particulate samples (gross beta and quarterly composite), 270 air iodine samples, 76 water samples (surface and drinking well water), 40 milk samples, 17 aquatic sediment samples, 13 fish/shellfish samples, and 40 vegetable samples from both nuclear generating stations (Oyster Creek and Salem/Hope Creek) combined. Of the 812 total samples collected, 108 were background air (Appendix B, Tables B-1, B-4, and B-7) and/or milk samples (Appendix B, Table B-16) collected from areas distant from the nuclear power plants. See Appendix A, Table A-1 for a description of the sampling media, frequency and type of analysis and Appendix A, Table A-2 for a description of the background stations.

All REMP samples were analyzed for the BNE by independent contract laboratories, Eberline Services for water sample analyses and Teledyne Brown Engineering for all other sampling media.

The BNE's Radiological Environmental Laboratory Monitoring contract specifies minimum detection limits for the analysis of radionuclides in the various media (air, water, soil, milk, fish/shellfish, vegetables) collected through the BNE's

radiological environmental monitoring program (Appendix C, Table C-1). The Bureau's contract labs must achieve detection limits that are equal to or lower than the limits cited in Table C-1. The detection limits are determined in accordance with the procedures specified in Appendix B of the EPA's Code of Federal Regulations (CFR) 40 CFR 136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants) and are based on the regulatory requirements in 40 CFR 141 (National Primary Drinking Water Regulations) and the NRC Branch Technical Position, Revision 1, November 1979. The EPA Safe Drinking Water Standards for radionuclides are the same as New Jersey's Groundwater Quality Standards, which are the same as the New Jersey Surface Water Quality Standards.

Furthermore, for the analysis of water samples throughout the duration of the laboratory contract, the contractor must be in compliance with the New Jersey Administrative Code (N.J.A.C.) 7:18 (Regulations Governing the Certification of Laboratories and Environmental Measurements). This program is administered by the DEP's Office of Quality Assurance through its Environmental Laboratory Certification Program (ELCP). Additional information on the ELCP can be found at http://www.nj.gov/dep/oqa/

Towards the end of 2007, the BNE began the process to award a new radiological environmental laboratory services contract for its REMP. The Bureau's present contracts with Eberline Services and Teledyne Brown Engineering expire in 2008. The new contract will run from 2008 through 2010.

3.3.1 Air Sampling

BNE staff maintains a network of air sampling locations around Oyster Creek and Salem/Hope Creek Nuclear Generating Stations. Air samples are collected bi-weekly[14] (once every two weeks) using low-volume continuous air samplers[15]. Each air sample is comprised of two media.

The first is an air filter that captures radioactive particulates, and is counted every two weeks for gross beta radioactivity. Gross beta is a measurement of all beta activity, regardless of the specific radionuclide source. It is used as a method to screen samples for relative levels of beta emitters which include cobalt-60, iodine-131, cesium-137, and strontium-90. After being analyzed for gross beta radioactivity, the air filters from each biweekly sampling collection are stored until the end of each calendar quarter. This is called an air particulate quarterly composite. Storage of biweekly air filters for quarterly composite sampling is possible due to the long half lives of the radionuclides being measured. Each

[14] With the exception of air samples from the Finninger Farm site which are collected weekly by the licensee and sent directly to the BNE contract lab

[15] Hi-Q Model VS23-0523CV

quarterly composite sample is subsequently analyzed for gamma emitting radionuclides and for strontium-89/90.

The second air sample media collected is a charcoal canister which is analyzed for gaseous iodine-131 at the end of each bi-weekly period.

Air sampling locations have been chosen with respect to (1) atmospheric stability data; (2) the prevailing wind direction; and (3) the height of the airborne release point from each nuclear plant site**.** A complete list of air sampling locations can be found in Appendix A, Table A-3 for Oyster Creek and Table A-5 for Salem/Hope Creek. Background locations are found in Appendix A, Table A-2.

3.3.2 Water Sampling

Drinking water samples are taken quarterly by BNE staff from around each nuclear facility as a way to evaluate potential human exposure to radionuclides that may accumulate in drinking water. Drinking water samples are taken from commercial well water systems. Samples are obtained directly from tap water at each location (such as a school, administration building or state park). Sample locations are chosen in aquifers downstream and upstream of each commercial nuclear facility. Each sample obtained is analyzed for gamma emitters, such as cesium-134/137 and cobalt-58/60, as well as for tritium.

Surface water samples are taken monthly by the nuclear power plant operator and split with the BNE as a way to evaluate potential exposure to radionuclides from ingestion of surface water or through direct contact with surface water, such as when participating in boating, fishing, or swimming activities. Samples are collected in locations in the direct liquid effluent pathway of release from each commercial nuclear facility (such as the discharge canal at Oyster Creek) and in locations that are outside the influence of the discharge point or any effects of re-circulation of liquid plant effluent (for example, effects of recirculation in the river or bay). Analyses for gamma emitters and tritium are performed on all surface water samples.

3.3.3 Aquatic Biota (Fish/Shellfish)

Fish and shellfish samples are collected and analyzed quarterly as an indicator of any radionuclides that may have entered the food chain and consumed by humans. Edible portions and body fluids are analyzed to evaluate radionuclide concentrations in fish/shellfish. Biological samples of clams (Mercenaria mercenaria) are taken to monitor radionuclide concentrations in shellfish. Fish sampling is divided into two types. First, bottom feeders (such as crabs, clams or eel) ingest radioactive materials

that settle to the bottom of the bays and canals. Second, predator fish (such as bluefish, bass, and white perch) that feed upon other species of fish are collected.

All fish/shellfish samples are split with the nuclear power plant operator and analyzed for gamma emitting isotopes such as cobalt-60 and cesium-137 and for beta-emitting strontium-89/90.

During 2007, the BNE requested split samples of fish collected by Amergen from the environs of the Oyster Creek nuclear power plant. Prior to this time, the licensee was providing only hardshell clams.

3.3.4 Vegetation

The nuclear power plant operators collect samples of locally grown vegetables from a combination of farms during the growing season (April through October) and split these samples with the BNE for analysis. Edible portions of vegetables such as cabbage, collards, kohlrabi, corn and tomato are analyzed for gamma emitting radionuclides in order to evaluate possible radionuclide uptake by crops and deposition of radionuclides on leafy vegetables.

The Salem/Hope Creek nuclear plant environmental group cultivated their own garden onsite and planted a variety of crops. The garden is located approximately one half mile from the Salem Units 1 & 2 reactors and provides an in-close vegetation sampling location. Prior to the garden located onsite, the nearest offsite farm for sample collection was over 6 miles away. The BNE requested and received split vegetation samples from this new location during the year.

3.3.5 Aquatic Sediment

Aquatic sediment samples are collected quarterly from the bottom of water passages that carry effluents from the nuclear generating stations to evaluate the concentrations of radionuclides. Sediments are fine solid materials that have settled out of a liquid stream or standing body of water. Accumulation of radionuclides in sediment can lead to exposure of humans through the ingestion of aquatic species or through direct shoreline exposure.

Around Oyster Creek, sediment samples are taken from Barnegat Bay, and Great Bay/Little Egg Harbor as well as the plant's discharge canal. Locations range from 0.4 to 20 miles from Oyster Creek. Around Salem/Hope Creek, sediment samples are taken from five locations along the Delaware River. Locations range from approximately 0.2 to 0.7 miles downstream and one location approximately 2.5 miles upstream of the

release point from Salem Units 1 and 2. Hope Creek nuclear power plant does not directly discharge to the Delaware River because of the closed loop cooling tower

All aquatic sediment samples are collected by the nuclear power plant operator, and the sample is split with the BNE. Samples are analyzed for gamma emitting isotopes such as cesium-134/137 and cobalt-58/60.

3.3.6 Milk

Milk is sampled because it is a readily available food source consumed by a large portion of the population and is a good indicator of radionuclides present in the environment. If released, the radionuclides can settle on pastures, and ultimately be consumed by milk-producing dairy animals (cows or goats). Milk samples are collected quarterly from a combination of three farms located within 20 miles of Salem/Hope Creek. All samples are split with the nuclear power plant operator and analyzed for gamma emitting radionuclides and for strontium-89/90. A background sampling location in the Trenton area for milk was established in 2004. There are no dairy farms within a 10-mile radius of Oyster Creek. Therefore no milk samples are collected from the environs of Oyster Creek for analysis.

3.4 Bureau of Nuclear Engineering Background REMP Locations

In order to assess the contribution of radioactivity in the environment from the commercial nuclear plants in New Jersey, the BNE has established background stations for air and milk media. A background sample location is one that is considered beyond the influence of either the Oyster Creek or Salem/Hope Creek nuclear power plants and is used to evaluate normal levels of radionuclides in the environment from natural sources and fallout from previous years' weapons testing (weapons tests conducted in the 1950's, 1960's and Chinese weapons tests during the late 1970's through October of 1980). Background data are used to track and trend radioactivity over time and are compared to the BNE's samples taken near each nuclear plant site.

For air sampling, the BNE maintains a background monitor at Brendan T. Byrne State Forest in New Lisbon, New Jersey and at the BNE Offices in Ewing, New Jersey. The air sampler at Brendan T. Byrne State Forest is approximately 20 miles from Oyster Creek and approximately 60 miles from Salem/Hope Creek. The air sampler at the BNE Offices is approximately 50 miles from Oyster Creek and 80 miles from Salem/Hope Creek. The BNE collects background air samples bi-weekly (once every two weeks).

A background location for milk was established in August of 2004 at a dairy farm located in suburban Trenton, New Jersey. This dairy farm is approximately 50 miles from Oyster Creek and 80 miles from Salem/Hope Creek, well beyond the

influence of either of New Jersey's nuclear generating stations. The nearest nuclear power plant in Pennsylvania (Limerick Nuclear Power Plant) is located approximately 50 miles west of the background dairy farm[16]. The BNE staff collects background milk samples once each quarter.

Locations and descriptions of the BNE's background sampling sites can be found in Appendix A, Table A-2.

4.0 DESCRIPTION OF NEW JERSEY NUCLEAR POWER PLANT SITES

4.1 Oyster Creek Nuclear Generating Station

The Oyster Creek Nuclear Generating Station is a boiling water reactor rated at 650-megawatts electric (see Figure 5). The facility is located in Lacey Township, Ocean County, New Jersey, near Barnegat Bay. It has been in commercial operation since December of 1969. The plant is owned and operated by Amergen Energy Company, a wholly owned subsidiary of the Exelon Corporation, headquartered in Illinois.

The Oyster Creek site is comprised of 1,316 acres located in the coastal pine barrens of New Jersey and is traversed by U.S. Highway Route 9. Geographically, the plant is situated in the Outer Coastal Plain near the Pinelands National Reserve. The area contains extensive freshwater and saltwater marshes. Barnegat Bay Inlet and the Atlantic Ocean are within 10 miles of the plant. Land use near the plant consists of commercial, residential, and recreational properties. Island Beach State Park and adjacent shore areas contribute to a large seasonal increase to the local population.

The largest concentrations of residents are to the north and the northeast. The closest residents are 0.5 miles northeast of the plant. The nearest population center is Ocean Township, which lies less than two miles south-southeast of the site. Other population centers within the 10-mile radius of the plant include Lacey Township and Toms River (Dover Township). There are a number of retirement communities in the area, including Lacey, Whiting (northwest) and Ocean Township.

[16] Limerick Nuclear Power Plant is a two-unit nuclear power plant owned and operated by the Exelon Corporation.

Figure 5 – Oyster Creek Nuclear Generating Station, Forked River, NJ

Oyster Creek uses a man-made intake and discharge canal to provide cooling water for the plant. Water enters the intake canal, located north and east of the site, from the Barnegat Bay, and is pumped through the station as a source of cooling water. Water returns from the plant into the discharge canal, along with existing water that is diverted from the intake canal through pumps, directly into the discharge canal, in order to maintain an acceptable temperature limit for aquatic biota. The water is then discharged from the canal south and east of the plant, and is returned to the Barnegat Bay. The Oyster Creek flows from the west and south of the plant into the discharge canal south of the plant. The branches of the Forked River flow into the intake canal, mixing with waters entering the canal from Barnegat Bay.

4.2 Artificial Island – Salem/Hope Creek Generating Stations

Artificial Island (see Figure 6) is the site of the Salem and Hope Creek Nuclear Generating Stations (Salem/Hope Creek). The Salem Generating Station consists of two pressurized water reactors. Salem Unit 1, rated at 1090 megawatts electric has been in commercial operation since June of 1977. Salem Unit 2, rated at 1115 megawatts electric has been in commercial operation since October of 1981. The Hope Creek Nuclear Generating Station (Hope Creek) is a boiling water reactor rated at 1067 megawatts electric. It has been in commercial operation since February of 1987. All three plants are owned and operated by Public Service Electric and Gas (PSEG). Salem Units 1 and 2 also are partly owned by Exelon Corporation.

**Figure 6 – Salem and Hope Creek Nuclear Generating Stations,
Lower Alloways Creek Twp., NJ**

Artificial Island is a 700-acre man-made site created by the deposition of fill from dredging operations. Land use in the areas adjacent to the site consists of commercial, government, agricultural, and residential properties. To the north and east are extensive tidal marshlands and low-lying areas. Mad Horse Creek Wildlife Management Area, located to the north and east of the site supports trapping and fishing. This wildlife area also is important for migratory birds. Within 10 miles of the site is some of South Jersey's prime agricultural land. The nearest New Jersey resident to the site is approximately four miles away.

5.0 ENVIRONMENTAL SURVEILLANCE AND MONITORING PROGRAM – SAMPLING RESULTS

5.1 Background Monitoring Results

Results for background air particulate samples were consistent in magnitude with results found at sample locations in close proximity to each commercial nuclear power plant.

There were no fission or activation products in air particulate samples at either background location. Beryllium-7, found naturally in the environment, was present at both background stations.

A trace amount of strontium-90 (1.39 ± .51pCi/L) was detected in a milk sample collected from the background farm located in the Trenton area. About 99.9% of strontium in the environment comes from fallout from atmospheric nuclear weapons testing conducted in the 1950's-1960's[17]. No other fission or activation products in milk were found.

All TLD results for both background locations were less than 20 milliroentgens per standard quarter (mR/Std. Qtr) with a range of 11.2 to 15.9 mR/Std. Qtr. These results are consistent with those observed in the environs around both nuclear power plants.

A complete summary of sample results from the background locations can be found in Appendix B, Table B-1 for air iodine, and Table B-4 for air particulate gross beta, Table B-16 for milk and Table B-22 for TLD.

5.2 Oyster Creek Monitoring Results

5.2.1 Oyster Creek Thermoluminescent Dosimetry Results

The BNE maintains twenty (20) TLD sites in the offsite surrounding area of Oyster Creek. Each location has two TLD badges that are exchanged at the end of each calendar quarter. Appendix A, Table A-4 provides details on TLD locations, site descriptions, and distances from Oyster Creek. Figure 7 depicts the locations of TLD sites near Oyster Creek. A complete summary of Oyster Creek's TLD results can be found in Appendix B, Table B-23.

[17] NRC Backgrounder: "Radiation Protection and the Tooth Fairy Issue"

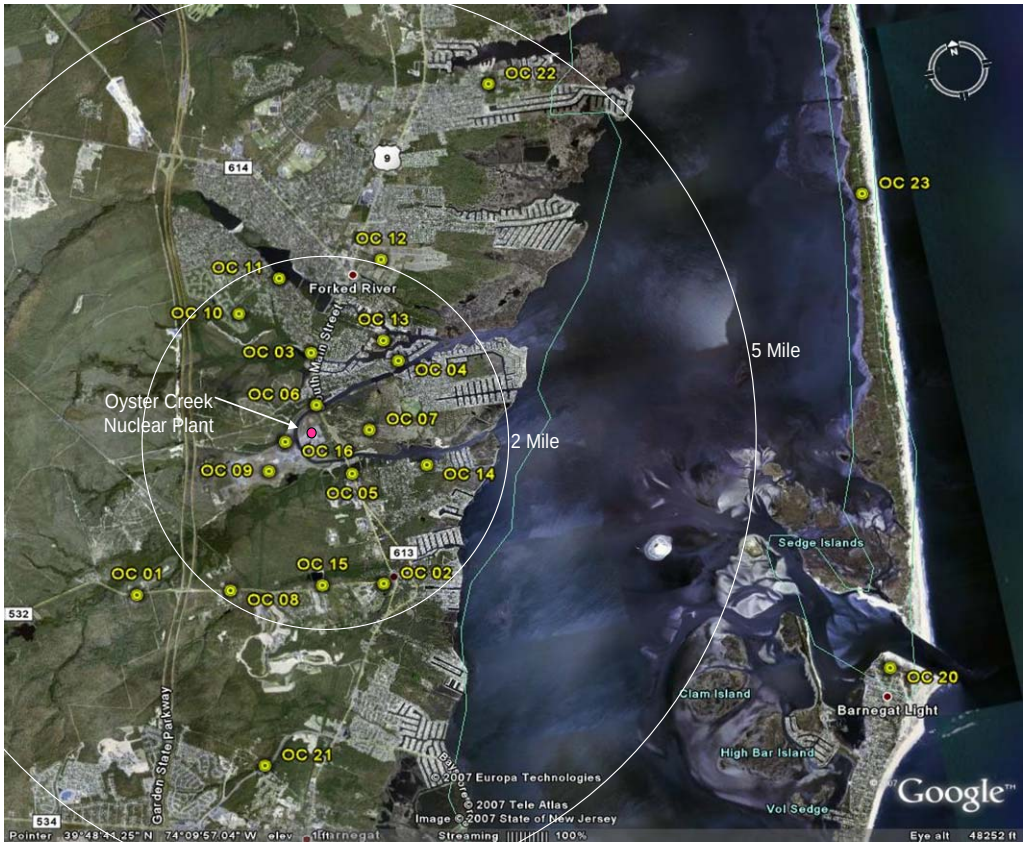


Figure 7 – CREST and Thermoluminescent Dosimeter Locations
Oyster Creek Nuclear Generating Station

All TLD badges are deployed, exchanged and analyzed by BNE staff. The overall collection efficiency for the offsite Oyster Creek TLD network[18] in 2007 was 100%.

All TLD results for the environs of Oyster Creek were less than 20 milliroentgens (mR) per standard quarter (Std. Qtr) with a range of 9.0 to 17.3 mR/Std. Qtr. These results are consistent with those observed in previous years.

5.2.2 Oyster Creek CREST Data Monitoring

Figure 7 above identifies the locations of CREST stations around the Oyster Creek Nuclear Generating Station. Appendix B, Table B-26, provides graphical summaries of ambient radiation results for each CREST site. The monthly average ambient radiation level recorded at

[18] For Figure 7, CREST monitoring locations are co-located with TLD badges for Stations OC-1 through OC-16. Stations OC-20 through OC-23 contains TLD badges ONLY.

each station is graphed in milliroentgens per hour (mR/hr). Two sites (OC9 and OC13) were not operational in 2007 due to failed telephone lines and therefore do not have associated data graphs.

Normal background radiation levels range from 0.0050 to 0.0090 mR/hr, in the vicinity of the Oyster Creek nuclear power plant. The monthly average ambient radiation levels at all CREST stations located in the environment around the nuclear power plant sites fell within this range during 2007.

5.2.3 Oyster Creek Air Sample Results

Air samples were collected around Oyster Creek from six locations. Figure 8 displays and Appendix A, Table A-3 describes a detailed list of air sampling sites.

Figure 8 – Air Sampling Locations, Oyster Creek Nuclear Generating Station

Air samples are collected bi-weekly in the environs of the Oyster Creek nuclear plant with the exception of Finninger Farm[19]. Air samples are

[19] Finninger Farm, located east of U.S. Route 9, is owned by Exelon Corporation. This land (approximately 650 acres) was formerly privately-owned farmland prior to the operation of the Oyster Creek nuclear plant.

collected on a weekly basis from the Finninger Farm location in accordance with the licensee's Offsite Dose Calculation Manual (ODCM). The ODCM requires the licensee to sample in the highest predominant wind direction sectors. Up through 2007, the BNE received only the air filter portion of the sample for analysis of gross beta radioactivity. Starting in 2008, the BNE requested and will be receiving the charcoal canister portion for analysis of gaseous iodine-131.

As the result of the discovery of higher than normal cesium-137 in vegetation samples on the owner controlled Finninger Farm property in 2006[20], and subsequent meteorological analysis of the prevailing wind directions in the area, AmerGen added an air sampling location in the east northeast sector. This wind compass sector is considered a high deposition area in the event of a release of radioactivity from Oyster Creek. The air sampler is located approximately ¼ mile from the plant. During 2008, the BNE will install an air sampler in the same location.

5.2.3a Air Particulate Gross Beta Results

Gross beta activity is a measurement of all beta activity present, regardless of specific radionuclide source. Gross measurements are used as a method to screen samples for relative levels of radioactivity. Specific analyses of beta-emitting isotopes are done at the end of each calendar quarter, when samples are composited by location.

Figure 9 graphically represents the average gross beta concentration in air for each of the BNE's sampling locations around Oyster Creek, as well as the background locations at Brendan T. Byrne State Forest in New Lisbon, New Jersey and Trenton, New Jersey. All air sites measured were not significantly different than the ambient background concentrations at Brendan T. Byrne State Forest and Trenton.

The highest gross beta concentration was 0.040 pCi/m^3, well below the EPA's RadNet screening criteria of 1.0 pCi/m^3 but greater than the minimum detectable concentration requirement (Appendix C, Table C-1) of 0.0100 pCi/m^3. RadNet is a national network of monitoring stations that regularly collect air, precipitation, drinking water, and milk samples for analysis of radioactivity. RadNet, which has stations in each state, has been used to track environmental releases of radioactivity from nuclear weapons tests and nuclear accidents. Sample results are compared against EPA screening levels for the various media. A screening level is a guideline used by the EPA to decide whether or not to determine the identity and activity of radionuclides in the sample, and does not correspond to any regulatory dose limit. RadNet documents background

[20] See 2006 NJBNE Environmental Surveillance and Monitoring Report, http://www.nj.gov/dep/rpp/bne/index.htm

levels of radioactivity and publishes this information in "Environmental Radiation Data" reports that are available on the EPA's internet website at, http://www.epa.gov/enviro/html/erams/.

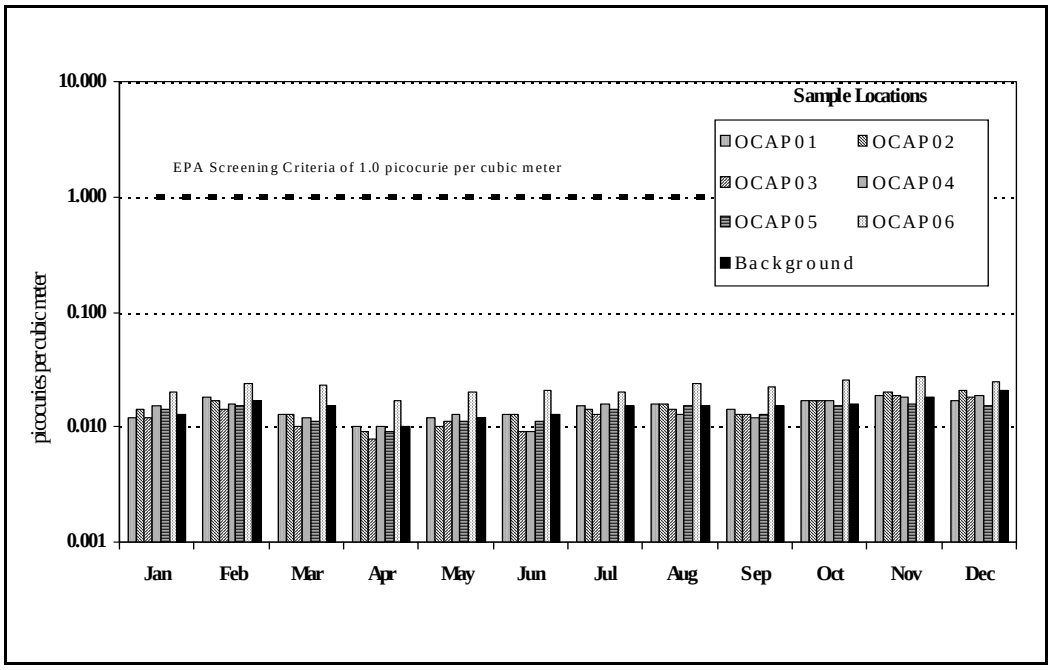


Figure 9 – Average Gross Beta Concentrations in Airborne Particulates – 2007, Oyster Creek Nuclear Generating Station

5.2.3b Air Particulate Quarterly Composites (Sr-90)

Sr-90 is a beta emitting fission product present in radioactive fallout[21] and commercial nuclear power plants. It remains in the environment for an extended period of time due to its 28.1 year half-life. Sr-90 is known to increase the risk of bone cancer and leukemia in animals and is presumed to do so in humans.[22]

Due to concerns expressed by the public, the DEP instituted quarterly analysis of Sr-90 in air samples in 1999. The predominance of environmental data shows no increase of Sr-90 in the environment since that time. [23]

[21] See section 3.4, page 16, for sources of fallout.
[22] EPA, Radiation Information, Strontium, http://www.epa.gov/radiation/radionuclides/strontium.htm
[23] A Review of Understanding Patterns and Trends of Radioactive Strontium-90 in Baby Teeth of New Jersey Children and Cancer: A Report To the NJ State Department of Health and Senior Services New, January 2006, http://www.nj.gov/dep/rpp/index.htm.

Quarterly analysis of samples collected and analyzed indicates no measurable Sr-90 concentrations in air. This was consistent to what was found at both background locations.

5.2.3c Air Particulate Quarterly Composites (Gamma Emitters)

Gamma isotopic analysis of the air particulate portion of the bi-weekly air samples did not detect any radionuclides of interest (cobalt or cesium). Beryllium-7, which is produced naturally by cosmic ray interactions with atmospheric constituents, was detected[24]. This was consistent to what was found at both background locations (Trenton and Brendan T. Byrne State Forest).

5.2.3d Air Iodine Results

Iodine-131 was not detected (all results below the minimum detectable concentration requirement of 0.07 pCi/m^3, per Appendix C, Table C-1) in any of the air charcoal samples collected bi-weekly from the six continuous air-monitoring locations around Oyster Creek.

A complete summary of all air sample results can be found in Appendix B, Table B-2 for air iodine; Table B-5 for air particulate gross beta; and Table B-8 for air particulate quarterly composites.

5.2.4 Oyster Creek Water Sample Results

Oyster Creek utilizes an intake/discharge canal, along with the Barnegat Bay for the discharge of cooling water and potential effluent discharges. The Oyster Creek nuclear plant does not routinely release activity in liquids to the environment. In the event of an unplanned release, the resulting activity will be included in the licensee's Annual Effluent Release Report, available through the NRC website at, http://www.nrc.gov or the Ocean County public library system.

Surface water samples are collected from four locations. These locations range from 0.4 miles in the plant's discharge canal to 20 miles away in the Great Bay/Little Egg Harbor. Surface water samples also are collected in the Barnegat Bay, located east of the discharge canal (2.1 miles from the plant) and in Stouts Creek, a tributary of the Barnegat Bay, located approximately 3.6 miles north of the plant discharge canal.

Well water samples were collected from two sources. Samples are taken from the Oyster Creek Administration Building and offsite from the New Jersey State Forked River Marina. The latter site is located approximately

[24] Parker, R.P., Beryllium-7 and Fission Products in Surface Air, *Nature* 193, 967 - 968 (10 March 1962)

1.7 miles north-northeast of the facility and considered upstream of the plant with regard to the aquifer that supplies water to the community.

Surface water and well water samples were analyzed for gamma emitting isotopes (such as radionuclides of cobalt, cesium, and iodine) and for tritium (Appendix B, Table B-18 and Table B-20). For the analysis of iodine-131 in both routine surface water and well water samples, the BNE requires its contract laboratory to achieve the EPA drinking water detection limit of 1.0 pCi/L. No gamma emitting isotopes or tritium were found in any routine surface water and well water samples collected during the year.

A complete summary of surface water and well water results can be found in Appendix B, Table B-18 and Table B-20.

In recent years environmental monitoring programs at several nuclear power plants have detected measurable levels of tritium contamination in groundwater. The unplanned release of tritium that contaminated the groundwater is the result of equipment degradation at the sites. As part of a fleet wide initiative, Exelon Corporation, the owners of Oyster Creek, began collecting and analyzing groundwater samples from 36 onsite wells. Onsite well samples were split between Exelon and the BNE and analyzed for tritium and gamma emitting radionuclides. All of the initial sampling results from these wells were less than the minimum detectable concentration of 300 pCi/L. Results of the BNE's split samples are available on the BNE website at http://www.nj.gov/dep/rpp/bne/welltab.htm. Additional information regarding tritium can be found on the NRC's website at http://www.nrc.gov/

5.2.5 Oyster Creek Aquatic Biota Sample Results

Oyster Creek collected and split both fish and shellfish samples with the BNE. Samples of fish (striped bass, bluefish, and drum) were collected in October from one sample location, while hardshell clams were collected from three locations, the Barnegat Bay, approximately 2.1 miles east of the discharge canal, Stouts Creek, located 3.6 miles north and east of the discharge canal, and Great Bay/Little Egg Harbor, some 20 miles south and east of the discharge canal.

No fission or activation products were detected in any fish or shellfish samples collected and analyzed (results were less than the minimum detectable concentration for cobalt and cesium, Appendix C, Table C-1). In addition, no strontium was found in any sample. Potassium-40, a naturally occurring radionuclide, was found in all samples.

A summary of sample results can be found in Appendix B, Table B-10.

5.2.6 Oyster Creek Vegetation Sample Results

Edible vegetation samples are routinely collected from three sampling locations each year and split with the BNE for analysis. These locations include two onsite vegetable gardens and one background garden located over 20-miles upwind of the nuclear plant (see Appendix A, Table A-3 for the location of each garden).

During 2007, naturally occurring potassium-40 was found in all edible vegetables. Sample analysis results from the vegetable samples were below minimum detectable levels (Appendix C, Table C-1) for fission and activation products for all locations.

A complete summary of edible vegetable sample results can be found Appendix B, Table B-14.

5.2.7 Oyster Creek Aquatic Sediment Sample Results

Aquatic sediment samples were collected from four locations. Sample locations include the plant Discharge Canal, Barnegat Bay (East of the site), Stouts Creek and Great Bay/Little Egg Harbor.

Sample analysis results from aquatic sediment samples were below minimum detectable levels (Appendix C, Table C-1) for fission and activation products for all locations. Naturally occurring potassium-40 was found at all sample locations.

A complete summary of sample results can be found Appendix B, Table B-12.

5.2.8 Oyster Creek Milk Sample Results

There are no dairy farms within a 10-mile radius of Oyster Creek. According to the Oyster Creek Year 2000 Land Use Survey, the closest dairy farm is about 30 miles away (Burlington County, New Jersey). Radiological data from milk taken at the closest dairy farm would not be statistically representative of the milk pathway to humans living near Oyster Creek. Therefore, no milk samples are collected for Oyster Creek.

5.3 Salem / Hope Creek Monitoring Results

5.3.1 Salem/Hope Creek Thermoluminescent Dosimetry Results

The Bureau of Nuclear Engineering's TLD program for Salem/Hope Creek consists of ten (10) offsite locations. Each location has two TLD badges that are exchanged at the end of each calendar quarter. Appendix A, Table A-6 provides details on TLD locations, site descriptions and distances from the Salem/Hope Creek Nuclear Generating Stations. Figure 10 depicts locations of the TLD badges.

Figure 10 – CREST and Thermoluminescent Dosimeter Locations, Salem/Hope Creek

All TLD badges are deployed, exchanged and analyzed by BNE staff. Appendix B, Table B-24 represents ambient radiation levels obtained from TLD badges in the surrounding area of Salem/Hope Creek during 2007. All TLD results were less than 21 milliroentgens (mR) per standard quarter (Std. Qtr.) with a range from 10.3 to 20.8 mR/Std. Qtr. These results are consistent with those observed in previous years.

The BNE participates in an intercomparison program by co-locating TLD badges obtained from Global Dosimetry Solutions, with BNE badges at a

number of locations in the environs of Salem/Hope Creek. This intercomparison program enables the BNE to document the precision and accuracy of its TLD data in order to identify any analytical or procedural problems in the current program. Results indicate that the BNE TLD data are consistent with the TLD results obtained by Global Dosimetry Solutions (Appendix B, Table B-25).

5.3.2 Salem/Hope Creek CREST Data Monitoring

Figure 10 identifies the locations of CREST stations around Salem/Hope Creek. Appendix B, Table B-27, provides graphical summaries of ambient radiation results for each CREST site. The monthly average ambient radiation level recorded at each station is graphed in milliroentgens per hour (mR/hr).

Normal background radiation levels range from 0.0050 to 0.0090 mR/hr around Salem/Hope Creek. The monthly average ambient radiation levels at all CREST stations located in the environment around the nuclear power plant sites fell within this range during 2007.

5.3.3 Salem/Hope Creek Air Sample Results

Air sampling was done at three locations. Figure 11 and Appendix A, Table A-5 indicate the location of air sampling sites at Salem/Hope Creek.

Figure 11 – Air Sample Locations, Salem/Hope Creek

5.3.3a Air Particulate Gross Beta Results

Gross beta activity is a measurement of all beta activity present, regardless of specific radionuclide source. Gross measurements are used as a method to screen samples for relative levels of radioactivity. Specific analyses of beta-emitting isotopes are done at the end of each calendar quarter, when samples are composited by location. Figure 12 graphically represents the average gross beta concentration in air for each of the BNE's sampling locations around Salem/Hope Creek, including the background locations at Brendan T. Byrne State Forest in New Lisbon, New Jersey and Trenton, New Jersey. Results were not significantly different than the ambient background concentrations at Brendan T. Byrne State Forest and Trenton.

The highest gross beta concentration was 0.023 pCi/m^3, well below the EPA's Environmental Radiation Ambient Monitoring System (RadNet) screening criteria of 1.0 pCi/m^3, but greater than the minimum detectable concentration of 0.0100 pCi/m^3 (Appendix C, Table C-1).

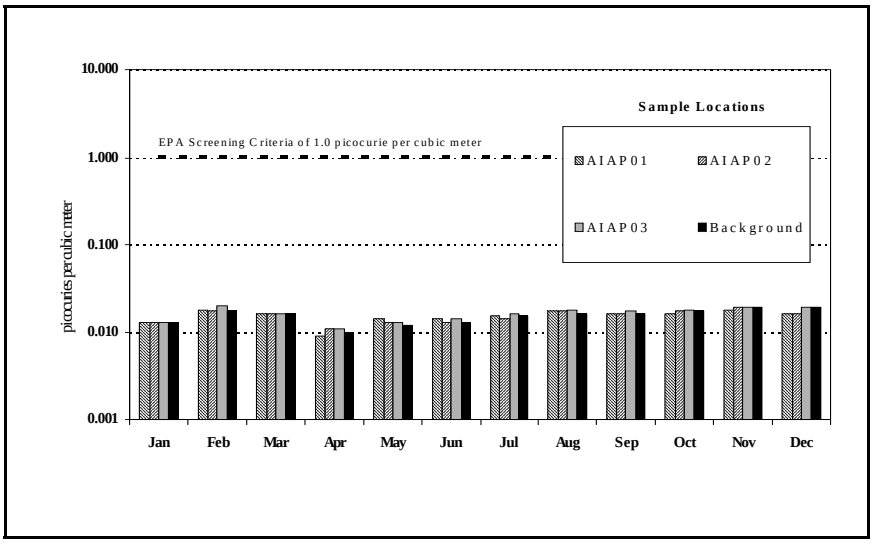


Figure 12 – Average Gross Beta Concentrations in Airborne Particulates, 2007 Salem/Hope Creek

5.3.3b Air Particulate Quarterly Composites (Sr-90)

Quarterly analysis of samples collected and analyzed in 2007 indicated no measurable Sr-90 concentrations in air. This was consistent to what was found at both background locations. Sr-90 is a beta emitting fission product present in radioactive fallout.[25]

5.3.3c Air Particulate Quarterly Composites (Gamma Emitters)

No gamma emitting fission and activation products were detected in the air particulate portion of the bi-weekly air samples greater than the minimum detectable concentration (Appendix C, Table C-1). Beryllium-7, which is found naturally in the environment, was detected. This was consistent to what was found at both background locations (Trenton and Brendan T. Byrne State Forest).

5.3.3d Air Iodine Results

Iodine-131 was not detected in any of the air charcoal samples collected bi-weekly from the three continuous air-monitoring locations around the Salem/Hope Creek.

A complete summary of all air sample results can be found in Appendix B, Table B-3 for air iodine, Table B-6 for air particulate gross beta and Table B-9 for air particulate quarterly composites.

[25] See section 3.4, page 16, for sources of fallout.

5.3.4 Salem/Hope Creek Water Sample Results

Salem Units 1 & 2 and Hope Creek have different systems used for plant cooling. Hope Creek uses a cooling tower. The two units at Salem utilize water drawn from the Delaware River for cooling purposes.

Surface water samples are collected from two locations. These locations are at the Onsite Surface Water Inlet Building Discharge (approximately 0.2 miles) and along the west bank of the Delaware River upstream from the liquid discharge point of the Salem nuclear power plants (approximately 2.5 miles from the plant).

Well water samples are taken from the site's Administration Building. In addition, well samples are drawn from the following locations: the Elsinboro School (5.8 miles from the plant), Lower Alloways Creek School (5.1 miles from the plant) and the Lower Alloways Creek Police Station (6.5 miles from the plant). Sample locations are chosen in potential drinking water aquifers downstream and upstream of the site.

Surface and well water samples were analyzed for gamma emitting isotopes and for tritium (See Appendix B, Table B-19 and Table B-21). For the analysis of iodine-131 in both routine surface water and well water samples, the BNE requires its contract laboratory to achieve the EPA drinking water detection limit of 1.0 pCi/L. No gamma emitting isotopes were found in any routine surface water and well water samples collected during 2007. Tritium was found in one surface water sample (476 ± 147 pCi/L). However, the tritium found in the surface water sample was below the New Jersey Surface Water Quality Standard[26] limit of 20,000pCi/L, which is the same as the EPA's Safe Drinking Water Standard and the same as the New Jersey Groundwater Quality Standard for tritium.

While not part of the BNE's routine REMP program, the BNE monitors for tritium and gamma emitting radionuclides in groundwater onsite at Artificial Island. The source of the tritium is the Salem Unit 1 spent fuel pool. Extensive monitoring and testing at the site indicates that tritium leakage has been contained within the Owner Controlled Area. No onsite or offsite dose consequences to workers or members of the public were identified. The BNE's onsite groundwater monitoring program was initiated because of tritium contamination detected in shallow groundwater near Salem Unit 1. PSE&G is taking remedial actions to address the tritium contamination and activities are closely monitored by the BNE. This project has been extended to include the collection and analysis of groundwater samples for Salem Unit 2 and Hope Creek. Groundwater

[26] NJDEP Surface Water Quality Standards, N.J.A.C. 7:9B, http://www.state.nj.us/dep/wms/bwqsa/swqsdocs.html

samples are taken from wells located on company property that surrounds each reactor. The samples are split between PSEG and the BNE. Results of the BNE's split samples are available on the BNE website at http://www.nj.gov/dep/rpp/bne/welltab.htm.

5.3.5 Salem/Hope Creek Aquatic Biota Sample Results

Samples of aquatic biota (fish/shellfish) are collected by the nuclear power plant operator and split with the BNE. Samples are analyzed for gamma emitting radionuclides and Sr-90. Samples of fish (striped bass, white perch, bluefish, catfish, American eel and carp) as well as hardshell crabs were collected from two locations, the Onsite Surface Water Inlet Building (within 0.2 miles of the plant) and along the western bank of the Delaware River (approximately 2.5 miles upstream from the plant).

No fission or activation products were detected in any fish or shellfish samples collected and analyzed during 2007 (results were less than the minimum detectable concentration for cobalt and cesium, Appendix C, Table C-1). In addition, no Sr-90 was found in any sample. Potassium-40, a naturally occurring radionuclide, was present in all samples.

A summary of fish/shellfish sample results can be found in Appendix B, Table B-11.

5.3.6 Salem/Hope Creek Vegetation --Sample Results

Vegetation samples were collected from seven farms ranging in distance from 0.55 to 26 miles of Salem/Hope Creek during the 2007 harvest season. Vegetation samples included cabbage, corn, tomatoes and peppers.

Sample analysis results from the edible vegetation were below minimum detectable levels (Appendix C, Table C-1) for fission and activation products at all locations. All samples contained potassium-40, which is a naturally occurring radionuclide found in the environment.

A complete summary of vegetation sample results can be found in Appendix B, Table B-15.

5.3.7 Salem/Hope Creek Aquatic Sediment Results

Aquatic sediment samples were collected from the following five locations, the Onsite Observation Building, Onsite Surface Water Inlet Building, the Cooling Tower Blowdown Discharge Line (Onsite), the Onsite South Storm Drain Discharge Line and the west bank of the Delaware River, upstream of the nuclear power plant.

Sample analysis results from aquatic sediment samples were below minimum detectable levels (Appendix C, Table C-1) for fission and activation products for all locations. Naturally occurring potassium-40 was detected in all samples.

A complete summary of aquatic sediment sample results can be found in Appendix B, Table B-13.

5.3.8 Salem/Hope Creek Milk Sample Results

Milk samples were collected monthly from three farms, ranging from 7.6 to 17 miles from the plant.

Trace amounts of Sr-90 were found at all three farms, ranging from 0.66 to 3.03 pCi/L. Trace amounts of Sr-90 also were found at the background farm near Trenton (1.39 pCi/L). Sr-90 is a beta emitting fission product present in radioactive fallout (atmospheric nuclear weapons tests conducted in the 1950's and 1960's) and in commercial nuclear power plants. It persists in the environment for an extended period because of its 28.1-year half-life. About 99.9% of strontium in the environment comes from fallout from atmospheric nuclear weapons testing[27]. Although Sr-90 levels in the environment have decreased since atmospheric weapons testing were halted, Sr-90 will continue to be detected until it decays.

Figure 13 graphically displays historical trends for Sr-90 concentrations in milk for all regions across the nation. The average historical Sr-90 concentration in milk (1960-2006) for all EPA regions was 10.5 pCi/L. The average historical Sr-90 concentration in milk for Region 2, which includes New Jersey, was below the national average (9.3 pCi/L), and well below EPA's acceptable risk level of 1 in 10,000 or 780 pCi/L. Levels of Sr-90 found in milk samples collected by the BNE at all locations are consistent with what is expected from environmental levels of Sr-90 as a result of weapons testing. No fission or activation products above the minimum detectable concentration (Appendix C, Table C-1) were found in any milk samples collected and analyzed during the year. A summary of results for milk samples can be found in Appendix B, Table B-17.

[27] NRC Fact Sheet on Radiation Monitoring at Nuclear Power Plants

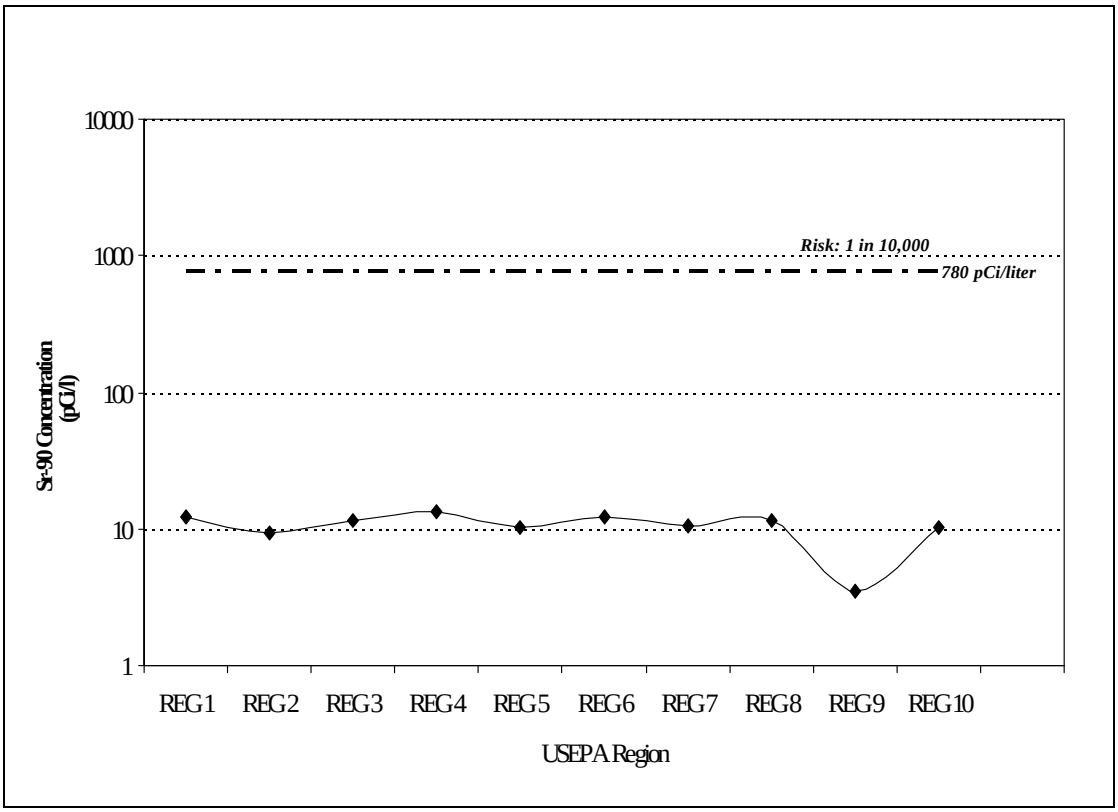


Figure 13 – Average Concentration of Strontium-90 in Milk in the US by EPA Region, 1960 through 2006

Appendix A - Sampling Locations
Table A-1
NJDEP / BNE
Radiological Environmental Monitoring Program

Sample Collection Summary for 2007

Description	*Parameters Analyzed For*	*Frequency*	*Number of Samples*
Milk	Gamma Emitters, Strontium-89/90 *	Monthly	40
Air Particulate Filter	Gross Beta	Bi-Weekly	312
Air Particulate Composite	Gamma Emitters, Strontium-89/90	Quarterly	44
Air Charcoal	Iodine-131	Bi-Weekly	270
Aquatic Sediment	Gamma Emitters	Semi-Annually	17
Fish & Shellfish	Gamma Emitters Strontium-89/90 *	Semi-Annually	13
Vegetables	Gamma Emitters	Harvest Season Only	40
Surface Water	Gamma Emitters** Tritium	Monthly	52
Potable Well Water	Gamma Emitters** Tritium	Quarterly	24
		Total Samples Collected	812

* Radiochemical analysis performed for Strontium-89/90, EPA Analytical Method 905.0.
** Radiochemical analysis performed for Iodine-131, EPA Analytical Method 902.0

Table A-2
NJDEP/BNE
Radiological Environmental Monitoring Program

Background Locations

Sample Media	*Station Code*	*Description of Site*
Milk	COMI01	State of New Jersey Dairy Farm – Ewing Township, NJ
Air Particulate Filter	COAP01	BNE Office, Arctic Parkway, Ewing, NJ
	COAP02	Brendan T. Byrne State Forest, New Lisbon, NJ
Air Particulate Composite	COAP01	BNE Office, Arctic Parkway, Ewing, NJ
	COAP02	Brendan T. Byrne State Forest, New Lisbon, NJ
Air Charcoal	COAI01	BNE Office, Arctic Parkway, Ewing, NJ
	COAI02	Brendan T. Byrne State Forest, New Lisbon, NJ
TLD	CO01	BNE Office, Arctic Parkway, Ewing, NJ
	CO02	Brendan T. Byrne State Forest, New Lisbon, NJ

Table A-3
NJDEP / BNE
Radiological Environmental Monitoring Program

Sample Locations and Descriptions
Oyster Creek Nuclear Generating Station

Sample Medium	*Station Code*	*Distance From Plant (miles)*	*Description of Site*
Milk	Not sampled	Not sampled	No milk-producing animals within 30-mile radius as per the Oyster Creek Land Use Survey for 2000
Air Particulate Filter	OCAP01	1.7	Waretown Municipal Building, SSE of site, on County Route 532, Waretown, NJ
	OCAP02	1.8	Sands Point Harbor, ESE of site on Bay Parkway, Waretown, NJ
	OCAP03	1.7	Forked River Marina, Forked River, NJ
	OCAP04	3.2	Lacey Township Recreation Bldg., Forked River, NJ
	OCAP05	5.6	JCP&L Substation, US Route 9, Bayville, NJ
	OCAP06	0.7	Finninger Farm, OC Dredge Site, Forked River, NJ*
Air Particulate Composite	OCAP01	1.7	Waretown Municipal Building, SSE of site, on County Route 532, Waretown, NJ
	OCAP02	1.8	Sands Point Harbor, ESE of site on Bay Parkway, Waretown, NJ
	OCAP03	1.7	Forked River Marina, Forked River, NJ
	OCAP04	3.2	Lacey Township Recreation Bldg., Forked River, NJ
	OCAP05	5.6	JCP&L Substation, US Route 9, Bayville, NJ
	OCAP06	0.7	Finninger Farm, OC Dredge Site, Forked River, NJ*
Air Charcoal	OCAI01	1.7	Waretown Municipal Building, SSE of site, on County Route 532, Waretown, NJ
	OCAI02	1.8	Sands Point Harbor, ESE of site on Bay Parkway, Waretown, NJ
	OCAI03	1.7	Forked River Marina, Forked River, NJ
	OCAI04	3.2	Lacey Township Recreation Bldg., Forked River, NJ
	OCAI05	5.6	JCP&L Substation, US Route 9, Bayville, NJ

* Oyster Creek Filter ONLY – air sampler is maintained by the nuclear power plant operator. Samples are collected on a weekly basis.

Table A-3 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Sample Locations and Descriptions
Oyster Creek Nuclear Generating Station Locations

Sample Medium	*Station Code*	*Distance From Plant (miles)*	*Description of Site*
Vegetables*	OCVE01	0.4	Oyster Creek Onsite Garden, east of US Route 9 and NORTH of the Oyster Creek Discharge Canal, Forked River, NJ
	OCVE02	23.1	Private Farm – NW wind compass sector
	OCVE03	0.4	Oyster Creek Onsite Garden, Discharge Canal, SE of site, east of US Route 9 and south of the inside fence, Waretown, NJ
Surface Water*	OCSW01	2.1	Barnegat Bay, east of site
	OCSW02	20	Great Bay / Little Egg Harbor, SSW of site
	OCSW03	3.6	Stouts Creek, ENE of site, Barnegat Bay
	OCSW04	0.4	Oyster Creek Discharge Canal, ESE of site, East of U.S. Route 9 Bridge
Well Water	OCWW01	0.1	Oyster Creek Administration Building (On-site)
	OCWW02	1.7	Forked River Marina, Forked River, NJ

* Sample split with nuclear power plant operator

Table A-3 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Sample Locations and Descriptions
Oyster Creek Nuclear Generating Station

Sample Medium	*Station Code*	*Distance From Plant (miles)*	*Description of Site*
Aquatic Sediment*	OCAQ01	2.1	Barnegat Bay, East of site
	OCAQ02	0.4	Oyster Creek Discharge Canal, ESE of site, East of U.S. Route 9 Bridge
	OCAQ03	20	Great Bay / Little Egg Harbor, SSW of site
	OCAQ04	3.6	Stouts Creek, ENE of site, Barnegat Bay
Fish & Shellfish*	OCFS01	3.6	Stouts Creek, ENE of site, Barnegat Bay
	OCFS02	2.1	Barnegat Bay, east of site
	OCFS03	20	Great Bay / Little Egg Harbor, SSW of site

* Sample split with nuclear power plant operator

Table A-4
NJDEP / BNE
Radiological Environmental Monitoring Program

CREST and Thermoluminescent Dosimetry Network
Oyster Creek Nuclear Generating Station

ID	*Distance From Plant (miles*	*Description of Site*
OC-1	2.7	Ocean County Vocational School, Waretown, NJ
OC-2	1.8	Ocean Township (Waretown) Municipal Building, Waretown, NJ
OC-3	0.9	Sewage Pump Station on U.S. Route 9, Forked River, NJ
OC-4	1.3	Twin River Station, Forked River, NJ
OC-5	0.5	Sewage Pump Station, U.S. Route 9, Ocean Township, NJ
OC-6	0.5	Oyster Creek Generating Station Gate #2, North Access Road, Forked River, NJ
OC-7	0.7	Finninger Farm, Forked River, NJ
OC-8	1.8	Ocean County Memorial Park Cemetery, Waretown, NJ
OC-9	0.3	Oyster Creek Amergen Building #17, Forked River, NJ
OC-10	2.3	Sheffield and Derby Roads, Forked River, NJ
OC-11	1.9	Lakeside Drive, Forked River, NJ
OC-12	2.2	Forked River Game Farm, Forked River, NJ
OC-13	1.4	Lacey Township Restrooms, Lakeside Drive, Forked River, NJ
OC-14	1.1	Sands Point Park, Dock Avenue, Waretown, NJ
OC-15	1.5	Recreational Center, Waretown, NJ
OC-16	0.3	North Access Road, Forked River Site, Forked River, NJ
OC-20	6.6	Third Avenue, Barnegat Light, NJ
OC-21	3.5	Rose Hill Road & Barnegat Blvd., Barnegat Twp., NJ
OC-22	4.4	Bay Way & Claimore Avenue, Lanoka Harbor, NJ
OC-23	6.3	Island Beach State Park, Parking Lot A5

Note: Each sample location above contains a CREST monitor and TLD
Note: Stations OC-20, OC-21, OC-22 and OC-23 contain TLD badges only

Table A-5
NJDEP / BNE
Radiological Environmental Monitoring Program

Sample Locations and Descriptions
Salem / Hope Creek Nuclear Generating Station

Sample Medium	*Station Code*	*Distance From Plant (miles)*	*Description of Site*
Milk	AIMI01	12	Private Farm – ENE wind compass sector
	AIMI02	17	Private Farm – NE wind compass sector
	AIMI03	7.6	Private Farm – WNW wind compass sector
Air Particulate Filter	AIAP01	5.6	Fort Elfsborg Rd., Elsinboro Township, NJ
	AIAP02	4.0	Plant Access Road
	AIAP03	5.1	Lower Alloways Creek School, Canton, NJ
Air Particulate Composite	AIAP01	5.6	Fort Elfsborg Rd., Elsinboro Township, NJ
	AIAP02	4.0	Plant Access Road
	AIAP03	5.1	Lower Alloways Creek School, Canton, NJ
Air Charcoal	AIAI01	5.6	Fort Elfsborg Rd., Elsinboro Township, NJ
	AIAI02	4.0	Plant Access Road
	AIAI03	5.1	Lower Alloways Creek School, Canton, NJ
Vegetable *	AIVE04	13.5	Private Farm – NNE wind compass sector
	AIVE07	9.2	Private Farm – NNE wind compass sector
	AIVE08	6.5	Private Farm – NE wind compass sector
	AIVE09	11.1	Private Farm – NNE wind compass sector
	AIVE10	7.2	Private Farm – NE wind compass sector
	AIVE11	26.0	Private roadside stand – NE wind compass sector
	AIVE12	0.55	Onsite, North of Salem Units 1 & 2 Nuclear Station, Owner Controlled Area
Surface Water *	AISW01	0.2	Onsite, Surface Water Inlet Building Discharge
	AISW02	2.5	Delaware River, West Bank Upstream

* Sample split with nuclear power plant operator

Note: In order to maintain owner privacy, the BNE does not disclose the names of farms which provide environmental samples for analysis. All farms that provide vegetation and milk samples are within the Ingestion Pathway Zone.

Table A-5 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Sample Locations and Descriptions
Salem / Hope Creek Nuclear Generating Station (*continued*)

Sample Medium	*Station Code*	*Distance From Plant (miles)*	*Description of Site*
Well Water *	AIWW01	5.8	Elsinboro School, Ft. Elfsborg Road, Elsinboro Township, NJ
	AIWW02	6.5	Lower Alloways Creek Police Station, 501 Locust Island Road, Hancocks Bridge, NJ
	AIWW03	Onsite	Salem Nuclear Generating Station, Admin Building
	AIWW04	5.1	Lower Alloways Creek School, Canton, NJ
Aquatic Sediment *	AIAQ01	0.2	Onsite, Observation Building
	AIAQ02	0.2	Onsite, Surface Water Inlet Building
	AIAQ03	0.3	Onsite, Cooling Tower Blowdown Discharge Line
	AIAQ04	0.7	Onsite, South Storm Drain Discharge Line
	AIAQ05	2.5	West Bank of Delaware River - Upstream
Fish & Shellfish*	AIFS01	0.2	Onsite, Surface Water Inlet Building
	AIFS02	2.5	Delaware River, West Bank Upstream

* Sample split with nuclear power plant operator

Table A-6
NJDEP / BNE
Radiological Environmental Monitoring Program

CREST and Thermoluminescent Dosimetry Network
Salem / Hope Creek Nuclear Generating Station

ID	*Distance From Plant (miles)*	*Description of Site*
AI-1	1.0	Access Road, Security Checkpoint
AI-2	4.1	Poplar Road, Lower Alloways Creek Twp., NJ
AI-3	4.1	Money and Eagle Island Roads, Elsinboro Twp., NJ
AI-4	5.4	Fort Elfsborg Road and Hancocks Bridge Road – East, Elsinboro Twp., NJ
AI-5	5.6	Fort Elfsborg Road and Hancocks Bridge Road – West, Elsinboro Twp., NJ
AI-6	8.4	Stathems Neck Road, Greenwich Twp., NJ
AI-7	6.2	Stow Neck Road, Lower Alloways Creek Twp., NJ
AI-8	3.3	Alloways Creek Neck Road, Lower Alloways Creek Twp., NJ
AI-9	3.8	Alloways Creek Neck Road, Lower Alloways Creek Twp., NJ
AI-10	4.8	Abbots Farm Road, Elsinboro Twp., NJ

Note: Each sample location above contains a CREST monitor and TLD

Appendix B – Sample Results

Table B-1
NJDEP / BNE
Radiological Environmental Monitoring Program

Background
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

BNE Office (COAI01)			
Collection Period			**I-131 (pCi/m^3)**
01/02/07	-	01/17/07	< 0.005
01/17/07	-	01/30/07	< 0.010
01/30/07	-	02/13/07	< 0.014
02/13/07	-	02/27/07	< 0.008
02/27/07	-	03/12/07	< 0.010
03/12/07	-	03/27/07	< 0.006
03/27/07	-	04/09/07	< 0.012
04/09/07	-	04/23/07	< 0.010
04/23/07	-	05/07/07	< 0.017
05/07/07	-	05/22/07	< 0.007
05/22/07	-	06/04/07	< 0.010
06/04/07	-	06/18/07	< 0.007
06/18/07	-	07/02/07	< 0.007
07/02/07	-	07/16/07	< 0.016
07/16/07	-	08/01/07	< 0.012
08/01/07	-	08/13/07	< 0.042
08/13/07	-	08/27/07	< 0.016
08/27/07	-	09/10/07	< 0.005
09/10/07	-	09/25/07	< 0.004
09/25/07	-	10/09/07	< 0.020
10/09/07	-	10/22/07	< 0.034
10/22/07	-	11/05/07	< 0.014
11/05/07	-	11/19/07	< 0.013
11/19/07	-	12/03/07	< 0.018
12/03/07	-	12/14/07	< 0.011
12/14/07	-	12/31/07	< 0.004

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-1 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Background
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Brendan T. Byrne State Forest (COAI02)				
Collection Period			**I-131 (pCi/m^3))**	
01/03/07	-	01/16/07	<	0.007
01/16/07	-	01/29/07	<	0.005
01/29/07	-	02/13/07	<	0.006
02/13/07	-	02/26/07	<	0.013
02/26/07	-	03/13/07	<	0.004
03/13/07	-	03/27/07	<	0.005
03/27/07	-	04/10/07	<	0.007
04/10/07	-	04/24/07	<	0.010
04/24/07	-	05/08/07	<	0.012
05/08/07	-	05/21/07	<	0.004
05/21/07	-	06/04/07	<	0.009
06/04/07	-	06/19/07	<	0.005
06/19/07	-	07/02/07	<	0.004
07/02/07	-	07/16/07	<	0.009
07/16/07	-	07/30/07	<	0.012
07/30/07	-	08/14/07	<	0.013
08/14/07	-	08/28/07	<	0.014
08/28/07	-	09/11/07	<	0.005
09/11/07	-	09/24/07	<	0.005
09/24/07	-	10/10/07	<	0.019
10/10/07	-	10/23/07	<	0.030
10/23/07	-	11/07/07	<	0.022
11/07/07	-	11/20/07	<	0.011
11/20/07	-	12/04/07	<	0.016
12/04/07	-	12/17/07	<	0.007
12/17/07	-	12/28/07	<	0.013

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-2
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Waretown Municipal Building (OCAI01)

Collection Period			I-131 (pCi/m^3)	
01/03/07	-	01/16/07	<	0.008
01/16/07	-	01/29/07	<	0.009
01/29/07	-	02/13/07	<	0.014
02/13/07	-	02/26/07	<	0.011
02/26/07	-	03/13/07	<	0.007
03/13/07	-	03/27/07	<	0.007
03/27/07	-	04/10/07	<	0.007
04/10/07	-	04/24/07	<	0.007
04/24/07	-	05/08/07	<	0.016
05/08/07	-	05/21/07	<	0.006
05/21/07	-	06/04/07	<	0.007
06/04/07	-	06/19/07	<	0.004
06/19/07	-	07/02/07	<	0.006
07/02/07	-	07/16/07	<	0.012
07/16/07	-	07/30/07	<	0.015
07/30/07	-	08/14/07	<	0.016
08/14/07	-	08/28/07	<	0.018
08/28/07	-	09/11/07	<	0.004
09/11/07	-	09/24/07	<	0.004
09/24/07	-	10/10/07	<	0.011
10/10/07	-	10/23/07	<	0.026
10/23/07	-	11/07/07	<	0.036
11/07/07	-	11/20/07	<	0.006
11/20/07	-	12/04/07	<	0.013
12/04/07	-	12/17/07	<	0.004
12/17/07	-	12/28/07	<	0.013

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-2 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Sands Point Harbor (OCAI02)			
Collection Period			**I-131 (pCi/m^3))**
01/03/07	-	01/16/07	< 0.008
01/16/07	-	01/29/07	< 0.016
01/29/07	-	02/13/07	< 0.014
02/13/07	-	02/26/07	< 0.011
02/26/07	-	03/13/07	< 0.007
03/13/07	-	03/27/07	< 0.008
03/27/07	-	04/10/07	< 0.010
04/10/07	-	04/24/07	< 0.011
04/24/07	-	05/08/07	< 0.017
05/08/07	-	05/21/07	< 0.020
05/21/07	-	06/04/07	< 0.015
06/04/07	-	06/19/07	< 0.008
06/19/07	-	07/02/07	< 0.006
07/02/07	-	07/16/07	< 0.013
07/16/07	-	07/30/07	< 0.018
07/30/07	-	08/14/07	< 0.019
08/14/07	-	08/28/07	< 0.020
08/28/07	-	09/11/07	< 0.010
09/11/07	-	09/24/07	< 0.005
09/24/07	-	10/10/07	< 0.022
10/10/07	-	10/23/07	< 0.030
10/23/07	-	11/07/07	< 0.039
11/07/07	-	11/20/07	< 0.015
11/20/07	-	12/04/07	< 0.021
12/04/07	-	12/17/07	< 0.006
12/17/07	-	12/28/07	< 0.016

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-2 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Forked River Marina (OCAI03)			
Collection Period			**I-131 (pCi/m^3)**
01/03/07	-	01/16/07	< 0.004
01/16/07	-	01/29/07	< 0.009
01/29/07	-	02/13/07	< 0.008
02/13/07	-	02/26/07	< 0.006
02/26/07	-	03/13/07	< 0.003
03/13/07	-	03/27/07	< 0.004
03/27/07	-	04/10/07	< 0.006
04/10/07	-	04/24/07	< 0.006
04/24/07	-	05/08/07	< 0.010
05/08/07	-	05/21/07	< 0.004
05/21/07	-	06/04/07	< 0.006
06/04/07	-	06/19/07	< 0.004
06/19/07	-	07/02/07	< 0.003
07/02/07	-	07/16/07	< 0.003
07/16/07	-	07/30/07	< 0.009
07/30/07	-	08/14/07	< 0.009
08/14/07	-	08/28/07	< 0.010
08/28/07	-	09/11/07	< 0.009
09/11/07	-	09/24/07	< 0.005
09/24/07	-	10/10/07	< 0.021
10/10/07	-	10/23/07	< 0.028
10/23/07	-	11/07/07	< 0.037
11/07/07	-	11/20/07	< 0.014
11/20/07	-	12/04/07	< 0.019
12/04/07	-	12/17/07	< 0.006
12/17/07	-	12/28/07	< 0.014

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-2 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Lacey Township Recreation Building (OCAI04)			
Collection Period			**I-131 (pCi/m^3)**
01/03/07	-	01/16/07	< 0.009
01/16/07	-	01/29/07	< 0.019
01/29/07	-	02/13/07	< 0.017
02/13/07	-	02/26/07	< 0.011
02/26/07	-	03/13/07	< 0.008
03/13/07	-	03/27/07	< 0.010
03/27/07	-	04/10/07	< 0.013
04/10/07	-	04/24/07	< 0.014
04/24/07	-	05/08/07	< 0.018
05/08/07	-	05/21/07	< 0.008
05/21/07	-	06/04/07	< 0.013
06/04/07	-	06/19/07	< 0.008
06/19/07	-	07/02/07	< 0.008
07/02/07	-	07/16/07	< 0.007
07/16/07	-	07/30/07	< 0.020
07/30/07	-	08/14/07	< 0.015
08/14/07	-	08/28/07	< 0.021
08/28/07	-	09/11/07	< 0.011
09/11/07	-	09/24/07	< 0.005
09/24/07	-	10/10/07	< 0.021
10/10/07	-	10/23/07	< 0.028
10/23/07	-	11/07/07	< 0.038
11/07/07	-	11/20/07	< 0.014
11/20/07	-	12/04/07	< 0.020
12/04/07	-	12/17/07	< 0.006
12/17/07	-	12/28/07	< 0.008

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-2 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

JCP&L Substation (OCAI05)

Collection Period			I-131 (pCi/m^3)	
01/03/07	-	01/16/07	<	0.004
01/16/07	-	01/29/07	<	0.013
01/29/07	-	02/13/07	<	0.006
02/13/07	-	02/26/07	<	0.010
02/26/07	-	03/13/07	<	0.005
03/13/07	-	03/27/07	<	0.003
03/27/07	-	04/10/07	<	0.008
04/10/07	-	04/24/07	<	0.009
04/24/07	-	05/08/07	<	0.007
05/08/07	-	05/21/07	<	0.004
05/21/07	-	06/04/07	<	0.009
06/04/07	-	06/19/07	<	0.005
06/19/07	-	07/02/07	<	0.005
07/02/07	-	07/16/07	<	0.008
07/16/07	-	07/30/07	<	0.007
07/30/07	-	08/14/07	<	0.012
08/14/07	-	08/28/07	<	0.009
08/28/07	-	09/11/07	<	0.006
09/11/07	-	09/24/07	<	0.003
09/24/07	-	10/10/07	<	0.013
10/10/07	-	10/23/07	<	0.014
10/23/07	-	11/07/07	<	0.013
11/07/07	-	11/20/07	<	0.009
11/20/07	-	12/04/07	<	0.012
12/04/07	-	12/17/07	<	0.004
12/17/07	-	12/28/07	<	0.009

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-3
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Fort Elfsborg Road (AIAI01)			
Collection Period			**I-131 (pCi/m^3)**
01/02/07	-	01/17/07	< 0.004
01/17/07	-	01/30/07	< 0.008
01/30/07	-	02/16/07	< 0.007
02/16/07	-	02/27/07	< 0.012
02/27/07	-	03/12/07	< 0.008
03/12/07	-	03/27/07	< 0.005
03/27/07	-	04/09/07	< 0.010
04/09/07	-	04/23/07	< 0.009
04/23/07	-	05/07/07	< 0.009
05/07/07	-	05/22/07	< 0.005
05/22/07	-	06/04/07	< 0.009
06/04/07	-	06/18/07	< 0.006
06/18/07	-	07/02/07	< 0.005
07/02/07	-	07/16/07	< 0.012
07/16/07	-	08/01/07	< 0.010
08/01/07	-	08/13/07	< 0.035
08/13/07	-	08/27/07	< 0.008
08/27/07	-	09/10/07	< 0.004
09/10/07	-	09/25/07	< 0.003
09/25/07	-	10/09/07	< 0.018
10/09/07	-	10/22/07	< 0.025
10/22/07	-	11/05/07	< 0.021
11/05/07	-	11/19/07	< 0.008
11/19/07	-	12/03/07	< 0.014
12/03/07	-	12/14/07	< 0.008
12/14/07	-	12/31/07	< 0.005

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-3 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Plant Access Road (AIAI02)			
Collection Period			**I-131 (pCi/m^3)**
01/02/07	-	01/17/07	< 0.002
01/17/07	-	01/30/07	< 0.007
01/30/07	-	02/16/07	< 0.007
02/16/07	-	02/27/07	< 0.012
02/27/07	-	03/12/07	< 0.008
03/12/07	-	03/27/07	< 0.005
03/27/07	-	04/09/07	< 0.010
04/09/07	-	04/23/07	< 0.009
04/23/07	-	05/07/07	< 0.013
05/07/07	-	05/22/07	< 0.005
05/22/07	-	06/04/07	< 0.007
06/04/07	-	06/18/07	< 0.006
06/18/07		07/02/07	< 0.005
07/02/07		07/16/07	< 0.012
07/16/07	-	08/01/07	< 0.009
08/01/07	-	08/13/07	< 0.033
08/13/07	-	08/27/07	< 0.012
08/27/07	-	09/10/07	< 0.003
09/10/07	-	09/25/07	< 0.003
09/25/07	-	10/09/07	< 0.017
10/09/07	-	10/22/07	< 0.013
10/22/07	-	11/05/07	< 0.019
11/05/07	-	11/19/07	< 0.009
11/19/07	-	12/03/07	< 0.010
12/03/07	-	12/14/07	< 0.008
12/14/07	-	12/31/07	< 0.005

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-3 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of I-131 in Bi-Weekly Air Iodine Samples
2007

Lower Alloways Creek School (AIAI03)			
Collection Period			**I-131 (pCi/m^3)**
01/02/07	-	01/17/07	< 0.007
01/17/07	-	01/30/07	< 0.010
01/30/07	-	02/13/07	< 0.011
02/13/07	-	02/27/07	< 0.044
02/27/07	-	03/12/07	< 0.010
03/12/07	-	03/27/07	< 0.007
03/27/07	-	04/09/07	< 0.012
04/09/07	-	04/23/07	< 0.008
04/23/07	-	05/07/07	< 0.017
05/07/07	-	05/22/07	< 0.007
05/22/07	-	06/04/07	< 0.012
06/04/07	-	06/18/07	< 0.008
06/18/07	-	07/02/07	< 0.007
07/02/07	-	07/16/07	< 0.016
07/16/07	-	08/01/07	< 0.014
08/01/07	-	08/13/07	< 0.048
08/13/07	-	08/27/07	< 0.018
08/27/07	-	09/10/07	< 0.006
09/10/07	-	09/25/07	< 0.002
09/25/07	-	10/09/07	< 0.027
10/09/07	-	10/22/07	< 0.038
10/22/07	-	11/05/07	< 0.031
11/05/07	-	11/19/07	< 0.014
11/19/07	-	12/03/07	< 0.020
12/03/07	-	12/14/07	< 0.007
12/14/07	-	12/31/07	< 0.008

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-4
NJDEP / BNE
Radiological Environmental Monitoring Program

Background
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

BNE Office (COAP01)

Collection Period			Particulate Gross Beta (pCi/m^3)		
01/02/07	-	01/17/07	0.011	±	0.0014
01/17/07	-	01/30/07	0.016	±	0.0019
01/30/07	-	02/13/07	0.020	±	0.0019
02/13/07	-	02/27/07	0.015	±	0.0017
02/27/07	-	03/12/07	0.017	±	0.0017
03/12/07	-	03/27/07	0.015	±	0.0016
03/27/07	-	04/09/07	0.010	±	0.0013
04/09/07	-	04/23/07	0.009	±	0.0012
04/23/07	-	05/07/07	0.013	±	0.0015
05/07/07	-	05/22/07	0.011	±	0.0014
05/22/07	-	06/04/07	0.015	±	0.0016
06/04/07	-	06/18/07	0.012	±	0.0014
06/18/07	-	07/02/07	0.015	±	0.0016
07/02/07	-	07/16/07	0.016	±	0.0016
07/16/07	-	08/01/07	0.015	±	0.0014
08/01/07	-	08/13/07	0.021	±	0.0018
08/13/07	-	08/27/07	0.013	±	0.0014
08/27/07	-	09/10/07	0.021	±	0.0017
09/10/07	-	09/25/07	0.013	±	0.0013
09/25/07	-	10/09/07	0.018	±	0.0016
10/09/07	-	10/22/07	0.017	±	0.0016
10/22/07	-	11/05/07	0.016	±	0.0015
11/05/07	-	11/19/07	0.019	±	0.0017
11/19/07	-	12/03/07	0.019	±	0.0016
12/03/07	-	12/14/07	0.017	±	0.0018
12/14/07	-	12/31/07	0.017	±	0.0014

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-4 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Background
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Brendan T. Byrne State Forest (COAP02)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/03/07	-	01/16/07	0.010	±	0.0014
01/16/07	-	01/29/07	0.016	±	0.0018
01/29/07	-	02/13/07	0.019	±	0.0017
02/13/07	-	02/26/07	0.015	±	0.0016
02/26/07	-	03/13/07	0.016	±	0.0015
03/13/07	-	03/27/07	0.014	±	0.0014
03/27/07	-	04/10/07	0.009	±	0.0012
04/10/07	-	04/24/07	0.010	±	0.0012
04/24/07	-	05/08/07	0.009	±	0.0011
05/08/07	-	05/21/07	0.012	±	0.0013
05/21/07	-	06/04/07	0.015	±	0.0014
06/04/07	-	06/19/07	0.012	±	0.0013
06/19/07	-	07/02/07	0.013	±	0.0014
07/02/07	-	07/16/07	0.016	±	0.0015
07/16/07	-	07/30/07	0.014	±	0.0014
07/30/07	-	08/14/07	0.018	±	0.0015
08/14/07	-	08/28/07	0.012	±	0.0013
08/28/07	-	09/11/07	0.018	±	0.0016
09/11/07	-	09/24/07	0.012	±	0.0014
09/24/07	-	10/10/07	0.015	±	0.0013
10/10/07	-	10/23/07	0.018	±	0.0016
10/23/07	-	11/07/07	0.016	±	0.0015
11/07/07	-	11/20/07	0.017	±	0.0015
11/20/07	-	12/04/07	0.020	±	0.0016
12/04/07	-	12/17/07	0.020	±	0.0017
12/17/07	-	12/28/07	0.022	±	0.0019

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-5
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Waretown Municipal Building (OCAP01)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/03/07	-	01/16/07	0.011	±	0.0014
01/16/07	-	01/29/07	0.014	±	0.0017
01/29/07	-	02/13/07	0.021	±	0.0017
02/13/07	-	02/26/07	0.015	±	0.0016
02/26/07	-	03/13/07	0.014	±	0.0014
03/13/07	-	03/27/07	0.014	±	0.0015
03/27/07	-	04/10/07	0.010	±	0.0013
04/10/07	-	04/24/07	0.010	±	0.0012
04/24/07	-	05/08/07	0.010	±	0.0013
05/08/07	-	05/21/07	0.010	±	0.0013
05/21/07	-	06/04/07	0.014	±	0.0015
06/04/07	-	06/19/07	0.012	±	0.0013
06/19/07	-	07/02/07	0.014	±	0.0015
07/02/07	-	07/16/07	0.016	±	0.0016
07/16/07	-	07/30/07	0.013	±	0.0014
07/30/07	-	08/14/07	0.019	±	0.0016
08/14/07	-	08/28/07	0.012	±	0.0014
08/28/07	-	09/11/07	0.017	±	0.0017
09/11/07	-	09/24/07	0.013	±	0.0015
09/24/07	-	10/10/07	0.015	±	0.0014
10/10/07	-	10/23/07	0.018	±	0.0017
10/23/07	-	11/07/07	0.016	±	0.0015
11/07/07	-	11/20/07	0.019	±	0.0018
11/20/07	-	12/04/07	0.019	±	0.0017
12/04/07	-	12/17/07	0.013	±	0.0015
12/17/07	-	12/28/07	0.020	±	0.0018

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-5 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Sands Point Harbor (OCAP02)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/03/07	-	01/16/07	0.013	±	0.0015
01/16/07	-	01/29/07	0.015	±	0.0018
01/29/07	-	02/13/07	0.020	±	0.0017
02/13/07	-	02/26/07	0.015	±	0.0016
02/26/07	-	03/13/07	0.016	±	0.0015
03/13/07	-	03/27/07	0.013	±	0.0015
03/27/07	-	04/10/07	0.010	±	0.0013
04/10/07	-	04/24/07	0.010	±	0.0013
04/24/07	-	05/08/07	0.008	±	0.0012
05/08/07	-	05/21/07	0.010	±	0.0028
05/21/07	-	06/04/07	0.011	±	0.0016
06/04/07	-	06/19/07	0.011	±	0.0014
06/19/07	-	07/02/07	0.014	±	0.0016
07/02/07	-	07/16/07	0.015	±	0.0016
07/16/07		07/30/07	0.013	±	0.0015
07/30/07		08/14/07	0.021	±	0.0018
08/14/07	-	08/28/07	0.011	±	0.0014
08/28/07	-	09/11/07	0.017	±	0.0018
09/11/07	-	09/24/07	0.013	±	0.0016
09/24/07	-	10/10/07	0.013	±	0.0014
10/10/07	-	10/23/07	0.020	±	0.0019
10/23/07	-	11/07/07	0.015	±	0.0016
11/07/07	-	11/20/07	0.019	±	0.0019
11/20/07	-	12/04/07	0.021	±	0.0019
12/04/07	-	12/17/07	0.020	±	0.0019
12/17/07	-	12/28/07	0.021	±	0.0021

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-5 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Forked River Marina (OCAP03)

Collection Period			Particulate Gross Beta (pCi/m^3)		
01/03/07	-	01/16/07	0.010	±	0.0010
01/16/07	-	01/29/07	0.014	±	0.0012
01/29/07	-	02/13/07	0.017	±	0.0012
02/13/07	-	02/26/07	0.012	±	0.0011
02/26/07	-	03/13/07	0.015	±	0.0011
03/13/07	-	03/27/07	0.011	±	0.0010
03/27/07	-	04/10/07	0.008	±	0.0009
04/10/07	-	04/24/07	0.008	±	0.0009
04/24/07	-	05/08/07	0.008	±	0.0009
05/08/07	-	05/21/07	0.009	±	0.0009
05/21/07	-	06/04/07	0.013	±	0.0010
06/04/07	-	06/19/07	0.011	±	0.0009
06/19/07	-	07/02/07	0.006	±	0.0007
07/02/07	-	07/17/07	0.014	±	0.0010
07/17/07	-	07/30/07	0.012	±	0.0010
07/30/07	-	08/14/07	0.016	±	0.0011
08/14/07	-	08/28/07	0.010	±	0.0009
08/28/07	-	09/11/07	0.017	±	0.0016
09/11/07	-	09/24/07	0.012	±	0.0015
09/24/07	-	10/10/07	0.014	±	0.0014
10/10/07	-	10/23/07	0.018	±	0.0018
10/23/07	-	11/07/07	0.017	±	0.0016
11/07/07	-	11/20/07	0.019	±	0.0018
11/20/07	-	12/04/07	0.019	±	0.0017
12/04/07	-	12/17/07	0.015	±	0.0016
12/17/07	-	12/28/07	0.022	±	0.0020

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-5 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Lacey Twp. Recreation Building (OCAP04)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/03/07	-	01/16/07	0.012	±	0.0016
01/16/07	-	01/29/07	0.014	±	0.0019
01/29/07	-	02/13/07	0.018	±	0.0018
02/13/07	-	02/26/07	0.016	±	0.0018
02/26/07	-	03/13/07	0.017	±	0.0017
03/13/07	-	03/27/07	0.015	±	0.0018
03/27/07	-	04/10/07	0.009	±	0.0014
04/10/07	-	04/24/07	0.011	±	0.0015
04/24/07	-	05/08/07	0.009	±	0.0013
05/08/07	-	05/21/07	0.011	±	0.0016
05/21/07	-	06/04/07	0.015	±	0.0017
06/04/07	-	06/19/07	0.012	±	0.0015
06/19/07	-	07/02/07	0.005	±	0.0012
07/02/07	-	07/17/07	0.015	±	0.0016
07/17/07	-	07/30/07	0.016	±	0.0018
07/30/07	-	08/14/07	0.021	±	0.0018
08/14/07	-	08/28/07	0.012	±	0.0015
08/28/07	-	09/11/07	0.005	±	0.0012
09/11/07	-	09/24/07	0.011	±	0.0014
09/24/07	-	10/10/07	0.013	±	0.0014
10/10/07	-	10/23/07	0.018	±	0.0018
10/23/07	-	11/07/07	0.016	±	0.0016
11/07/07	-	11/20/07	0.018	±	0.0018
11/20/07	-	12/04/07	0.019	±	0.0017
12/04/07	-	12/17/07	0.017	±	0.0018
12/17/07	-	12/28/07	0.022	±	0.0021

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-5 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

JCP&L Substation (OCAP05)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/03/07	-	01/16/07	0.010	±	0.0012
01/16/07	-	01/29/07	0.014	±	0.0015
01/29/07	-	02/13/07	0.019	±	0.0015
02/13/07	-	02/26/07	0.014	±	0.0015
02/26/07	-	03/13/07	0.015	±	0.0013
03/13/07	-	03/27/07	0.013	±	0.0013
03/27/07	-	04/10/07	0.009	±	0.0011
04/10/07	-	04/24/07	0.010	±	0.0011
04/24/07	-	05/08/07	0.009	±	0.0010
05/08/07	-	05/21/07	0.010	±	0.0012
05/21/07	-	06/04/07	0.013	±	0.0012
06/04/07	-	06/19/07	0.010	±	0.0011
06/19/07	-	07/02/07	0.012	±	0.0013
07/02/07	-	07/17/07	0.015	±	0.0013
07/17/07	-	07/30/07	0.014	±	0.0013
07/30/07	-	08/14/07	0.016	±	0.0013
08/14/07	-	08/28/07	0.011	±	0.0012
08/28/07	-	09/11/07	0.016	±	0.0013
09/11/07	-	09/24/07	0.012	±	0.0011
09/24/07	-	10/10/07	0.014	±	0.0011
10/10/07	-	10/23/07	0.016	±	0.0013
10/23/07	-	11/07/07	0.014	±	0.0011
11/07/07	-	11/20/07	0.017	±	0.0013
11/20/07	-	12/04/07	0.016	±	0.0013
12/04/07	-	12/17/07	0.011	±	0.0011
12/17/07	-	12/28/07	0.019	±	0.0015

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-5 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gross Beta in Weekly* Air Particulate Samples
2007

Finninger Farm, OC Dredge Site (OCAP06)

Collection Period			Particulate Gross Beta (pCi/m^3)		
01/03/07	-	01/10/07	0.015	±	0.0041
01/10/07	-	01/17/07	0.018	±	0.0041
01/17/07	-	01/24/07	0.019	±	0.0051
01/24/07	-	01/31/07	0.027	±	0.0045
01/31/07	-	02/07/07	0.031	±	0.0051
02/07/07	-	02/15/07	0.020	±	0.0040
02/15/07	-	02/21/07	0.028	±	0.0052
02/21/07	-	02/28/07	0.018	±	0.0042
02/28/07	-	03/06/07	0.023	±	0.0051
03/06/07	-	03/14/07	0.032	±	0.0047
03/14/07	-	03/20/07	0.022	±	0.0049
03/20/07	-	03/28/07	0.018	±	0.0039
03/28/07	-	04/04/07	0.020	±	0.0041
04/04/07	-	04/10/07	0.018	±	0.0045
04/10/07	-	04/18/07	0.013	±	0.0032
04/18/07	-	04/25/07	0.023	±	0.0043
04/25/07	-	05/02/07	0.016	±	0.0039
05/02/07	-	05/09/07	0.014	±	0.0034
05/09/07	-	05/16/07	0.022	±	0.0043
05/16/07	-	05/23/07	0.018	±	0.0039
05/23/07	-	05/30/07	0.027	±	0.0047
05/30/07	-	06/06/07	0.023	±	0.0045
06/06/07	-	06/13/07	0.023	±	0.0043
06/13/07	-	06/20/07	No Data**		No Data**
06/20/07	-	06/27/07	0.021	±	0.0043
06/27/07	-	07/03/07	0.019	±	0.0046

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

* Air particulate samples are collected by the licensee on a weekly basis

** No sample results due to maintenance issues with equipment

Table B-5 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gross Beta in Weekly* Air Particulate Samples
2007

Finninger Farm, OC Dredge Site (OCAP06)
(continued)

Collection Period			Particulate Gross Beta (pCi/m^3)		
07/03/07	-	07/11/07	0.023	±	0.0041
07/11/07	-	07/18/07	0.027	±	0.0048
07/18/07	-	07/25/07	0.021	±	0.0048
07/25/07	-	08/01/07	0.006	±	0.0012
08/01/07	-	08/08/07	0.036	±	0.0051
08/08/07	-	08/15/07	0.020	±	0.0039
08/15/07	-	08/22/07	0.021	±	0.0042
08/22/07	-	08/29/07	0.021	±	0.0041
08/29/07	-	09/06/07	0.022	±	0.0042
09/06/07	-	09/12/07	0.017	±	0.0039
09/12/07	-	09/19/07	0.018	±	0.0041
09/19/07	-	09/26/07	0.023	±	0.0044
09/26/07	-	10/03/07	0.028	±	0.0047
10/03/07	-	10/10/07	0.021	±	0.0043
10/10/07	-	10/17/07	0.022	±	0.0043
10/17/07	-	10/24/07	0.040	±	0.0055
10/24/07	-	10/30/07	0.023	±	0.0044
10/30/07		11/07/07	0.026	±	0.0046
11/07/07	-	11/14/07	0.027	±	0.0053
11/14/07	-	11/20/07	0.029	±	0.0055
11/20/07	-	11/28/07	0.030	±	0.0043
11/28/07	-	12/05/07	0.025	±	0.0045
12/05/07	-	12/12/07	0.024	±	0.0045
12/12/07	-	12/18/07	0.023	±	0.0050
12/18/07	-	12/26/07	0.024	±	0.0040
12/26/07	-	01/02/08	0.029	±	0.0046

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

* Air particulate samples are collected by the licensee on a weekly basis

Table B-6
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Fort Elfsborg Road (AIAP01)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/02/07	-	01/17/07	0.010	±	0.0011
01/17/07	-	01/30/07	0.016	±	0.0016
01/30/07	-	02/16/07	0.020	±	0.0015
02/16/07	-	02/27/07	0.016	±	0.0017
02/27/07	-	03/12/07	0.016	±	0.0015
03/12/07	-	03/27/07	0.015	±	0.0014
03/27/07	-	04/09/07	0.011	±	0.0012
04/09/07	-	04/23/07	0.010	±	0.0011
04/23/07	-	05/07/07	0.007	±	0.0010
05/07/07	-	05/22/07	0.012	±	0.0012
05/22/07	-	06/04/07	0.016	±	0.0015
06/04/07	-	06/18/07	0.014	±	0.0013
06/18/07	-	07/02/07	0.014	±	0.0013
07/02/07	-	07/16/07	0.016	±	0.0014
07/16/07	-	08/01/07	0.014	±	0.0012
08/01/07	-	08/13/07	0.020	±	0.0016
08/13/07	-	08/27/07	0.013	±	0.0012
08/27/07	-	09/10/07	0.018	±	0.0015
09/10/07	-	09/25/07	0.013	±	0.0012
09/25/07	-	10/09/07	0.013	±	0.0012
10/09/07	-	10/22/07	0.018	±	0.0014
10/22/07	-	11/05/07	0.016	±	0.0013
11/05/07	-	11/19/07	0.018	±	0.0014
11/19/07	-	12/03/07	0.018	±	0.0014
12/03/07	-	12/14/07	0.014	±	0.0014
12/14/07	-	12/31/07	0.017	±	0.0012

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-6 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Plant Access Road (AIAP02)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/02/07	-	01/17/07	0.011	±	0.0011
01/17/07	-	01/30/07	0.016	±	0.0016
01/30/07	-	02/16/07	0.018	±	0.0014
02/16/07	-	02/27/07	0.015	±	0.0016
02/27/07	-	03/12/07	0.017	±	0.0015
03/12/07	-	03/27/07	0.014	±	0.0013
03/27/07	-	04/09/07	0.012	±	0.0013
04/09/07	-	04/23/07	0.010	±	0.0011
04/23/07	-	05/07/07	0.011	±	0.0012
05/07/07	-	05/22/07	0.011	±	0.0011
05/22/07	-	06/04/07	0.016	±	0.0015
06/04/07	-	06/18/07	0.011	±	0.0012
06/18/07	-	07/02/07	0.016	±	0.0014
07/02/07	-	07/16/07	0.016	±	0.0014
07/16/07	-	08/01/07	0.013	±	0.0011
08/01/07	-	08/13/07	0.022	±	0.0016
08/13/07	-	08/27/07	0.012	±	0.0011
08/27/07	-	09/10/07	0.019	±	0.0015
09/10/07	-	09/25/07	0.013	±	0.0012
09/25/07	-	10/09/07	0.016	±	0.0013
10/09/07	-	10/22/07	0.018	±	0.0014
10/22/07	-	11/05/07	0.016	±	0.0013
11/05/07	-	11/19/07	0.018	±	0.0014
11/19/07	-	12/03/07	0.019	±	0.0014
12/03/07	-	12/14/07	0.016	±	0.0014
12/14/07	-	12/31/07	0.017	±	0.0012

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-6 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gross Beta in Bi-Weekly Air Particulate Samples
2007

Lower Alloways Creek School (AIAP03)					
Collection Period			**Particulate Gross Beta (pCi/m^3)**		
01/02/07	-	01/17/07	0.011	±	0.0015
01/17/07	-	01/30/07	0.015	±	0.0019
01/30/07	-	02/16/07	0.018	±	0.0016
02/16/07	-	02/27/07	0.023	±	0.0041
02/27/07	-	03/12/07	0.018	±	0.0018
03/12/07	-	03/27/07	0.015	±	0.0016
03/27/07	-	04/09/07	0.012	±	0.0015
04/09/07	-	04/23/07	0.010	±	0.0013
04/23/07	-	05/07/07	0.011	±	0.0014
05/07/07	-	05/22/07	0.010	±	0.0013
05/22/07	-	06/04/07	0.015	±	0.0017
06/04/07	-	06/18/07	0.013	±	0.0015
06/18/07	-	07/02/07	0.015	±	0.0016
07/02/07	-	07/16/07	0.017	±	0.0017
07/16/07	-	08/01/07	0.015	±	0.0015
08/01/07	-	08/13/07	0.022	±	0.0020
08/13/07	-	08/27/07	0.013	±	0.0015
08/27/07	-	09/10/07	0.020	±	0.0018
09/10/07	-	09/25/07	0.014	±	0.0015
09/25/07	-	10/09/07	0.018	±	0.0017
10/09/07	-	10/22/07	0.018	±	0.0018
10/22/07	-	11/05/07	0.018	±	0.0017
11/05/07	-	11/19/07	0.019	±	0.0018
11/19/07	-	12/03/07	0.020	±	0.0018
12/03/07	-	12/14/07	0.018	±	0.0020
12/14/07	-	12/31/07	0.020	±	0.0016

Results in picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Table B-7
NJDEP / BNE
Radiological Environmental Monitoring Program

Background
Concentrations of Gamma Emitters and Strontium-90 in
Quarterly Composite Air Samples
2007

BNE Office (COAP01)							
Collection Period			**Co-60**	**Cs-134**	**Cs-137**	**Be-7**	**Sr-90**
01/02/07	-	03/27/07	< 1.74	< 1.03	< 1.21	65 ± 15	< 1.69
03/27/07	-	07/02/07	< 1.50	< 1.71	< 1.53	100 ± 28	< 1.51
07/02/07	-	09/25/07	< 1.88	< 2.10	< 1.73	106 ± 45	< 1.07
09/25/07	-	12/31/07	< 1.09	< 1.29	< 1.44	60 ± 15	< 1.53

Brendan T. Byrne State Forest (COAP02)							
Collection Period			**Co-60**	**Cs-134**	**Cs-137**	**Be-7**	**Sr-90**
01/03/07	-	03/27/07	< 1.69	< 1.03	< 1.06	83 ± 18	< 1.38
03/27/07	-	07/02/07	< 1.00	< 1.32	< 0.89	62 ± 16	< 1.57
07/02/07	-	09/24/07	< 1.80	< 1.90	< 1.47	75 ± 42	< 0.88
09/24/07	-	12/28/07	< 1.74	< 1.46	< 1.22	63 ± 17	< 1.44

Results in 10^{-3} picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Beryllium-7 (Be-7) is a naturally occurring radionuclide found in the environment.

Table B-8
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gamma Emitters and Strontium-90 in
Quarterly Composite Air Samples
2007

Waretown Municipal Building (OCAP01)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/03/07	-	03/27/07	< 1.00	< 1.23	< 1.40	79 ± 15	< 1.67
03/27/07	-	07/02/07	< 1.18	< 1.17	< 0.99	61 ± 17	< 1.67
07/02/07	-	09/24/07	< 1.67	< 2.33	< 1.65	60 ± 40	< 1.05
09/24/07	-	12/28/07	< 1.09	< 1.31	< 1.36	60 ± 14	< 1.55

Sands Point Harbor (OCAP02)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/03/07	-	03/27/07	< 1.72	< 1.19	< 1.20	67 ± 15	< 1.53
03/27/07	-	07/02/07	< 1.17	< 2.08	< 1.98	51 ± 20	< 1.73
07/02/07	-	09/24/07	< 1.99	< 1.68	< 1.19	90 ± 28	< 1.19
09/24/07	-	12/28/07	< 1.64	< 1.26	< 1.23	70 ± 17	< 1.72

Forked River Marina (OCAP03)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/03/07	-	03/27/07	< 1.10	< 0.57	< 0.74	61 ± 11	< 0.99
03/27/07	-	07/02/07	< 0.65	< 0.56	< 0.52	74 ± 13	< 0.71
07/02/07	-	09/24/07	< 1.42	< 1.56	< 1.25	61 ± 24	< 0.64
09/24/07	-	12/28/07	< 1.91	< 1.67	< 1.32	59 ± 17	< 1.49

Lacey Twp. Recreation Building (OCAP04)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/03/07	-	03/27/07	< 1.94	< 1.38	< 1.51	74 ± 17	< 2.02
03/27/07	-	07/02/07	< 1.42	< 1.54	< 1.07	69 ± 18	< 1.46
07/02/07	-	09/24/07	< 2.57	< 2.80	< 2.34	75 ± 45	< 1.09
09/24/07	-	12/28/07	< 2.19	< 1.53	< 1.52	60 ± 21	< 1.49

Jersey Central Power & Light Substation (OCAP05)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/03/07	-	03/27/07	< 1.10	< 1.03	< 0.90	73 ± 14	< 1.28
03/27/07	-	07/02/07	< 0.88	< 1.40	< 1.10	59 ± 16	< 1.04
07/02/07	-	09/24/07	< 0.82	< 1.04	< 0.88	77 ± 18	< 0.75
09/24/07	-	12/28/07	< 0.67	< 0.53	< 0.56	73 ± 11	< 1.10

Finninger Farm, OC Dredge Site (OCAP06)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/03/07	-	04/04/07	< 3.18	< 2.44	< 2.63	71 ± 21	< 3.55
04/04/07	-	07/03/07	< 2.62	< 3.06	< 2.69	59 ± 28	< 3.49
07/03/07	-	10/03/07	< 1.34	< 1.83	< 1.88	67 ± 32	< 1.79
10/03/07	-	01/02/08	< 2.91	< 2.51	< 2.19	43 ± 23	< 3.76

Results in 10^{-3} picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations
Beryllium-7 (Be-7) is a naturally occurring radionuclide found in the environment.

Table B-9
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters and Strontium-90 in
Quarterly Composite Air Samples
2007

Fort Elfsborg Road (AIAP01)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/02/07	-	03/27/07	< 1.13	< 1.30	< 0.76	66 ± 18	< 1.44
03/27/07	-	07/02/07	< 0.70	< 1.00	< 0.93	70 ± 14	< 1.05
07/02/07	-	09/25/07	< 0.81	< 2.05	< 1.21	75 ± 24	< 0.85
09/25/07	-	12/31/07	< 0.81	< 0.62	< 0.45	60 ± 10	< 1.06

Plant Access Road (AIAP02)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/02/07	-	03/27/07	< 1.39	< 0.97	< 0.75	77 ± 13	< 1.41
03/27/07	-	07/02/07	< 0.84	< 1.11	< 1.01	59 ± 17	< 1.18
07/02/07	-	09/25/07	< 1.22	< 1.45	< 1.12	98 ± 40	< 0.69
09/25/07	-	12/31/07	< 0.78	< 0.75	< 1.03	69 ± 12	< 1.18

Lower Alloways Creek School (AIAP03)

Collection Period			Co-60	Cs-134	Cs-137	Be-7	Sr-90
01/02/07	-	03/27/07	< 1.51	< 1.20	< 1.59	93 ± 21	< 1.50
03/27/07	-	07/02/07	< 1.36	< 1.86	< 1.48	99 ± 23	< 1.74
07/02/07	-	09/25/07	< 1.65	< 2.36	< 1.35	69 ± 25	< 1.18
09/25/07	-	12/31/07	< 0.98	< 1.02	< 0.94	48 ± 12	< 1.70

Results in 10^{-3} picoCuries per cubic meter (pCi/m^3) +/- 2 Standard Deviations

Beryllium-7 (Be-7) is a naturally occurring radionuclide found in the environment.

Table B-10
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gamma Emitters and Strontium-90 in Fish/Shellfish Samples
2007

Stouts Creek (OCFS01)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**	**Sr-90**
04/24/07 – Clams	< 28	< 22	< 23	< 24	1338 ± 344	< 44
10/08/07 – Clams	< 23	< 20	< 21	< 24	763 ± 271	< 50

East of Site – Barnegat Bay (OCFS02)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**	**Sr-90**
04/24/07 – Clams	< 18	< 15	< 17	< 21	1083 ± 337	< 38
10/08/07 – Clams	< 23	< 28	< 22	< 23	1443 ± 327	No Data**

Great Bay / Little Egg Harbor (OCFS03)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**	**Sr-90**
04/18/07 – Clams	< 24	< 19	< 19	< 20	1200 ± 327	< 33
10/08/07 – Clams	< 44	< 26	< 28	< 28	822 ± 300	< 38
10/09/07 – Fish*	< 36	< 33	< 28	< 34	3516 ± 572	< 13

Results in picoCuries per kilogram – WET (pCi/kg) +/- 2 Standard Deviations

Potassium-40 (K-40) is a naturally occurring radionuclide found in the environment.

***** Fish consist of various species including Striped Bass, Bluefish, Red Drum and Black Drum

** No Data indicates no Strontium-89/90 analysis was performed due to limited sample size

Table B-11
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters and Strontium-90 in Fish/Shellfish Samples
2007

Onsite Surface Water Inlet Building (AIFS01)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**	**Sr-90**
05/30/07 – Fish*	< 50	< 35	< 42	< 52	3255 ± 745	< 16
09/25/07 - Fish**	< 52	< 49	< 32	< 39	3143 ± 653	< 22
07/27/07 - Crab	< 65	< 76	< 55	< 65	2892 ± 879	< 40
08/31/07 - Crab	< 34	< 36	< 28	< 31	1272 ± 392	< 71

Delaware River – West Bank Upstream (AIFS02)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**	**Sr-90**
05/31/07 – Fish***	< 37	< 43	< 42	< 45	3428 ± 771	< 29
09/18/07 – Fish****	< 74	< 55	< 42	< 57	3570 ± 862	< 17
07/27/07 – Crab	< 74	< 59	< 66	< 105	2993 ± 1131	< 35
08/30/07 – Crab	< 16	< 18	< 14	< 16	1666 ± 232	< 87

Results in picoCuries per kilogram – WET (pCi/kg) +/- 2 Standard Deviations

Potassium-40 (K-40) is a naturally occurring radionuclide found in the environment.

* Fish consist of various species including Channel Catfish, White Perch, Bluefish, and Striped Bass

** Fish consist of various species including White Catfish, White Perch, Bluefish and Striped Bass

*** Fish consist of various species including Channel Catfish, Bluefish, Striped Bass, American Eel, and Carp

**** Fish consist of various species including Channel Catfish, Bluefish and Striped Bass

Table B-12
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gamma Emitters in Aquatic Sediment Samples
2007

Barnegat Bay (OCAQ01)						
Collection Date	**Be-7**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
04/24/07	< 233	< 22	< 24	< 23	< 27	6710 ± 514
10/08/07	< 211	< 21	< 26	< 19	< 22	1389 ± 314

Oyster Creek Discharge Canal (OCAQ02)						
Collection Date	**Be-7**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
04/18/07	< 154	< 18	< 17	< 17	< 20	791 ± 299
10/18/07	< 237	< 24	< 19	< 26	< 27	1006 ± 282

Great Bay / Little Egg Harbor (OCAQ03)						
Collection Date	**Be-7**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
04/26/07	< 274	< 28	< 28	< 26	< 32	15350 ± 919
10/18/07	< 220	< 25	< 24	< 21	< 25	13260 ± 640

Stouts Creek (OCAQ04)						
Collection Date	**Be-7**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
04/24/07	< 103	< 12	< 11	< 13	< 12	560 ± 175
10/08/07	< 258	< 29	< 21	< 24	< 26	2330 ± 445

Results in picoCuries per kilogram – DRY (pCi/kg) +/- 2 Standard Deviations

Potassium-40 (K-40) and Beryillium-7 (Be-7) are naturally occurring radionuclides found in the environment.

Table B-13
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters in Aquatic Sediment Samples
2007

Onsite Observation Building (AIAQ01)

Collection Date	Be-7	Co-58	Co-60	Cs-134	Cs-137	K-40
06/25/07	< 134	< 13	< 11	< 12	< 13	2137 ± 227

Surface Water Inlet Building (AIAQ02)

Collection Date	Be-7	Co-58	Co-60	Cs-134	Cs-137	K-40
06/27/07	< 157	< 17	< 15	< 14	< 17	7767 ± 344
10/17/07	< 227	< 25	< 23	< 25	< 26	6678 ± 507

Onsite – Cooling Tower Blowdown Discharge Line (AIAQ03)

Collection Date	Be-7	Co-58	Co-60	Cs-134	Cs-137	K-40
06/27/07	< 149	< 15	< 14	< 13	< 17	8458 ± 481
10/17/07	< 231	< 26	< 25	< 22	< 27	7596 ± 548

Onsite – South Storm Drain Discharge Line (AIAQ04)

Collection Date	Be-7	Co-58	Co-60	Cs-134	Cs-137	K-40
06/27/07	< 147	< 16	< 16	< 13	< 15	6983 ± 356
10/17/07	< 268	< 29	< 29	< 24	< 33	6201 ± 550

West Bank of Delaware River - Upstream (AIAQ05)

Collection Date	Be-7	Co-58	Co-60	Cs-134	Cs-137	K-40
06/27/07	< 128	< 13	< 13	< 11	< 13	7289 ± 369
10/17/07	< 180	< 22	< 20	< 17	< 21	17620 ± 529

Results in picoCuries per kilogram – DRY (pCi/kg) +/- 2 Standard Deviations

Potassium-40 (K-40) and Beryillium-7 (Be-7) are naturally occurring radionuclides found in the environment.

Table B-14
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gamma Emitters in Vegetable Samples
2007

Oyster Creek Onsite Garden (OCVE01)

Sample	Collection Date	Co-58	Co-60	Cs-134	Cs-137	K-40
Cabbage	07/25/07	< 15	< 16	< 16	< 19	2537 ± 299
Collards	07/25/07	< 18	< 22	< 22	< 24	2370 ± 434
Kohlrabi	07/25/07	< 28	< 30	< 27	< 30	2842 ± 501
Cabbage	08/22/07	< 23	< 22	< 26	< 27	2045 ± 410
Collards	08/22/07	< 26	< 26	< 25	< 27	2094 ± 406
Kohlrabi	08/22/07	< 27	< 27	< 28	< 31	1577 ± 488
Cabbage	09/11/07	< 27	< 30	< 24	< 33	1581 ± 484
Collards	09/11/07	< 25	< 28	< 31	< 36	2358 ± 531
Cabbage	10/17/07	< 9	< 7	< 7	< 7	2992 ± 153
Collards	10/17/07	< 26	< 21	< 20	< 23	3216 ± 410

Private Farm – NW sector (OCVE02)

Sample	Collection Date	Co-58	Co-60	Cs-134	Cs-137	K-40
Cabbage	07/25/07	< 21	< 22	< 20	< 25	3158 ± 423
Collards	07/25/07	< 14	< 18	< 15	< 16	3537 ± 359
Kohlrabi	07/25/07	< 18	< 18	< 17	< 20	3728 ± 387
Cabbage	08/22/07	< 18	< 24	< 19	< 23	1719 ± 329
Collards	08/22/07	< 25	< 23	< 20	< 25	3878 ± 489
Kohlrabi	08/22/07	< 24	< 22	< 21	< 25	3212 ± 462
Cabbage	09/11/07	< 25	< 18	< 23	< 30	2534 ± 501
Collards	09/11/07	< 19	< 21	< 18	< 20	3650 ± 410
Kohlrabi	09/11/07	< 31	< 40	< 30	< 38	3789 ± 672
Cabbage	10/17/07	< 3	< 4	< 2	< 3	2057 ± 97
Collards	10/17/07	< 4	< 3	< 3	< 3	4004 ± 131
Kohlrabi	10/17/07	< 3	< 3	< 2	< 3	3582 ± 110

Oyster Creek Onsite Garden (OCVE03)*

Sample	Collection Date	Co-58	Co-60	Cs-134	Cs-137	K-40
Cabbage	07/25/07	< 8	< 10	< 9	< 10	2180 ± 292
Collards	07/25/07	< 27	< 28	< 28	< 31	3145 ± 484
Cabbage	08/22/07	< 21	< 22	< 22	< 22	2143 ± 391
Collards	08/22/07	< 30	< 34	< 39	< 44	1818 ± 584

Results in picoCuries per kilogram – WET (pCi/kg) +/- 2 Standard Deviations
Potassium-40 (K-40) is a naturally occurring radionuclide found in the environment.

Vegetables not available at OCVE03 in September and October 2007 (low yield)

Table B-15
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters in Vegetable Samples
2007

Private Farm - NNE (AIVE04)						
Sample	**Collection Date**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
Peppers	07/17/07	< 2	< 2	< 2	< 2	1875 ± 59

Private Farm - NNE (AIVE07)						
Sample	**Collection Date**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
Cabbage	07/17/07	< 4	< 4	< 3	< 4	1847 ± 88
Tomato	07/17/07	< 5	< 5	< 4	< 5	2392 ± 109
Peppers	07/17/07	< 7	< 8	< 6	< 7	1758 ± 131
Corn	07/17/07	< 4	< 4	< 4	< 4	2308 ± 100

Private Farm - NE (AIVE08)						
Sample	**Collection Date**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
Cabbage	07/17/07	< 4	< 3	< 3	< 4	2673 ± 87

Private Farm - NNE (AIVE09)						
Sample	**Collection Date**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
Tomato	07/17/07	< 5	< 5	< 4	< 5	2188 ± 100
Corn	07/17/07	< 7	< 7	< 6	< 6	2225 ± 150

Private Farm - NE (AIVE10)						
Sample	**Collection Date**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
Tomato	07/17/07	< 8	< 8	< 7	< 8	1991 ± 157

Results in picoCuries per kilogram – WET (pCi/kg) +/- 2 Standard Deviations

Potassium-40 (K-40) is a naturally occurring radionuclide found in the environment.

Table B-15 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters in Vegetable Samples
2007

Private Roadside Stand – NE (AIVE11)						
Sample	**Collection Date**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
Cabbage	07/17/07	< 6	< 5	< 6	< 6	2043 ± 125

Onsite - N (AIVE12)						
Sample	**Collection Date**	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**K-40**
Cabbage*	12/14/07	< 18	< 17	< 17	< 20	3893 ± 354
Cabbage	12/14/07	< 5	< 5	< 4	< 5	4175 ± 142
Cabbage	12/14/07	< 7	< 7	< 6	< 8	4842 ± 202
Cabbage	12/14/07	< 7	< 8	< 6	< 7	3902 ± 184

* Higher MDC for Co-58, Co-60, and Cs-137, along with uncertainty for K-40 are a result of reduced sample size (~1.0 kilogram versus 1.5 kilogram of cabbage leaves)

Table B-16
NJDEP / BNE
Radiological Environmental Monitoring Program

Background
Concentrations of Gamma Emitters and Strontium-90 in Milk Samples
2007

State of New Jersey Dairy Farm (COMI01)				
Collection Date	**Cs-137**	**I-131**	**K-40**	**Sr-90**
02/13/07	< 6.10	< 0.92	1245±133	< 0.46
05/09/07	< 4.78	< 0.79	1284±122	< 0.23
08/14/07	< 8.02	< 0.49	1297±205	1.39 ± 0.51
11/05/07	< 3.20	< 0.86	1297±71	< 0.47

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

Potassium-40 (K-40) is a naturally occurring radionuclide found in the environment.

Table B-17
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters and Strontium-90 in Milk Samples
2007

Private Farm - ENE (AIMI01)				
Collection Date	**Cs-137**	**I-131**	**K-40**	**Sr-90**
01/02/07	< 3.63	< 0.82	1258±90	0.85 ± 0.48
02/06/07	< 2.83	< 0.83	1238±127	< 0.50
03/06/07	< 5.88	< 0.35	1076±139	1.99 ± 0.83
04/02/07	< 8.79	< 0.61	1111±175	< 0.71
05/09/07	< 6.54	< 0.52	1329±146	< 0.23
06/04/07	< 4.69	< 0.84	1135±115	0.99 ± 0.21
07/10/07	< 6.56	< 0.53	1276±152	< 0.83
08/07/07	< 4.75	< 0.55	1280±116	1.33 ± 0.57
09/03/07	< 4.12	< 0.36	1121±101	< 0.56
10/01/07	< 5.33	< 0.87	1265±116	1.16 ± 0.71
11/05/07	< 2.62	< 0.65	1265±60	< 0.23
12/14/07	< 3.27	< 0.78	1225±72	< 0.97

Private Farm – NE (AIMI02)				
Collection Date	**Cs-137**	**I-131**	**K-40**	**Sr-90**
01/02/07	< 3.36	< 0.72	1293± 82	< 0.89
02/06/07	< 5.53	< 0.65	1126±126	1.02 ± 0.34
03/06/07	< 8.35	< 0.34	1149±181	< 0.75
04/02/07	< 6.61	< 0.38	1237±146	0.81 ± 0.53
05/09/07	< 4.70	< 0.53	1161±119	< 0.21
06/04/07	< 6.08	< 0.71	1170±133	< 0.22
07/10/07	< 6.63	< 0.55	1135±157	0.80 ± 0.51
08/07/07	< 3.87	< 0.59	1298 ± 92	1.83 ± 0.60
09/03/07	< 5.22	< 0.49	1315±122	1.24 ± 0.36
10/01/07	< 4.32	< 0.89	1221±100	< 0.59
11/05/07	< 3.26	< 0.56	1252±76	< 0.61
12/04/07	< 3.09	< 0.60	1291±75	< 0.68

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

Potassium-40 (K-40) is a naturally occurring radionuclide found in the environment.

Table B-17 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters and Strontium-90 in Milk Samples
2007

Private Farm - WNW (AIMI03)				
Collection Date	**Cs-137**	**I-131**	**K-40**	**Sr-90**
01/02/07	< 2.49	< 0.76	1161±64	1.45 ± 0.66
02/05/07	< 4.33	< 0.73	1402±97	0.86 ± 0.31
03/05/07	< 8.41	< 0.70	1519±186	< 0.75
04/02/07	< 8.10	< 0.30	1320±183	1.03 ± 0.52
05/09/07	< 6.97	< 0.97	1226±137	< 0.25
06/04/07	< 5.63	< 0.60	1357±125	3.03 ± 0.66
07/09/07	< 4.10	< 0.72	1235±149	< 0.87
08/07/07	< 5.10	< 0.61	1290±104	1.81 ± 0.58
09/03/07	< 4.28	< 0.36	1277±108	1.09 ± 0.30
10/01/07	< 5.95	< 0.68	1344±128	0.79 ± 0.46
11/05/07	< 3.25	< 0.63	1305±75	1.16 ± 0.45
12/03/07	< 3.03	< 0.64	1214±68	0.66 ± 0.43

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

Potassium-40 (K-40) is a naturally occurring radionuclide found in the environment.

Table B-18
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gamma Emitters and Tritium (H-3) in Surface Water
2007

Barnegat Bay (OCSW01)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
04/10/07	< 8.77	< 5.53	< 6.09	< 6.45	< 272	< 1.13*
10/08/07	< 6.29	< 7.11	< 4.90	< 6.49	< 238	< 0.59

Great Bay / Little Egg Harbor (OCSW02)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
01/09/07	< 5.61	< 6.26	< 6.05	< 7.03	< 292	< 1.01*
02/07/07	< 9.24	< 9.70	< 7.57	< 8.52	< 290	< 0.95
03/14/07	< 7.29	< 8.60	< 6.33	< 6.87	< 210	< 0.62
04/10/07	< 8.54	< 8.40	< 7.23	< 8.16	< 247	< 0.55
05/09/07	< 7.98	< 7.03	< 6.05	< 6.88	< 264	< 1.29*
06/06/07	< 5.24	< 5.80	< 4.58	< 5.17	< 234	< 1.32*
07/11/07	< 6.30	< 7.14	< 5.87	< 6.30	< 254	< 1.08*
08/08/07	< 6.26	< 6.04	< 5.19	< 5.98	< 256	< 2.95*
09/06/07	< 6.37	< 5.19	< 4.85	< 5.07	< 247	< 1.34*
10/03/07	< 5.05	< 5.53	< 4.58	< 5.20	< 204	< 0.62
11/07/07	< 6.55	< 7.54	< 6.41	< 7.10	< 240	< 0.98
12/05/07	< 4.89	< 6.19	< 4.25	< 5.34	< 239	< 0.70

Stouts Creek (OCSW03)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
04/10/07	< 7.81	< 5.79	< 5.67	< 6.09	< 252	< 0.91
10/08/07	< 4.91	< 5.15	< 4.22	< 4.79	< 239	< 0.80

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

* Sample results were in excess of the 1.0 pCi/L detection level due to low chemical yield. Low chemical yield is a result of the delay in time between sample collection and analysis along with I-131 decay due to its short half-life (8 days).

Table B-18 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gamma Emitters and Tritium (H-3) in Surface Water
2007

Oyster Creek Discharge Canal (OCSW04)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
01/10/07	< 10.06	< 10.35	< 7.76	< 9.50	< 285	< 1.08*
02/15/07	< 8.36	< 7.99	< 7.42	< 7.86	< 262	< 0.77
03/14/07	< 7.61	< 8.26	< 6.51	< 7.99	< 215	< 0.55
04/10/07	< 7.00	< 5.76	< 5.73	< 6.30	< 237	< 0.55
05/09/07	< 5.81	< 5.69	< 5.09	< 5.22	< 277	< 1.20*
06/06/07	< 6.14	< 4.83	< 5.20	< 6.22	< 283	< 1.11*
07/11/07	< 6.93	< 5.91	< 5.26	< 6.30	< 250	< 0.98
08/08/07	< 5.29	< 5.02	< 4.61	< 5.22	< 256	< 2.55*
09/06/07	< 11.19	< 9.23	< 7.74	< 8.48	< 245	< 1.00
10/03/07	< 4.37	< 5.05	< 4.28	< 4.90	< 204	< 0.70
11/07/07	< 6.68	< 7.00	< 5.89	< 6.47	< 242	< 0.89
12/05/07	< 4.74	< 5.59	< 4.82	< 5.05	< 237	< 0.99

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

* Sample results were in excess of the 1.0 pCi/L detection level due to low chemical yield. Low chemical yield is a result of the delay in time between sample collection and analysis along with I-131 decay due to its short half-life (8 days).

Table B-19
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters and Tritium (H-3) in Surface Water
2007

Surface Water Inlet Building Discharge (AISW01)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
01/03/07	< 5.64	< 6.19	< 5.56	< 6.23	< 297	< 0.88
02/26/07	< 7.29	< 7.23	< 6.60	< 7.33	< 267	< 0.77
03/07/07**	No Data	No Data	No Data	No Data	No Data	No Data
04/02/07	< 8.71	< 9.04	< 7.26	< 9.18	476±147	< 0.74
05/16/07	< 10.65	< 9.17	< 8.87	< 9.59	< 264	< 1.42*
06/07/07	< 6.79	< 6.46	< 6.09	< 6.39	< 241	< 1.85*
07/06/07	< 9.67	< 10.25	< 7.21	< 8.55	< 286	< 1.08*
08/07/07	< 6.66	< 5.32	< 5.01	< 5.84	< 268	< 3.82*
09/04/07	< 5.39	< 5.13	< 4.84	< 4.94	< 247	< 1.63*
10/04/07	< 5.06	< 4.26	< 4.13	< 4.10	< 238	< 0.60
11/05/07	< 6.13	< 5.44	< 4.94	< 5.33	< 253	< 0.94
12/05/07	< 9.32	< 7.04	< 7.44	< 8.93	< 240	< 0.76

West Bank – Delaware River (AISW02)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
01/03/07	< 9.74	< 9.98	< 8.18	< 9.49	< 298	< 0.87
02/26/07	< 8.14	< 8.41	< 7.69	< 7.94	< 268	< 0.66
03/07/07**	No Data	No Data	No Data	No Data	No Data	No Data
04/02/07	< 6.70	< 6.33	< 5.78	< 7.18	< 249	< 0.53
05/16/07	< 6.32	< 5.65	< 5.03	< 5.61	< 268	< 1.28*
06/07/07	< 6.99	< 5.73	< 5.23	< 4.76	< 237	< 1.55*
07/06/07	< 6.01	< 5.75	< 5.52	< 6.05	< 286	< 0.91
08/07/07	< 4.70	< 5.10	< 4.52	< 5.29	< 270	< 2.97*
09/04/07	< 7.21	< 6.19	< 5.09	< 6.01	< 239	< 1.21*
10/04/07	< 5.34	< 5.06	< 4.85	< 5.17	< 237	< 0.62
11/05/07	< 6.62	< 6.89	< 6.25	< 5.52	< 254	< 0.93
12/05/07	< 6.77	< 5.51	< 5.06	< 6.63	< 242	< 1.06*

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

* Sample results were in excess of the 1.0 pCi/L detection level due to low chemical yield. Low chemical yield is a result of the delay in time between sample collection and analysis along with I-131 decay due to its short half-life (8 days).

** Samples lost by courier in transit to the BNE contract laboratory.

Table B-20
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Concentrations of Gamma Emitters and Tritium (H-3) in Well Water
2007

Oyster Creek Administration Building Onsite (OCWW01)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
01/29/07	< 6.20	< 5.53	< 4.12	< 4.88	< 295	< 1.10*
04/23/07	< 6.30	< 6.97	< 5.44	< 6.41	< 238	< 0.73
07/31/07	< 3.52	< 2.84	< 2.92	< 2.95	< 258	< 0.96
10/23/07	< 3.23	< 3.67	< 2.70	< 4.44	< 245	< 0.81

Forked River Marina (OCWW02)						
Collection Date	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**	**H-3**	**I-131**
01/29/07	< 8.40	< 6.37	< 5.46	< 6.92	< 279	< 0.97
04/24/07	< 8.14	< 6.38	< 5.99	< 6.07	< 257	< 0.63
07/31/07	< 4.66	< 3.75	< 3.37	< 3.85	< 255	< 0.90
10/23/07	< 4.14	< 4.09	< 3.47	< 3.63	< 244	< 0.70

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

* Sample results were in excess of the 1.0 pCi/L detection level due to low chemical yield. Low chemical yield is a result of the delay in time between sample collection and analysis along with I-131 decay due to its short half-life (8 days).

Table B-21
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Concentrations of Gamma Emitters and Tritium (H-3) in Well Water
2007

Elsinboro School (AIWW01)

Collection Date	Co-58	Co-60	Cs-134	Cs-137	H-3	I-131
01/30/07	< 4.23	< 3.92	< 4.21	< 4.18	< 276	< 0.99
04/23/07	< 7.39	< 5.99	< 6.21	< 5.68	< 235	< 0.69
08/01/07	< 3.97	< 4.29	< 3.03	< 3.83	< 259	< 0.79
10/22/07	< 3.98	< 4.80	< 3.52	< 3.97	< 244	< 0.84

Lower Alloways Creek Police Station (AIWW02)

Collection Date	Co-58	Co-60	Cs-134	Cs-137	H-3	I-131
01/30/07	< 4.27	< 5.01	< 3.61	< 4.79	< 272	< 1.27*
04/23/07	< 10.36	< 8.79	< 7.15	< 9.12	< 266	< 0.79
08/01/07	< 2.38	< 2.12	< 2.10	< 2.25	< 256	< 1.15*
10/22/07	< 2.81	< 3.62	< 2.71	< 3.08	< 237	< 0.72

Salem Administration Building (AIWW03)

Collection Date	Co-58	Co-60	Cs-134	Cs-137	H-3	I-131
01/30/07	< 5.65	< 5.76	< 4.22	< 5.91	< 273	< 1.16*
04/23/07	< 7.25	< 5.51	< 5.75	< 7.01	< 250	< 0.74
08/01/07	< 6.87	< 6.21	< 5.05	< 6.64	< 255	< 0.87
10/22/07	< 4.47	< 4.65	< 3.90	< 3.65	< 242	< 0.58

Lower Alloways Creek School (AIWW04)

Collection Date	Co-58	Co-60	Cs-134	Cs-137	H-3	I-131
01/30/07	< 7.02	< 5.22	< 6.28	< 6.43	< 272	< 0.91
04/23/07	< 10.50	< 9.86	< 6.18	< 9.24	< 239	< 0.77
08/01/07	< 4.32	< 3.49	< 3.49	< 3.65	< 256	< 1.28*
10/22/07	< 2.69	< 4.09	< 2.89	< 3.54	< 240	< 0.73

Results in picoCuries per Liter (pCi/L) +/- 2 Standard Deviations

* Sample results were in excess of the 1.0 pCi/L detection level due to low chemical yield. Low chemical yield is a result of the delay in time between sample collection and analysis along with I-131 decay due to its short half-life (8 days).

Table B-22
NJDEP / BNE
Radiological Environmental Monitoring Program

Background
Thermoluminescent Dosimetry Data
Quarterly Results for 2007

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
Station	**Location**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**
CO01	BNE Office, Arctic Parkway, Ewing, NJ	14.5	1.7	14.8	5.2	12.7	4.9	15.0	4.0
CO02	Brendan T. Byrne State Forest, New Lisbon, NJ	11.4	2.5	11.2	3.1	15.9	7.1	11.5	1.8

Results are reported in units of milliroentgens (mR)

CV is the coefficient of variation; the ratio of the standard deviation to the mean, and is normally reported as a percentage

All exposures were normalized to 91 days (a standard quarter)

Table B-23
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Thermoluminescent Dosimetry Data
Quarterly Results for 2007

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
Station	**Location**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**
1	Ocean County Vocational School	9.9	1.4	9.7	3.8	9.8	1.1	10.0	0.5
2	Ocean Twp. Municipal Building	10.9	2.6	10.9	15.1	11.0	0.8	10.8	4.4
3	Sewage Pumping Station, Forked River	11.4	1.2	12.0	4.7	10.7	2.0	11.3	1.1
4	Twin River Station, Forked River	10.5	3.0	10.8	3.2	10.4	6.2	10.2	3.1
5	Sewage Pumping Station, Ocean Twp.	11.0	2.6	10.8	3.6	10.3	4.2	11.1	2.1
6	Oyster Creek, Gate #2, Forked River	11.4	0.5	17.3*	3.9	11.5	2.4	11.4	2.4
7	Finninger Farm, Forked River	9.5	2.5	9.1	7.3	9.1	3.9	9.6	3.8
8	Ocean Co. Memorial Cemetery, Waretown	9.6	1.8	9.8	4.9	10.7	13.4	10.1	3.3
9	Oyster Creek Building 17, Forked River	11.4	2.2	12.6	9.0	10.6	3.8	11.1	2.3
10	Sheffield & Derby Rd, Forked River	10.2	2.9	10.5	3.7	10.5	2.0	10.3	2.3
11	Lakeside Drive, Forked River	11.1	3.9	11.2	3.0	10.6	1.5	11.1	3.7
12	Forked River Game Farm, Forked River	11.2	3.5	10.4	2.8	11.5	2.0	10.8	3.9
13	Restrooms, Lakeside Dr., Forked River	10.9	4.4	10.3	6.8	10.6	1.9	10.5	3.6
14	Sands Pt. Park, Dock Ave., Waretown	11.6	2.5	12.3	3.4	13.3	15.1	11.8	1.9
15	Recreation Center, Waretown	9.8	2.0	10.0	9.3	10.0	3.4	10.1	1.1
16	North Access Rd., Forked River	11.0	2.4	11.4	7.6	10.8	3.9	10.8	4.3

* Radiography performed by New Jersey Natural Gas on equipment in an area adjacent to the TLD badges during 2nd Quarter (June 2007).
Results are reported in units of milliroentgens (mR)
CV is the coefficient of variation; the ratio of the standard deviation to the mean, and is normally reported as a percentage. All exposures were normalized to 91 days (a standard quarter)

Table B-23 (continued)
NJDEP / BNE
Radiological Environmental Monitoring Program

Oyster Creek
Thermoluminescent Dosimetry Data
Quarterly Results for 2007

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
Station	**Location**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**
20	Third Avenue, Barnegat Light	9.0	1.8	9.3	7.5	9.1	1.3	9.3	1.3
21	Rose Hill Road & Barnegat Blvd	11.0	2.9	10.6	3.2	10.4	5.1	11.2	1.3
22	Bay Way & Claimore Avenue	9.6	3.6	10.2	4.5	10.7	4.2	10.8	3.1
23	Island Beach State Park, Parking Lot A5	9.4	1.5	9.6	5.8	9.3	1.9	9.7	1.7

Results are reported in units of milliroentgens (mR).

CV is the coefficient of variation; the ratio of the standard deviation to the mean, and is normally reported as a percentage.

All exposures were normalized to 91 days (a standard quarter).

Table B-24
NJDEP / BNE
Radiological Environmental Monitoring Program

Salem / Hope Creek
Thermoluminescent Dosimetry Data
Quarterly Results for 2007

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
Station	**Location**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**
1	Access Road – Security Checkpoint	11.9	2.0	12.1	7.1	14.4	3.5	13.3	2.8
2	Poplar Road, Lower Alloways	*	*	12.4	4.4	*	*	13.0	2.0
3	Money and Eagle Island Road	13.8	0.1	13.6	2.2	14.7	1.5	14.2	0.9
4	Ft. Elfsborg / Hancocks – East	14.7	2.9	15.1	0.6	14.5	2.5	15.1	2.1
5	Ft. Elfsborg / Hancocks – West	18.2	1.1	18.8	2.6	20.8	10.5	18.9	2.3
6	Stathems Neck Road	12.5	1.7	12.7	3.3	13.1	1.4	13.1	4.7
7	Stow Neck Road Lower Alloways	11.0	2.0	11.3	1.8	10.6	2.2	11.3	3.0
8	Alloways Creek Neck Road - Middle	10.8	0.8	10.7	1.1	10.3	1.9	11.0	1.8
9	Alloways Creek Neck Road - North	14.2	2.5	14.6	8.0	13.9	3.7	15.0	6.7
10	Abbotts Farm Road	11.4	4.3	10.6	0.4	10.8	2.5	11.1	2.6

Results are reported in units of milliroentgens (mR)

CV is the coefficient of variation; the ratio of the standard deviation to the mean, and is normally reported as a percentage. All exposures were normalized to 91 days (a standard quarter)

* Data lost due to environmental damage or vandalism

Table B-25
NJDEP / BNE
Radiological Environmental Monitoring Program

Comparison of NJDEP and Global Dosimetry Solutions Thermoluminescent Dosimetry Data for Salem / Hope Creek

Quarterly Results for Co-located Dosimeters for 2007

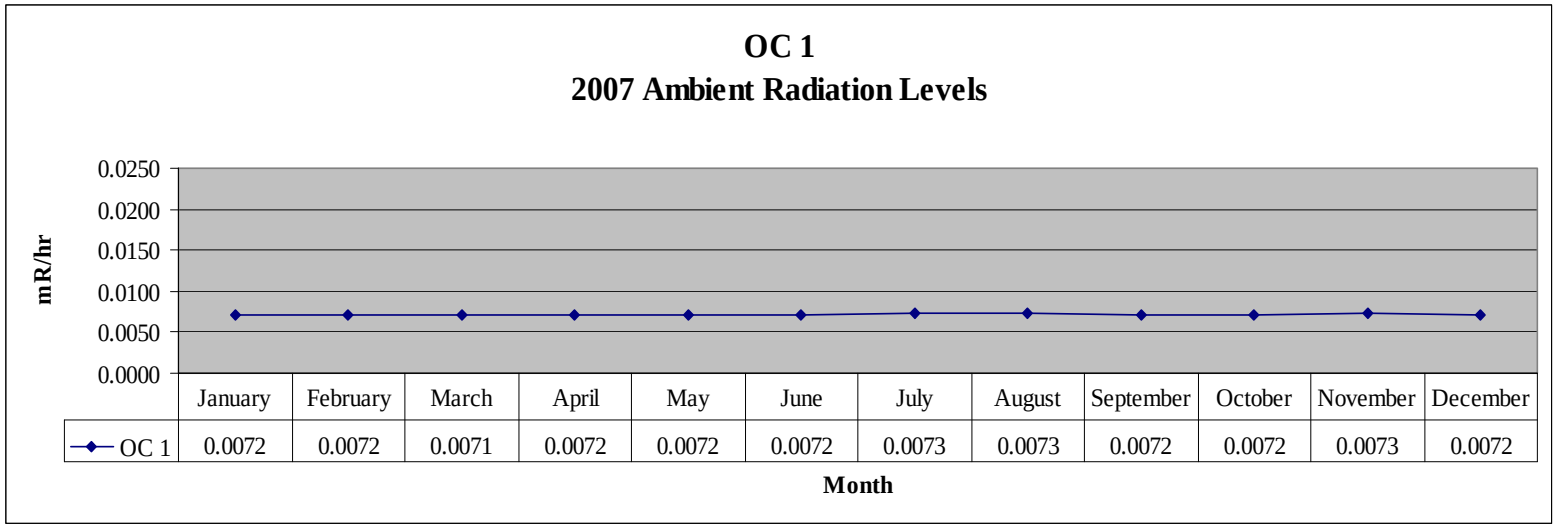
		1st Quarter				2nd Quarter				3rd Quarter				4th Quarter			
		NJDEP		Global		NJDEP		Global		NJDEP		Global		NJDEP		Global	
Station	**Location**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**	**Result**	**%CV**
1	Access Road – Security Checkpoint	11.9	2.0	10.8	6.2	12.1	7.1	10.9	7.3	14.4	3.5	11.7	6.5	13.3	2.8	11.6	3.3
2	Poplar Road, Lower Alloways	*	*	*	*	12.4	4.4	11.6	3.3	*	*	*	*	13.0	2.0	12.4	3.0
5	Ft. Elfsborg / Hancocks – West	18.2	1.1	16.3	0.0	18.8	2.6	16.4	5.1	20.8	10.5	16.9	5.6	18.9	2.3	18.1	5.0
9	Alloways Creek Neck Road - North	14.2	2.5	12.5	2.7	14.6	8.0	12.9	0.0	13.9	3.7	13.2	6.8	15.0	6.7	14.6	5.9

Results are reported in units of milliroentgens (mR)
CV is the coefficient of variation; the ratio of the standard deviation to the mean, and is normally reported as a percentage
All exposures were normalized to 91 days (a standard quarter)

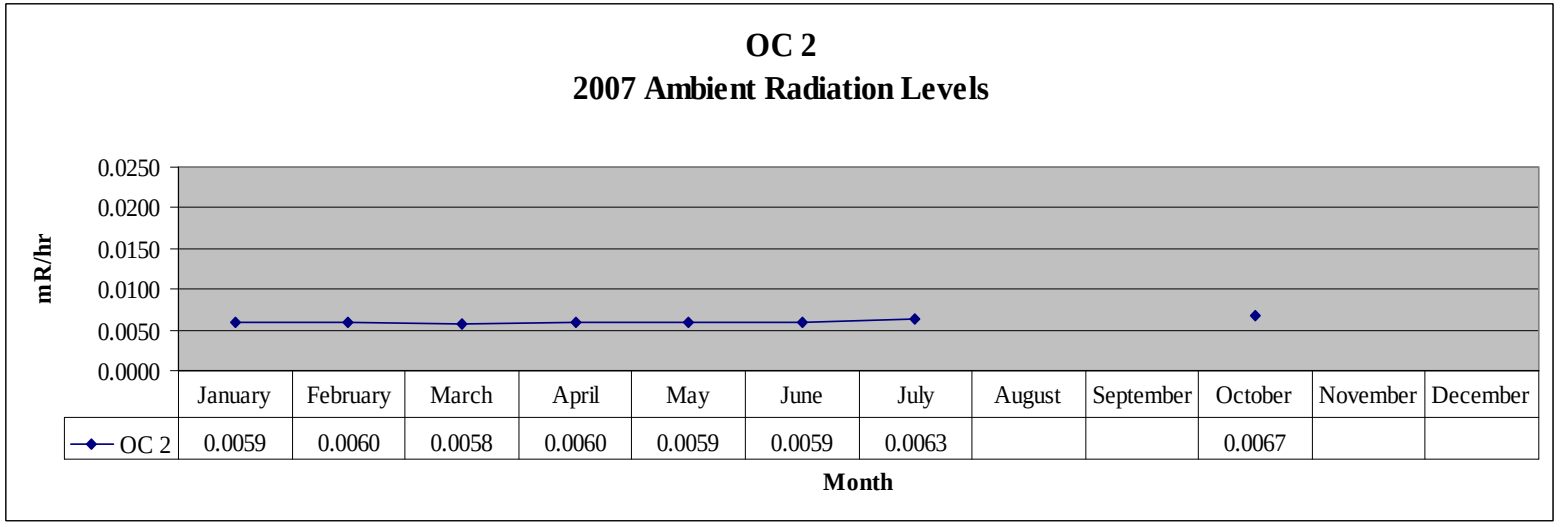
* Data lost due to environmental damage or vandalism

Table B-26

Oyster Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



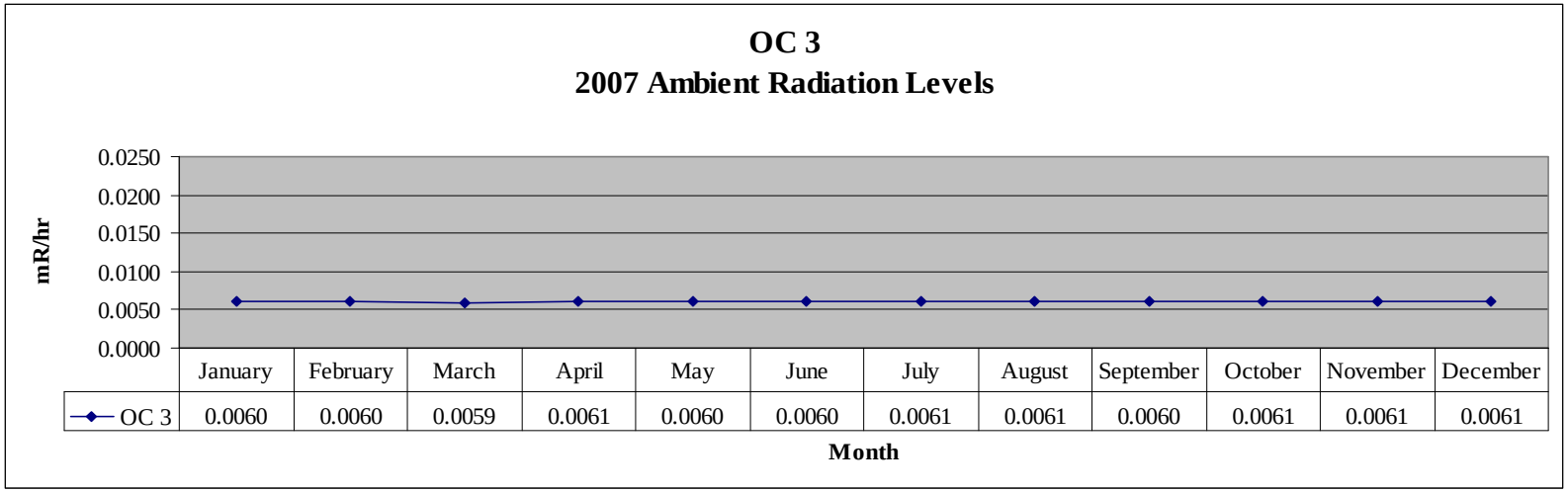
	January	February	March	April	May	June	July	August	September	October	November	December
OC 1	0.0072	0.0072	0.0071	0.0072	0.0072	0.0072	0.0073	0.0073	0.0072	0.0072	0.0073	0.0072



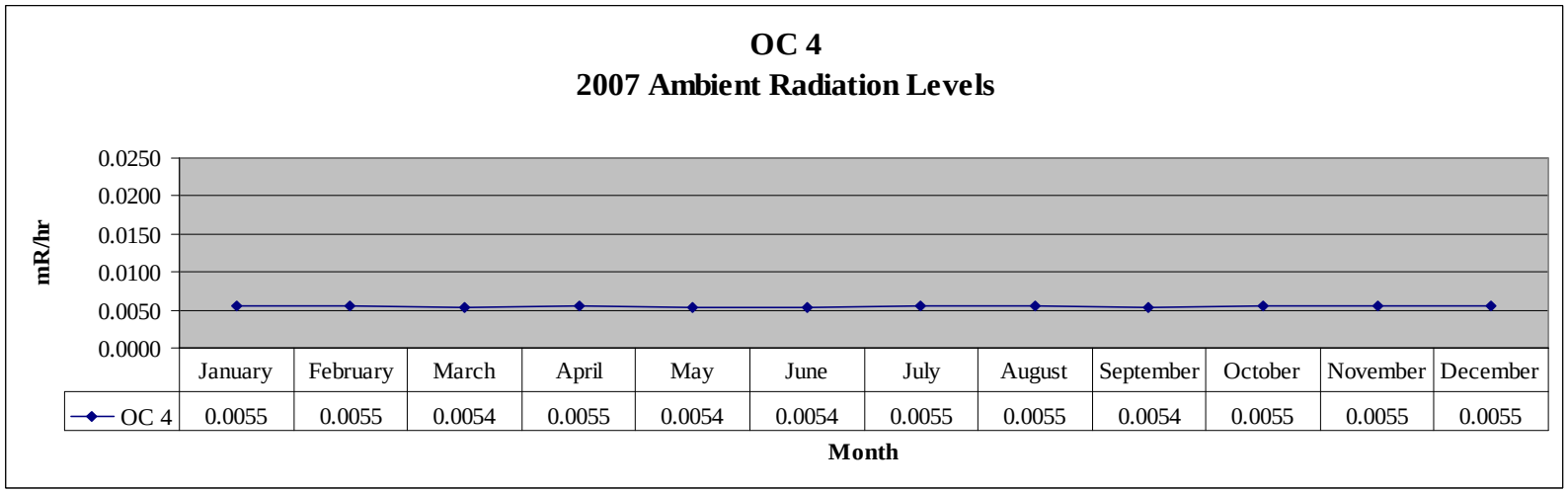
	January	February	March	April	May	June	July	August	September	October	November	December
OC 2	0.0059	0.0060	0.0058	0.0060	0.0059	0.0059	0.0063			0.0067		

Blank months indicate "No Data Available"

Table B-26 (continued)
Oyster Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data

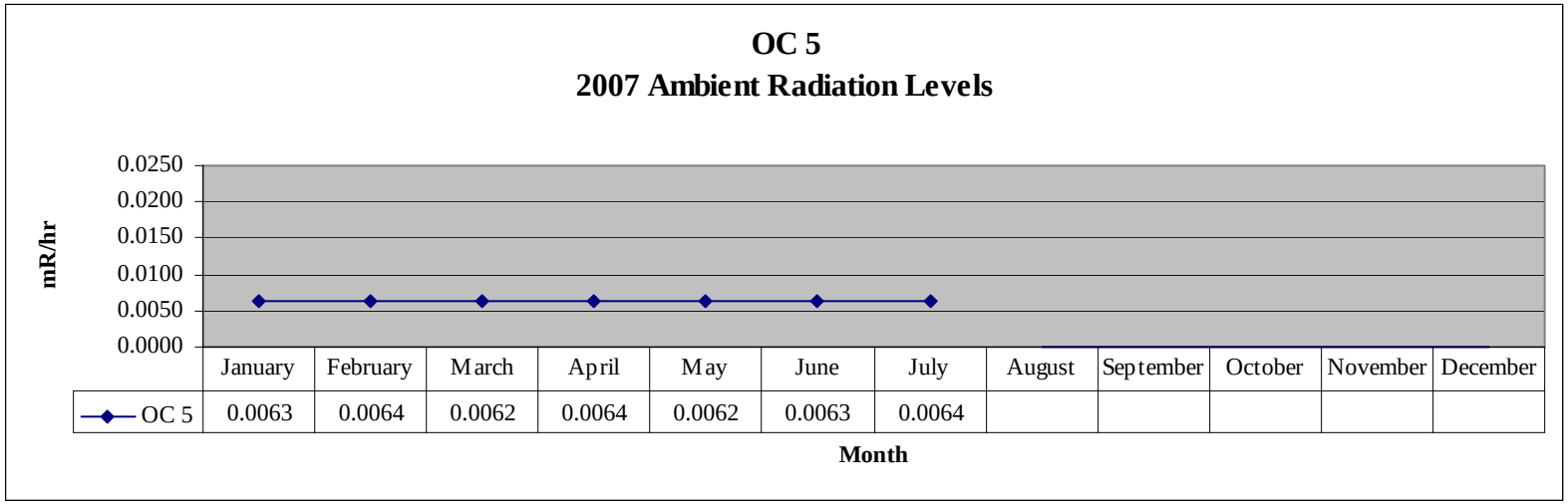


	January	February	March	April	May	June	July	August	September	October	November	December
OC 3	0.0060	0.0060	0.0059	0.0061	0.0060	0.0060	0.0061	0.0061	0.0060	0.0061	0.0061	0.0061

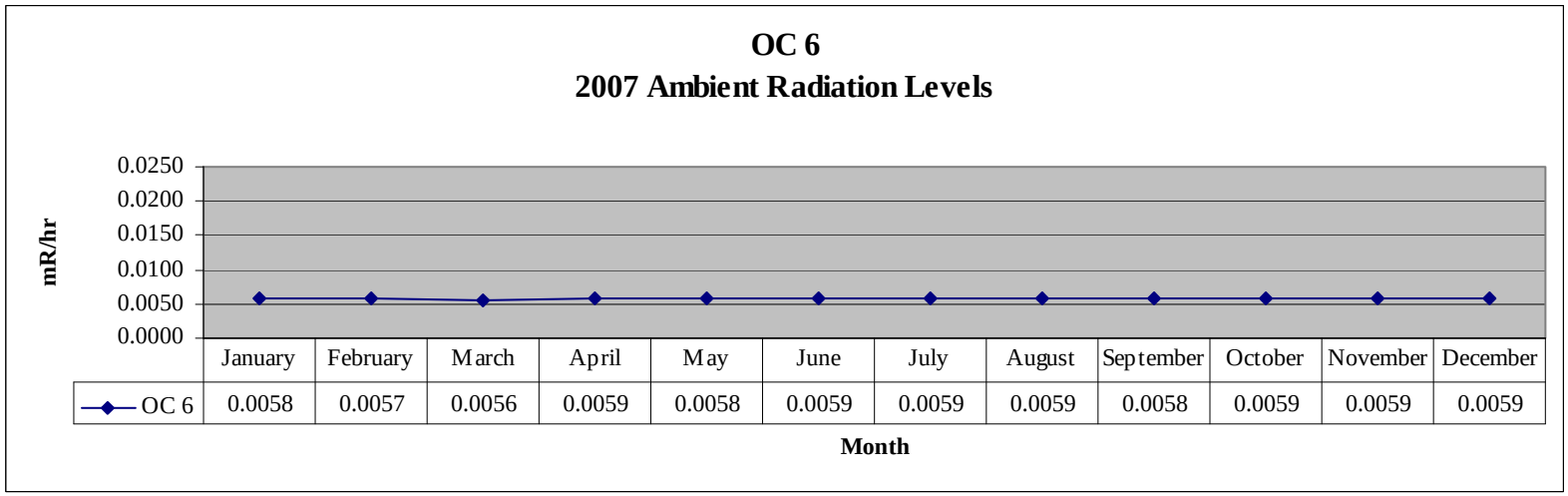


	January	February	March	April	May	June	July	August	September	October	November	December
OC 4	0.0055	0.0055	0.0054	0.0055	0.0054	0.0054	0.0055	0.0055	0.0054	0.0055	0.0055	0.0055

Table B-26 (continued)
Oyster Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



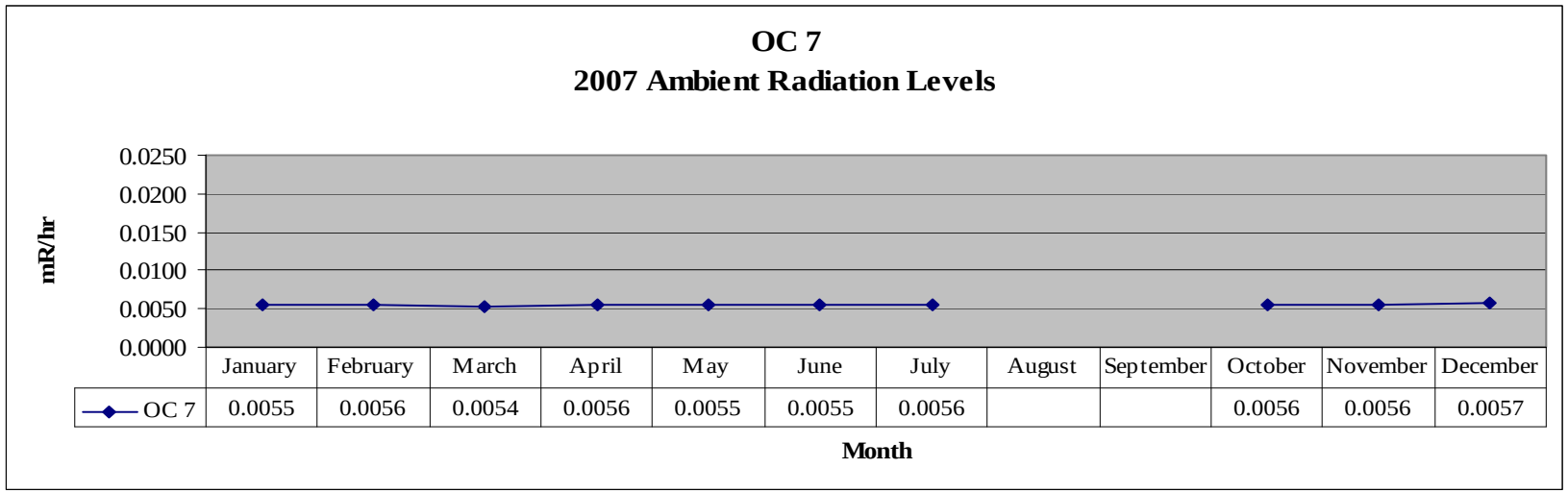
	January	February	March	April	May	June	July	August	September	October	November	December
OC 5	0.0063	0.0064	0.0062	0.0064	0.0062	0.0063	0.0064					



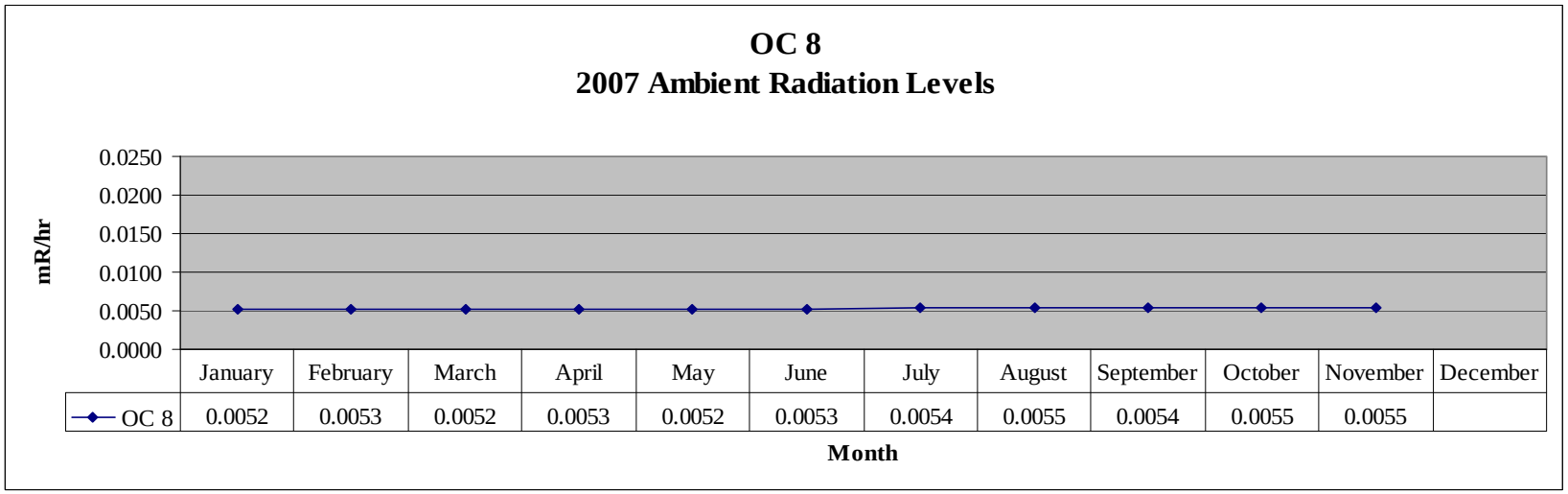
	January	February	March	April	May	June	July	August	September	October	November	December
OC 6	0.0058	0.0057	0.0056	0.0059	0.0058	0.0059	0.0059	0.0059	0.0058	0.0059	0.0059	0.0059

Blank months indicate "No Data Available"

Table B-26 (continued)
Oyster Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



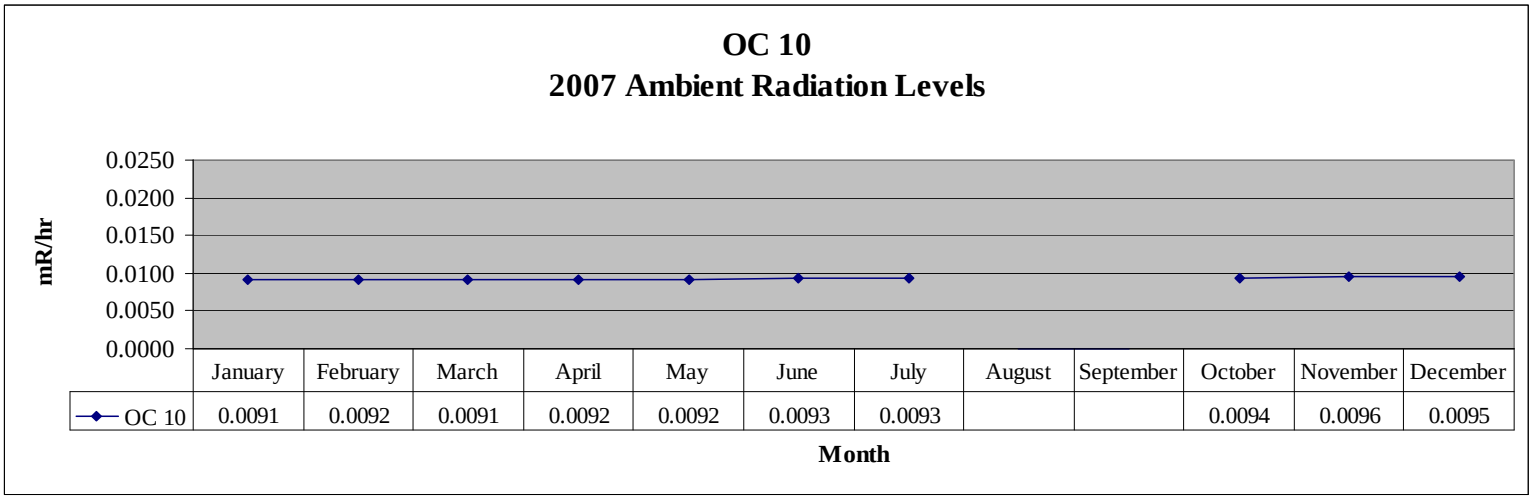
	January	February	March	April	May	June	July	August	September	October	November	December
OC 7	0.0055	0.0056	0.0054	0.0056	0.0055	0.0055	0.0056			0.0056	0.0056	0.0057



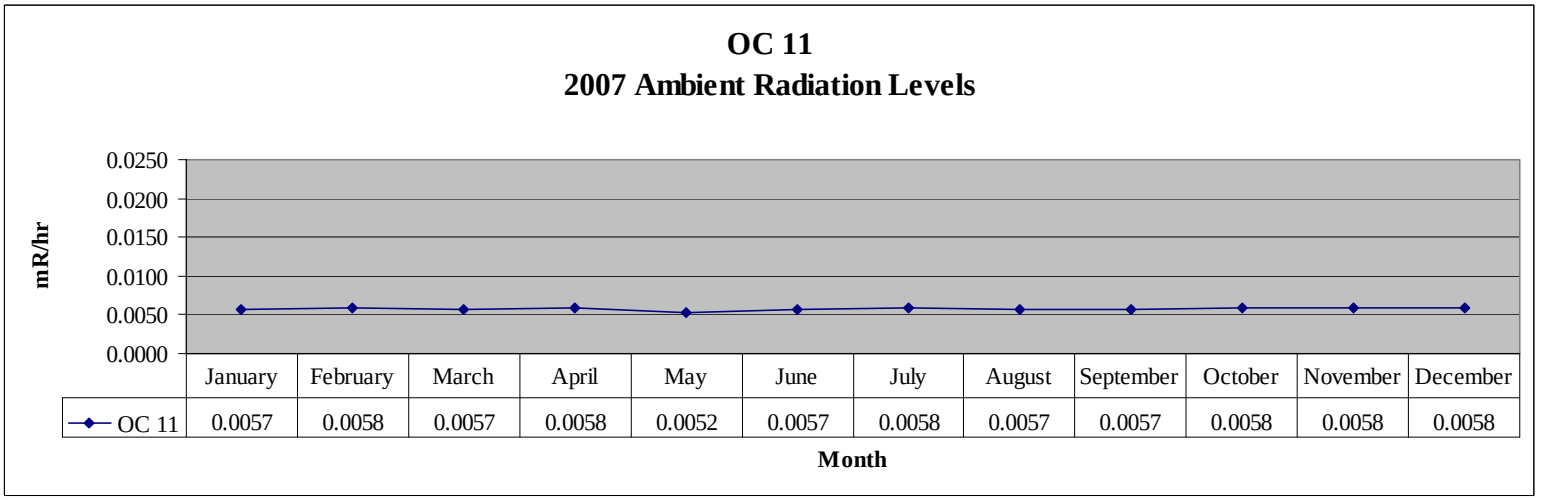
	January	February	March	April	May	June	July	August	September	October	November	December
OC 8	0.0052	0.0053	0.0052	0.0053	0.0052	0.0053	0.0054	0.0055	0.0054	0.0055	0.0055	

Blank months indicate "No Data Available"

Table B-26 (continued)
Oyster Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



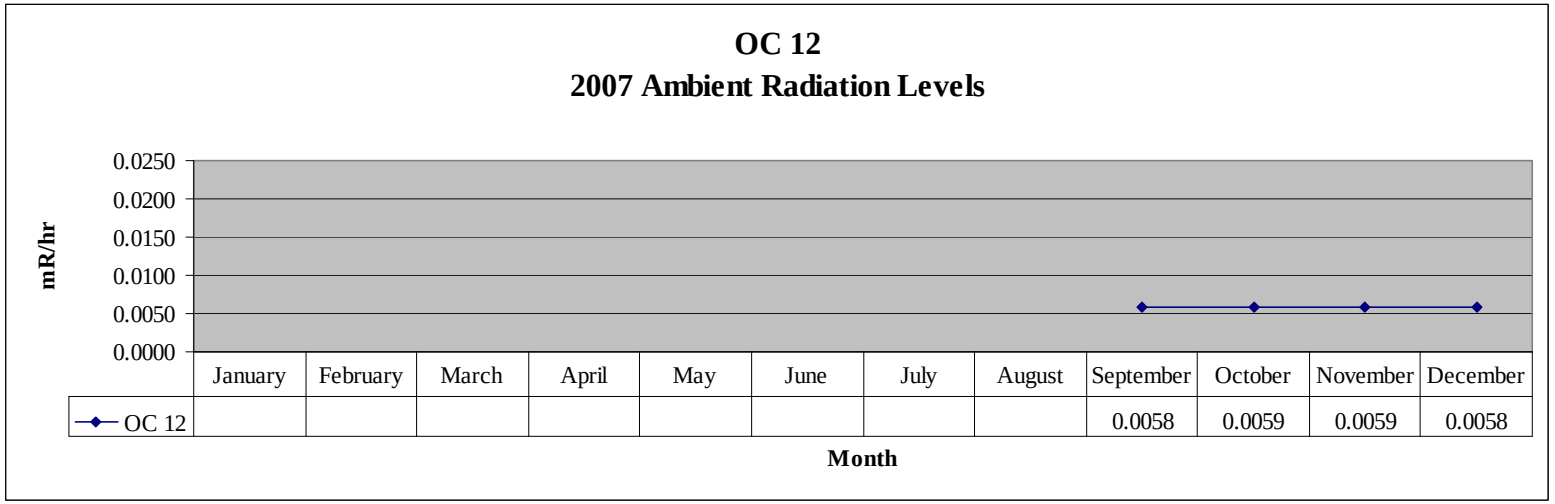
	January	February	March	April	May	June	July	August	September	October	November	December
OC 10	0.0091	0.0092	0.0091	0.0092	0.0092	0.0093	0.0093			0.0094	0.0096	0.0095

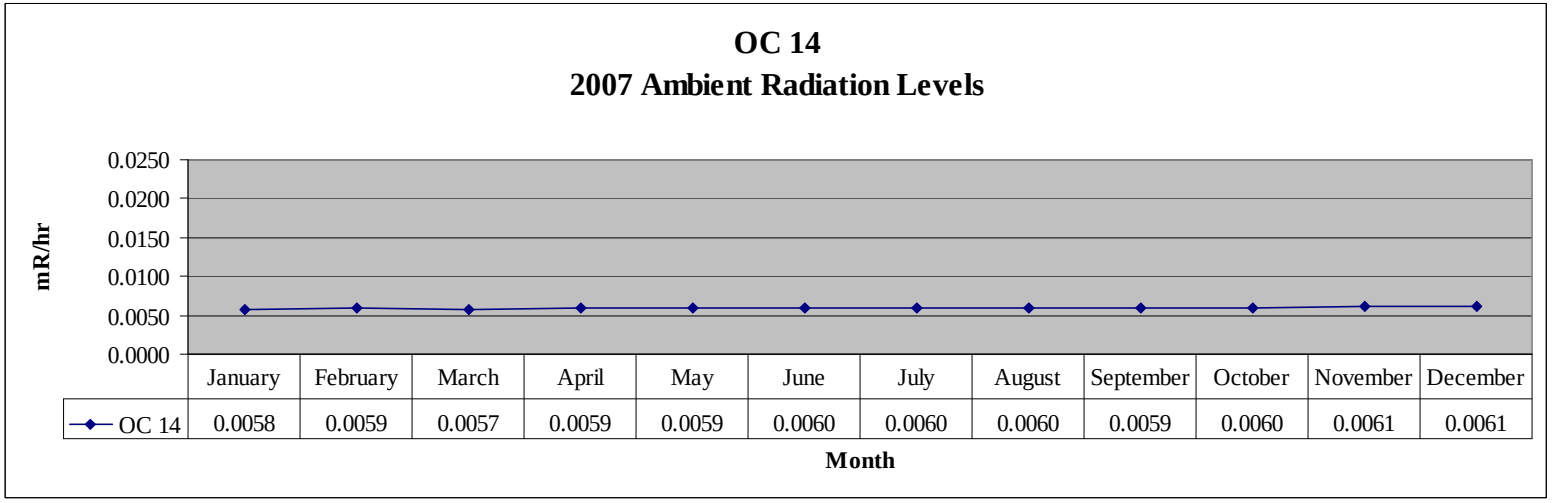


	January	February	March	April	May	June	July	August	September	October	November	December
OC 11	0.0057	0.0058	0.0057	0.0058	0.0052	0.0057	0.0058	0.0057	0.0057	0.0058	0.0058	0.0058

Blank months indicate "No Data Available'

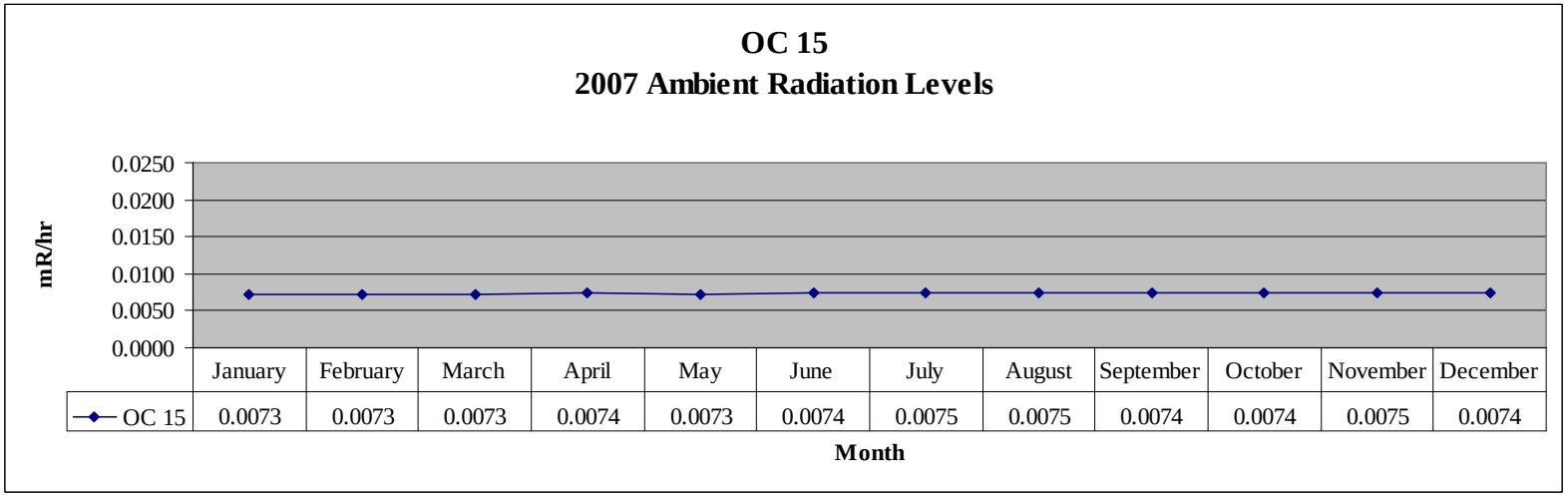
Table B-26 (continued)
Oyster Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



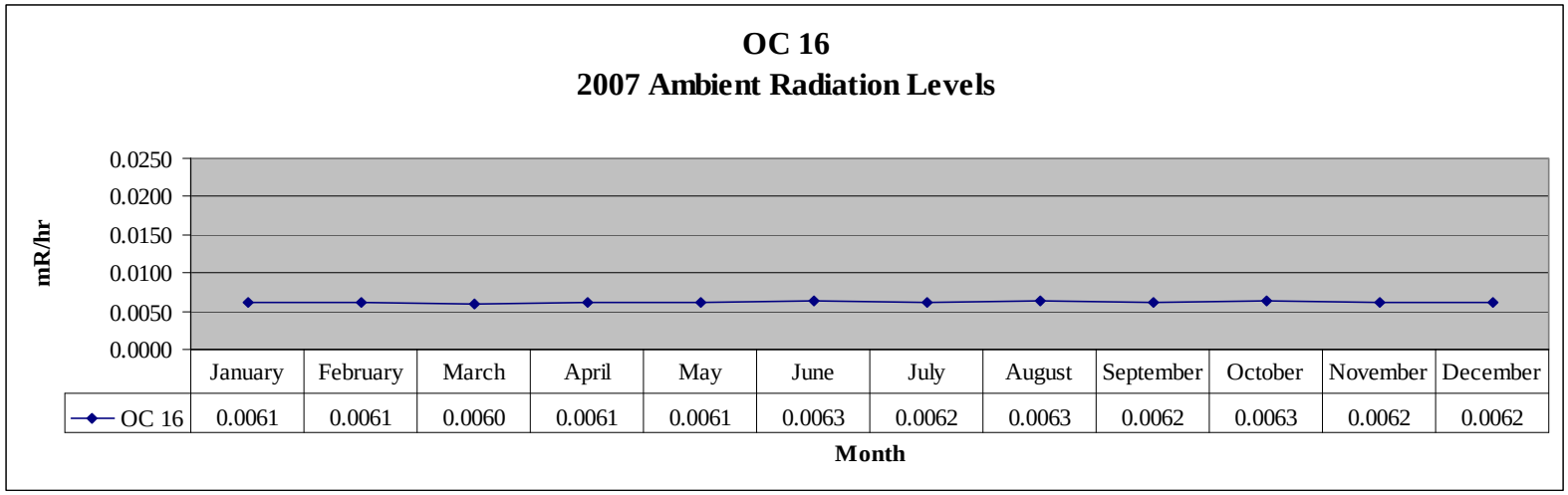


Blank months indicate "No Data Available'

Table B-26 (continued)
Oyster Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



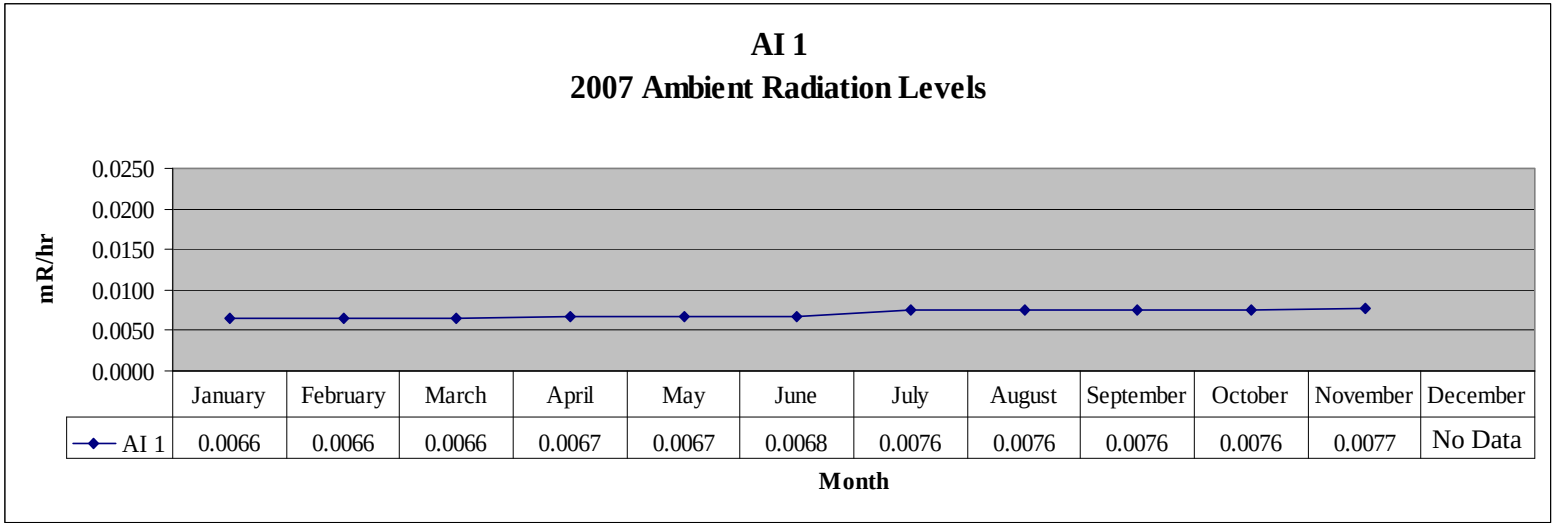
	January	February	March	April	May	June	July	August	September	October	November	December
OC 15	0.0073	0.0073	0.0073	0.0074	0.0073	0.0074	0.0075	0.0075	0.0074	0.0074	0.0075	0.0074



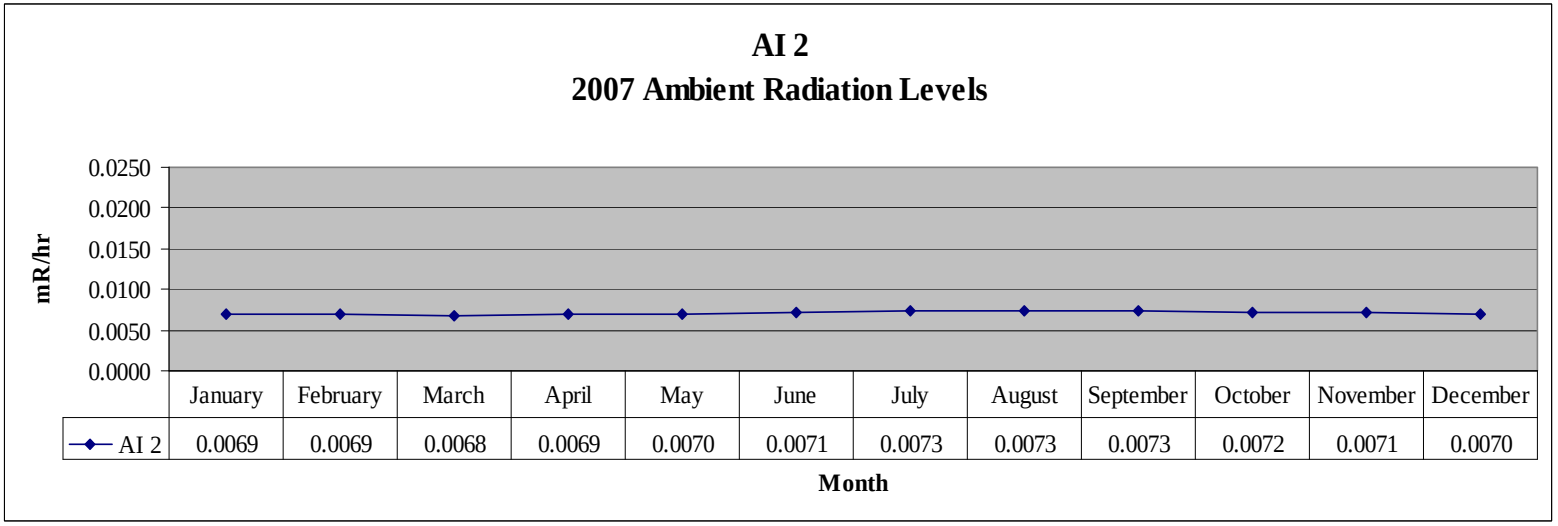
	January	February	March	April	May	June	July	August	September	October	November	December
OC 16	0.0061	0.0061	0.0060	0.0061	0.0061	0.0063	0.0062	0.0063	0.0062	0.0063	0.0062	0.0062

Table B-27

Salem / Hope Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data

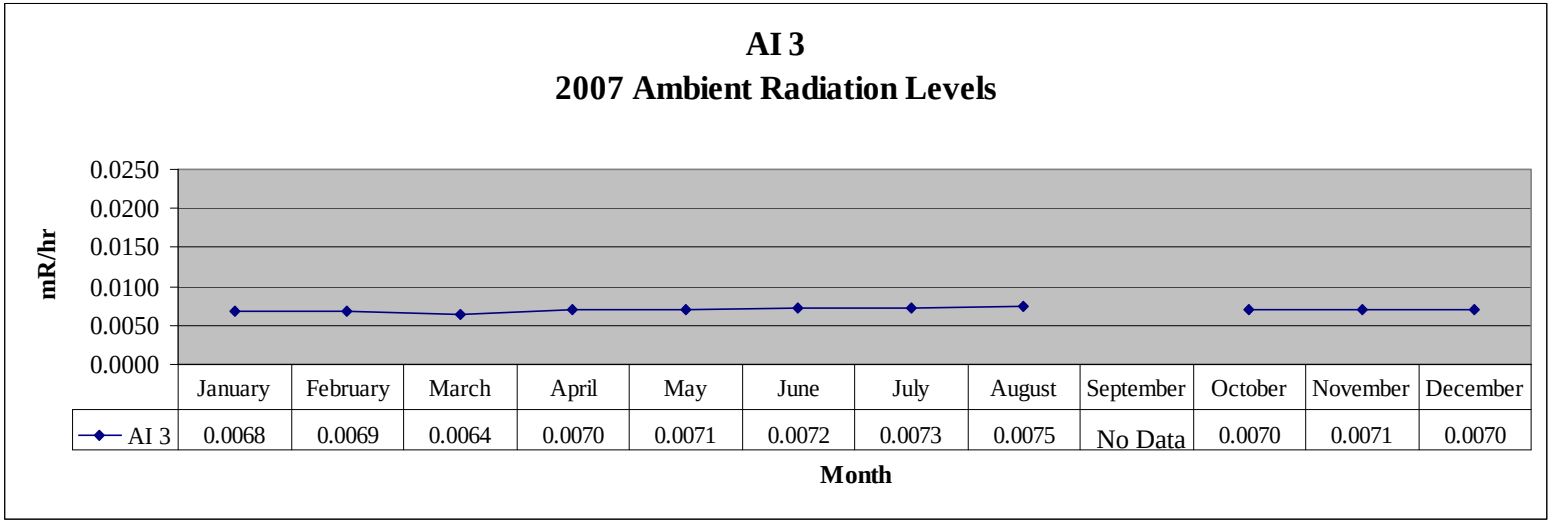


	January	February	March	April	May	June	July	August	September	October	November	December
AI 1	0.0066	0.0066	0.0066	0.0067	0.0067	0.0068	0.0076	0.0076	0.0076	0.0076	0.0077	No Data

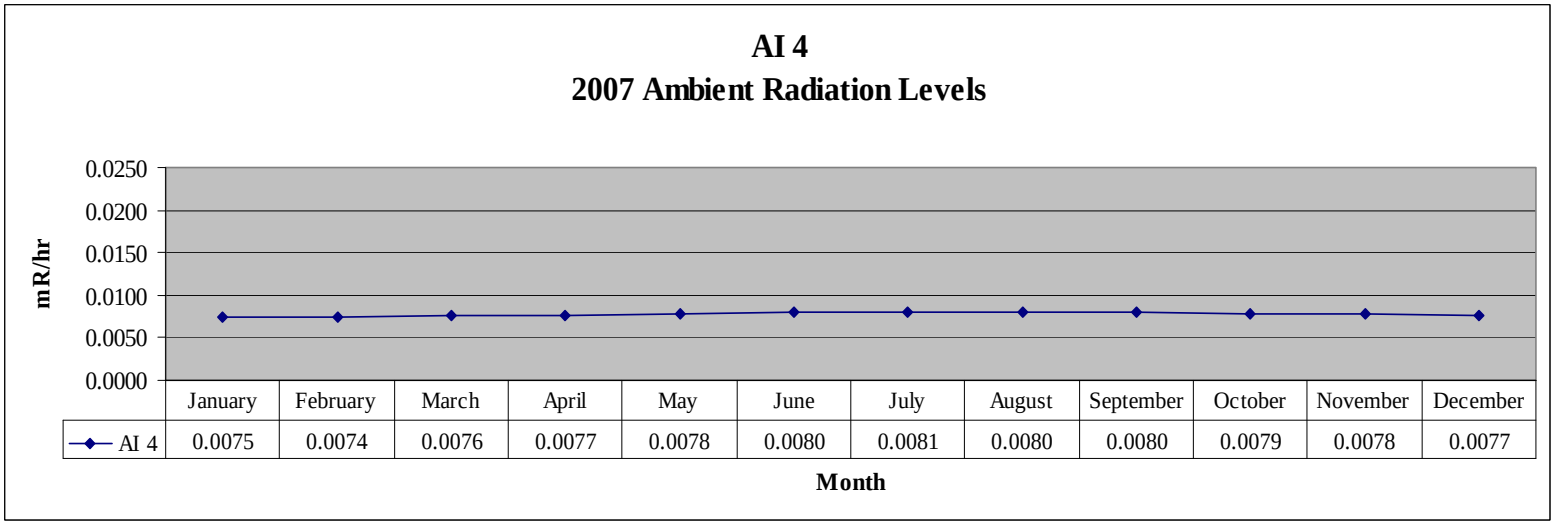


	January	February	March	April	May	June	July	August	September	October	November	December
AI 2	0.0069	0.0069	0.0068	0.0069	0.0070	0.0071	0.0073	0.0073	0.0073	0.0072	0.0071	0.0070

Table B-27 (continued)
Salem / Hope Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



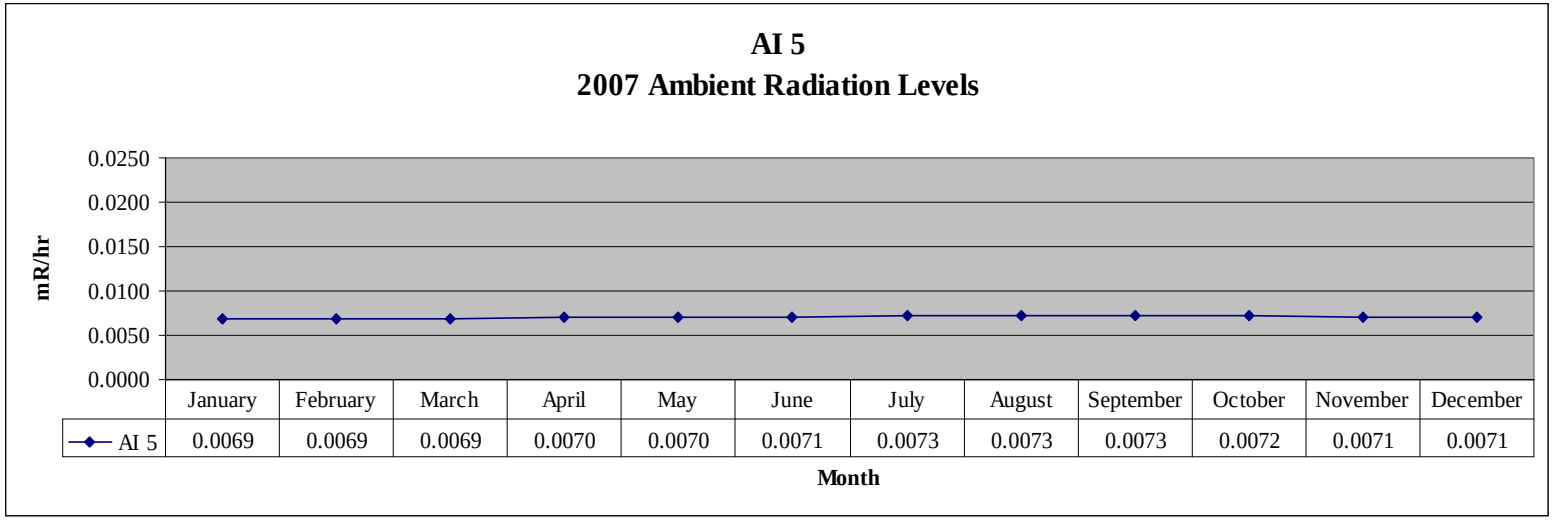
	January	February	March	April	May	June	July	August	September	October	November	December
AI 3	0.0068	0.0069	0.0064	0.0070	0.0071	0.0072	0.0073	0.0075	No Data	0.0070	0.0071	0.0070



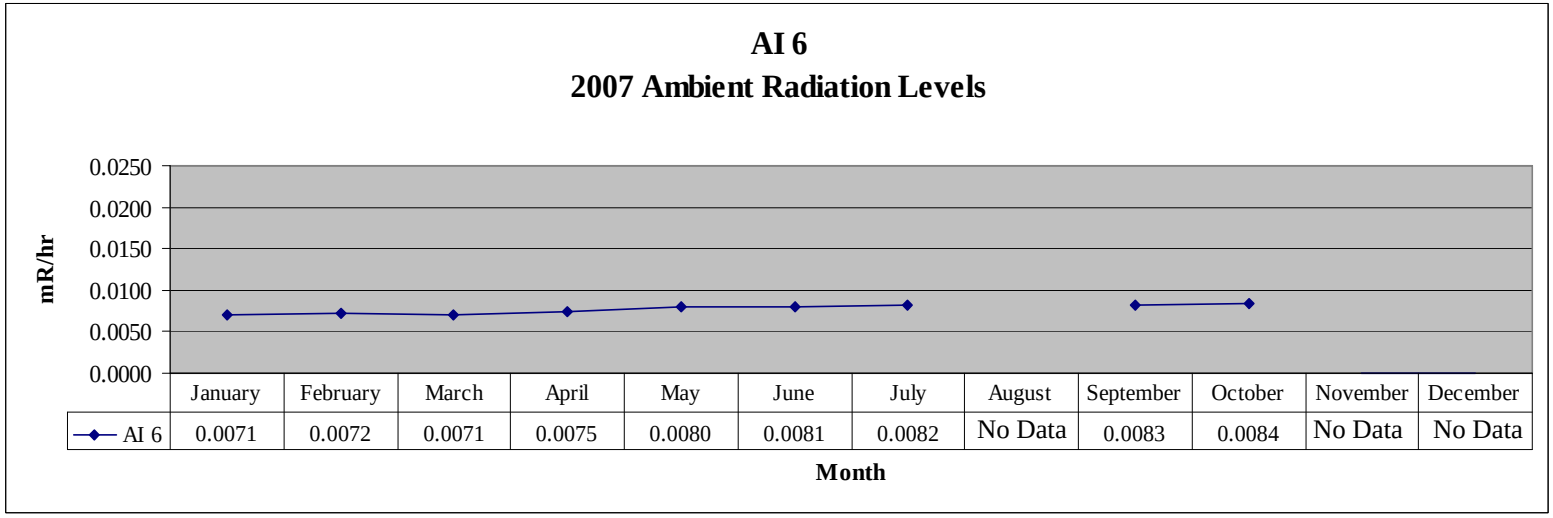
	January	February	March	April	May	June	July	August	September	October	November	December
AI 4	0.0075	0.0074	0.0076	0.0077	0.0078	0.0080	0.0081	0.0080	0.0080	0.0079	0.0078	0.0077

Table B-27 (continued)

Salem / Hope Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data

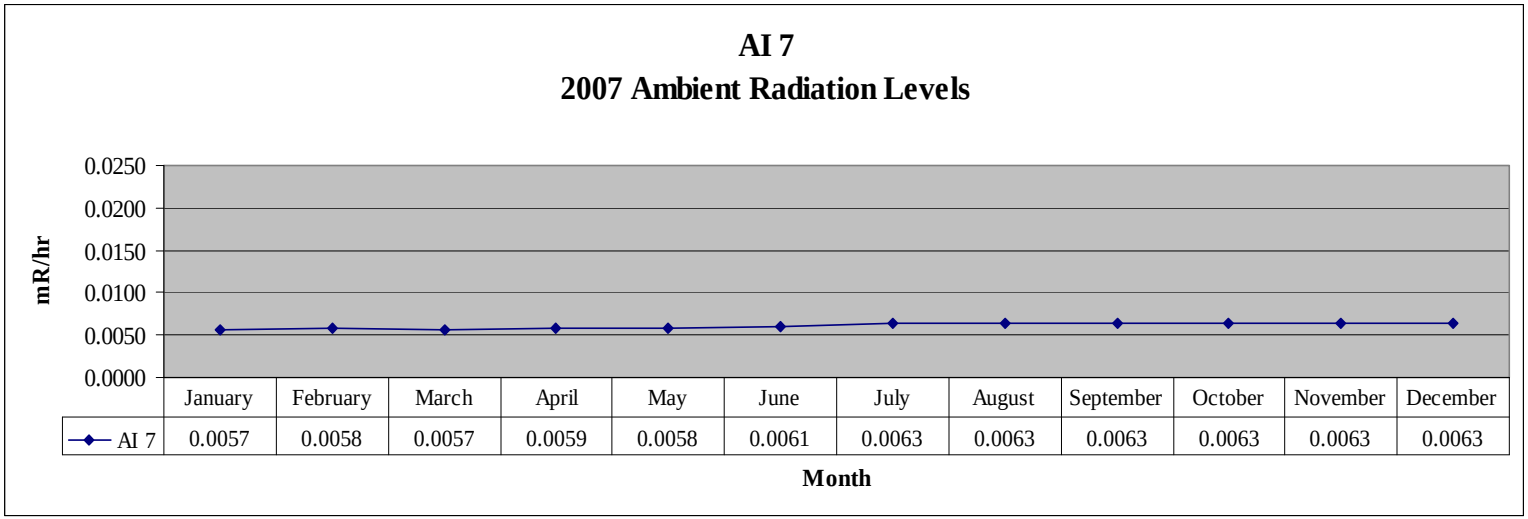


	January	February	March	April	May	June	July	August	September	October	November	December
AI 5	0.0069	0.0069	0.0069	0.0070	0.0070	0.0071	0.0073	0.0073	0.0073	0.0072	0.0071	0.0071

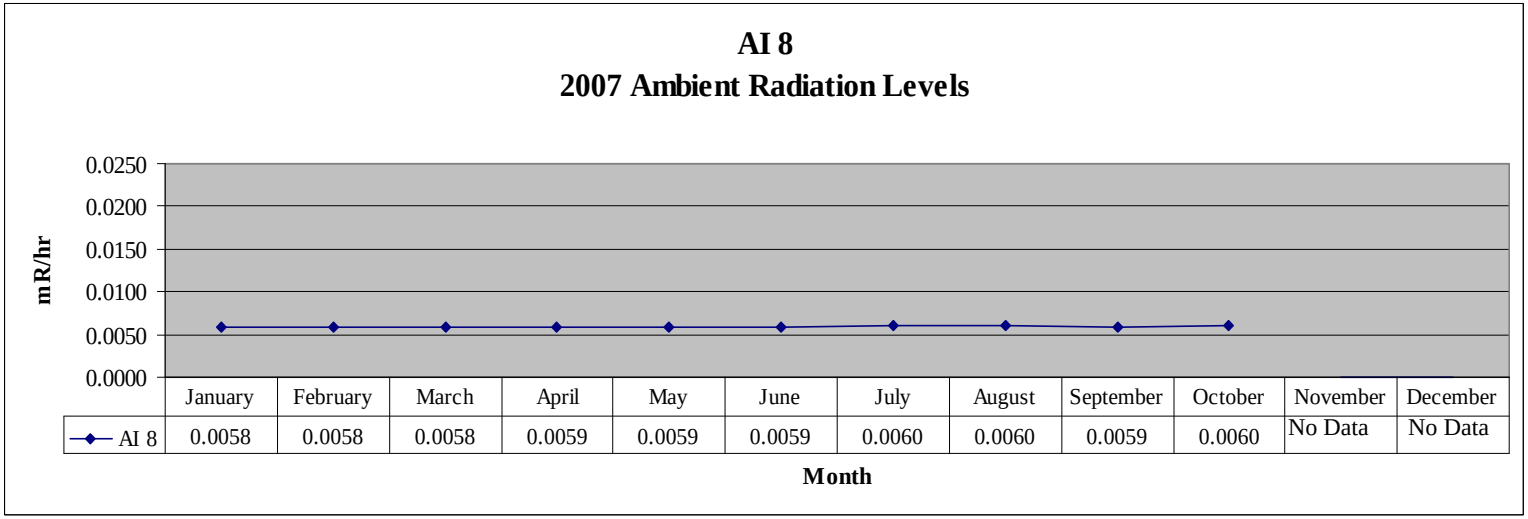


	January	February	March	April	May	June	July	August	September	October	November	December
AI 6	0.0071	0.0072	0.0071	0.0075	0.0080	0.0081	0.0082	No Data	0.0083	0.0084	No Data	No Data

Table B-27 (continued)
Salem / Hope Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data

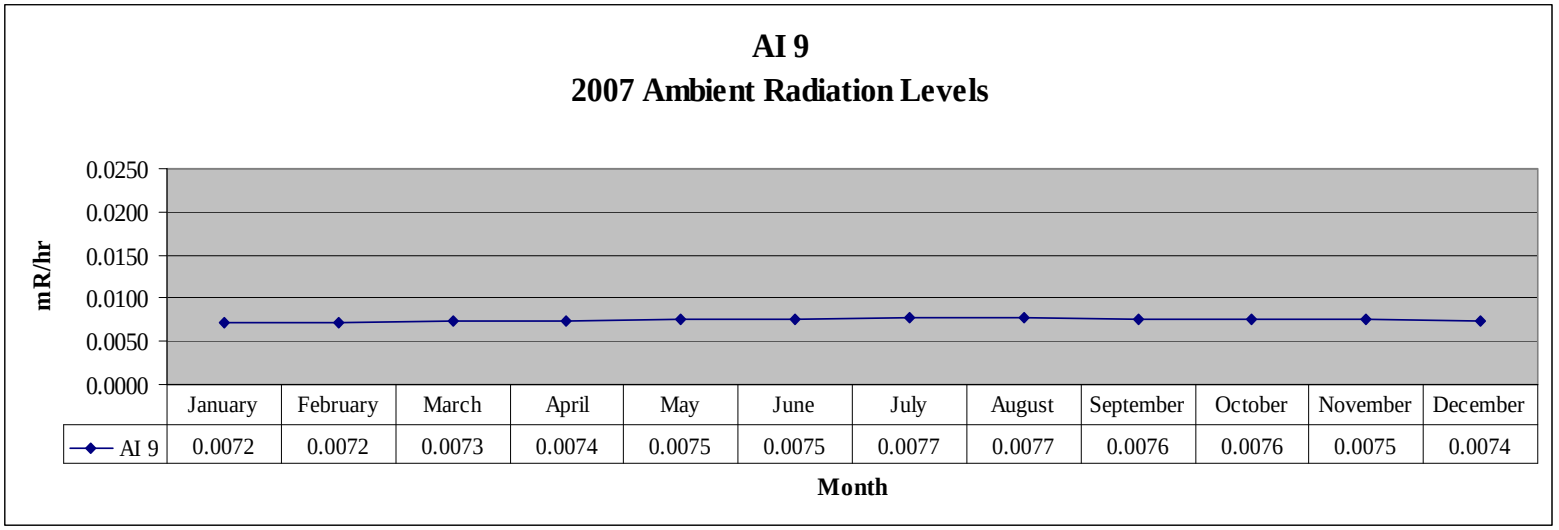


	January	February	March	April	May	June	July	August	September	October	November	December
AI 7	0.0057	0.0058	0.0057	0.0059	0.0058	0.0061	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063

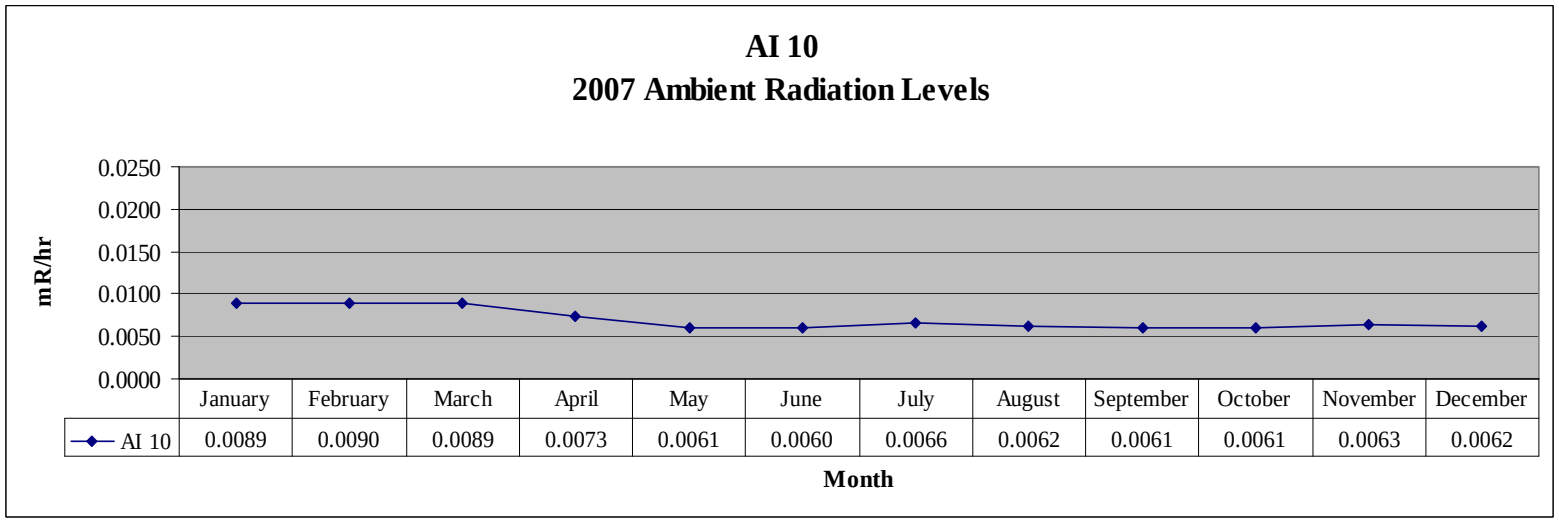


	January	February	March	April	May	June	July	August	September	October	November	December
AI 8	0.0058	0.0058	0.0058	0.0059	0.0059	0.0059	0.0060	0.0060	0.0059	0.0060	No Data	No Data

Table B-27 (continued)
Salem / Hope Creek – Continuous Radiological Environmental Surveillance Telemetry (CREST) Data



	January	February	March	April	May	June	July	August	September	October	November	December
AI 9	0.0072	0.0072	0.0073	0.0074	0.0075	0.0075	0.0077	0.0077	0.0076	0.0076	0.0075	0.0074



	January	February	March	April	May	June	July	August	September	October	November	December
AI 10	0.0089	0.0090	0.0089	0.0073	0.0061	0.0060	0.0066	0.0062	0.0061	0.0061	0.0063	0.0062

Appendix C

Table C-1
NJDEP/BNE
Radiological Environmental Monitoring Program

Minimum Detectable Concentration Requirements For NJDEP/BNE Radiological Environmental Lab Services Contract						
NUCLIDE	**AIR pCi/M^3**	**WATER* pCi/L**	**SOILS/ SEDIMENT pCi/Kg (dry)**	**MILK pCi/L**	**FISH/ INVERTIBRATE pCi/Kg (wet)**	**VEGETABLE pCi/Kg**
Gross Beta	0.01***	4*				
Tritium		1000*				
Mn-54		15***			130***	
Fe-59		30***			260***	
Co-58		15***	30		130***	
Co-60		15*	30		130***	
Zn-65		30***			260***	
Sr-89		10*		1	1000	
Sr-90		2*		1	1000	
Zr-95		10				
Nb-95		10				
I-131	0.07***	1**	100	1**	10	60***
Cs-134	0.01	10	150***	15***	130***	60***
Cs-137	0.01	18***	180***	18***	150***	80***
Ba-140		60***		15		
La-140		15***		15***		
Ra-226		0.5	500			
Ra-228		0.5				

* From EPA Safe Drinking Water Regulation 40 CFR 141.25(c)(1)&(2).

** Based on Radiochemical analysis performed for Iodine-131, EPA Analytical Method 902.0

*** Detection capabilities for Environmental Sample Analysis, Nuclear Regulatory Commission Branch Technical Position, Revision 1, November 1979

Table C-2
GLOSSARY OF TERMS

ADAMS:	Agency-wide Documents Access and Management System. The NRC's web-based access tool that enables an individual to search for NRC public documents. Access to ADAMS is through the NRC website at **http://www.nrc.gov/reading-rm/adams/web-based.html.**
Background Location:	Removed from the influence of a source. A background station is a sampling location that is away from the influence of a potential source (of man-made radioactivity in this case).
Background Radiation:	The amount of radiation to which a member of the population is exposed from natural sources, such as terrestrial radiation due to naturally occurring radionuclides in the soil, cosmic radiation originating in outer space, radioactive substances found in building materials, and naturally occurring radionuclides deposited in the human body.
Bottom Feeder:	A fish, such as a catfish, carp, or flounder, which exists on or near the bottom of a body of water. Shellfish are also bottom feeders.
Composite:	A collection of more than one sample of the same medium (e.g. milk, air particulate or water) such that multiple samples can be analyzed as a single sample.
Coefficient of Variation	The coefficient of variation represents the ratio of the standard deviation to the mean, and is normally reported as a percentage. It is a useful statistic for comparing the degree of variation from one data series to another, even if the means are drastically different from each other.
Curie (Ci):	The quantity of any radionuclide in which the number of disintegrations per second is 37 billion. It is a measure of radioactivity.
Dose:	The mean energy imparted by ionizing radiation to an irradiated medium per unit mass. Dose is measured in rads.

Table C-2 (continued)
GLOSSARY OF TERMS

Effluent:	Material that is released from a source. For the purpose of this report, radioactive effluent is the radioactivity released from each commercial nuclear power plant.
Gamma Emitters:	Gamma emitting radionuclides are isotopes that emit gamma radiation. Examples of gamma emitting radionuclides are Cesium-137, Cesium-134 and Cobalt-60.
Gamma Ray:	Short-wavelength electromagnetic radiation of nuclear origin.
Gross Beta:	A measurement of all beta activity present, regardless of specific radionuclide source. Gross measurements are used as a method to screen samples for relative levels of radioactivity.
Ingestion Pathway Zone:	An emergency planning zone that extends about 50 miles in radius around a nuclear plant. The primary concern within this zone is the ingestion of food and liquid that is contaminated by radioactivity.
Isotopes:	Nuclides that have the same number of protons in their nuclei, and hence the same atomic number, but that differ in the number of neutrons, and therefore in mass number. The chemical properties of isotopes of a particular element are almost identical. Examples of isotopes are Iodine-131 and Iodine-133.
MegaWatt Thermal:	Refers to thermal power produced (MWt). A nuclear power plant utilizes a reactor to generate heat (thermal output) which creates steam to drive a turbine to generate electricity.
MicroRem (μRem):	A submultiple of a Rem equal to one one-hundred thousand of a Rem.
MilliRem (mRem):	A submultiple of a Rem equal to one one-thousand of a Rem.
Milliroentgen (mR):	A submultiple of the roentgen equal to one one-thousand of a roentgen.

Table C-2 (continued)
GLOSSARY OF TERMS

Minimum Detectable Concentration (MDC):	The Minimum Detectable Concentration (MDC) is the smallest concentration of radioactivity in a sample that can be detected with a 5% probability of erroneously detecting radioactivity, when in fact none was present (Type I error) and also, a 5% probability of not detecting radioactivity, when in fact it is present (Type II error). Often used interchangeably with Minimum Detectable Activity, since the difference between the two terms is only one of units conversion.
NAREL:	National Air and Radiation Environmental Laboratory. Samples from the EPA's RadNet program are analyzed at this facility. See **http://www.epa.gov/narel/**
NJDEP/BNE	New Jersey Department of Environmental Protection, Bureau of Nuclear Engineering. This group independently monitors radiation in the environment outside the site boundaries of New Jersey's nuclear power generating stations (Artificial Island and Oyster Creek).
Nuclide:	A species of atom characterized by the constitution of its nucleus, which is specified by its atomic mass and atomic number (Z). The atomic number is its number of protons while the atomic mass is its number of protons plus neutrons.
Owner Controlled Area	An area outside of a restricted area, but inside the site boundary, to which the licensee can limit access for any reason.
Picocurie:	The measurement of radioactivity in the environment is expressed in picocuries. A picocurie is one trillionth (10^{-12}) of a curie.
Predator Fish:	Fish that feed off of other species of fish.
Pressurized Ion Chamber:	An integrating instrument that measures the total dose over a given timeframe. It is referred to as a PIC.
Rad:	A unit of radiation absorbed dose.
Radioactivity:	The property of some nuclides of spontaneously emitting particles or radiation.

Table C-2 (continued)
GLOSSARY OF TERMS

Radioisotope:	A radioactive atomic species of an element with the same atomic number usually identical chemical properties (eg., stable and the radioisotope [Tritium]).
Radionuclide:	A radioactive species of an atom characterized by the constitution of its nucleus.
RadNet:	Formerly known as ERAMS, RadNet is a national network of monitoring stations that regularly collect air, precipitation, drinking water, and milk samples for analysis of radioactivity. RadNet also documents the status and trends of environmental radioactivity. These data are published by NAREL in a quarterly report entitled *Environmental Radiation Data*. RadNet information can also be found be at: **http://www.epa.gov/narel/radnet/**.
Rem:	A unit of radiation dose equivalent in man. Different types of ionizing radiation produce varying amounts of biological effects based on how and where the energy is imparted. To account for these differences, quality and modifying factors have been developed. The dose equivalent is designed to normalize all ionizing radiation to a common scale so that radiation protection standards can be developed.
Roentgen (R):	The special unit of radiation exposure to X or gamma radiation. One roentgen creates 2.58E-4 coulomb of electric charge per kilogram of air. The roentgen expresses the amount of energy imparted by X or gamma radiation in a given volume of air.
Sigma	Referred to as 'the standard deviation', sigma is the most common measure of statistical dispersion, measuring how 'spread out' the values in the dataset are. If the data points are all close to the mean, then the standard deviation is close to zero. If all data values are equal, the standard deviation is zero.