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U.S. Nuclear Regulatory Commission
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Docket Nos.	50-245
	50-336
	50-423
License Nos.	DPR-21
	DPR-65
	NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNITS 1, 2, AND 3
2014 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

This letter transmits the Annual Radiological Environmental Operating Report for the Millstone Power Station, for the period January 2014 through December 2014. This satisfies the provisions of Section 5.7.2 of Millstone Power Station Unit 1 Permanently Defueled Technical Specifications (PDTS), and Sections 6.9.1.6a and 6.9.1.3 of the Millstone Power Station Units 2 and 3 Technical Specifications, respectively.

If you have any questions or require additional information, please contact Mr. Mr. Thomas G. Cleary at (860) 447 1791 extension 3232.

Sincerely,

D. B. Blakeney
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IE25
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Attachments: 1

Commitments made in this letter:

1. None.

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NPF-49

ATTACHMENT 1

2014 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

MILLSTONE POWER STATION UNITS 1, 2, AND 3
DOMINION NUCLEAR CONNECTICUT, INC. (DNC)

Millstone Power Station

2014

Radiological Environmental Operating Report

January 1, 2014 – December 31, 2014

Dominion Nuclear Connecticut, Inc.

Unit	License	Docket
1	DPR-21	50-245
2	DPR-65	50-336
3	NPF-49	50-423

Dominion

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

MILLSTONE POWER STATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

2014

Millstone Power Station Unit 1, DOCKET NO. 50-245
Millstone Power Station Unit 2, DOCKET NO. 50-336
Millstone Power Station Unit 3, DOCKET NO. 50-423

Dominion Nuclear Connecticut, Inc.
Waterford, Connecticut

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EXECUTIVE SUMMARY

INTRODUCTION

This report summarizes the results of the Radiological Environmental Monitoring Program (REMP) conducted in the vicinity of the Millstone Nuclear Power Station (Millstone) during the period from January 1 to December 31, 2014. This document has been prepared in accordance with the requirements of the separate Technical Specifications for Millstone Units 1, 2 and 3.

The REMP has been established to monitor the radiation and radioactivity released to the environment as a result of Millstone's operation. This program, initiated in April 1967, includes the collection, analysis, and evaluation of radiological data in order to assess the impact of Millstone on the environment and on the general public.

SAMPLING AND ANALYSIS

The environmental sampling media collected in the vicinity of Millstone and at distant locations included terrestrial samples in the form of air particulate filters, charcoal cartridges, soil, cow milk, pasture grass, feed, hay, well water, broadleaf vegetation, fruits and vegetables; and aquatic samples in the form of seawater, bottom sediment, aquatic flora, fish, oysters, clams and lobster.

During 2014, there were 799 samples collected from the atmospheric, aquatic, and terrestrial environments. In addition, 176 exposure measurements were obtained using environmental thermoluminescent dosimeters (TLDs). A discussion of all discrepancies from the sample collection requirements in the Millstone Radiological Effluent Monitoring and Offsite Dose Calculation Manual (REMODCM) is given in Section 2.3 of this report.

Teledyne Brown Engineering, Inc. of Knoxville, Tennessee performed the sample analyses and Environmental Dosimetry Company of Sterling, Massachusetts performed the TLD analyses.

LAND USE CENSUS

The annual land use census in the vicinity of Millstone was conducted as required by the Millstone REMODCM. Typically the cow milk locations are identified by a review of the annual registration information obtained from the State of Connecticut Department of Agriculture. Gardens are located by a drive-by during the harvest season. Although broadleaf sampling was performed and may be used in lieu of a garden census, gardens were included in the 2014 census. Only vegetable gardens having an area of more than 500 square feet need to be identified. Due to the difficulty of measuring individual gardens, the nearest garden within each directional sector identified by a drive-by survey is listed. However, for dose calculation, garden distances are based on nearest resident assuming that a resident may plant a new garden. This gives a more conservative dose result. Goat locations are more difficult to determine, but best efforts are made by reviewing membership list of the American Dairy Goat Association records, contacting previous owners and, if necessary, performing visual drive-by inspections.

RADIOLOGICAL IMPACT TO THE ENVIRONMENT

The radioactivity detected in some samples was from non-station related sources, such as fallout from past nuclear weapons tests and naturally occurring radionuclides.

All terrestrial samples collected as part of the Millstone REMP did not show any station related activity.

Monitoring of seawater in the area of the discharge indicated the presence of tritium, a station related radionuclide. Tritium was only found in seawater onsite inside the mixing zone of the quarry discharge at levels that were expected from routine station operation.

Offsite ambient radiation measurements using environmental TLDs beyond the site boundary ranged between 39 and 102 milliRoentgens per year. The range of ambient radiation levels observed with the TLDs is consistent with natural background radiation levels for Connecticut.

RADIOLOGICAL IMPACT TO THE GENERAL PUBLIC

During 2014, radiation doses to the general public as a result of Millstone's operation continued to be well below the federal limits and much less than the dose due to other sources of man-made (e.g., X-rays, medical) and naturally-occurring (e.g., cosmic, radon) radiation.

The calculated total body dose to the maximally exposed member of the general public from radioactive effluents and ambient radiation resulting from Millstone operations for 2014 was approximately 0.24 mrem* for the year. This conservative estimate is well below the Environmental Protection Agency's (EPA) annual dose limit to any member of the general public and is a fraction of a percent of the typical dose received from natural and other sources of man-made radiation.

CONCLUSIONS

The 2014 REMP for Millstone resulted in the collection and analysis of 975 environmental samples and measurements. The data obtained were used to determine the impact of Millstone's operation on the environment and on the general public.

An evaluation of direct radiation measurements, environmental sample analyses, and dose calculations indicates all applicable federal criteria were met. Furthermore, radiation levels and resulting doses from station operation were a small fraction of those attributed to natural and man-made background radiation.

Based on this information, there is no significant radiological impact on the environment or on the general public due to Millstone's operation.

* The term 'mrem' used in this report is a unit of radiation dose. The letter 'm' is for 'milli', or one-thousandth of a 'rem.' The word 'rem' is an acronym for roentgen equivalent man. One rem is equal to a rad multiplied by factors to account for type of radiation and distribution within the body. The word 'rad' is an acronym for radiation absorbed dose. One rad is equal to the absorption of 100 ergs of energy per gram of tissue.

1. INTRODUCTION

This section provides an overview of the Millstone REMP. It also includes background information to allow a reader to have an informed understanding of radiation and nuclear power operation.

1.1 Overview

The REMP for 2014 performed by Dominion Nuclear Connecticut (DNC) for Millstone is discussed in this report. Since the operation of a nuclear power station results in the release of small amounts of radioactivity and low levels of radiation, the Nuclear Regulatory Commission (NRC) requires by regulations and technical specifications that a program be established to monitor radiation and radioactivity in the environment (References 1, 6, 9, 10 & 11). This report, published annually per Millstone's Technical Specifications (section 5.7.2 for Millstone Unit 1, section 6.9.1.6A for Millstone Unit 2 and Section 6.9.1.3 for Millstone Unit 3), summarizes the results of measurements of radiation and radioactivity in the environment in the vicinity of the Millstone and at distant locations during the period January 1 to December 31, 2014.

The REMP consists of taking radiation measurements and collecting samples from the environment, analyzing them for radioactivity content, and interpreting the results. With emphasis on the critical radiation exposure pathways to humans, samples from the aquatic, atmospheric, and terrestrial environments are collected. These samples include, but are not limited to: air, soil, cow milk, pasture grass, hay, well water, broadleaf vegetation, fruits, vegetables, seawater, bottom sediment, aquatic flora, fish, mussels, oysters, clams and lobster. Thermoluminescent dosimeters (TLDs) are placed in the environment to measure gamma radiation levels. The TLDs are processed and the environmental samples are analyzed to measure the very low levels of radiation and radioactivity present in the environment as a result of Millstone operation and other natural and man-made sources. These results are reviewed by Millstone's radiological staff and have been reported semiannually or annually to the NRC and others for over 30 years.

In order to more fully understand how a nuclear power station impacts humans and the environment, background information on radiation and radioactivity, natural and man-made sources of radiation, reactor operations, radioactive effluent controls, and radiological impact on humans is provided. It is believed that this information will assist the reader in understanding the radiological impact on the environment and humans from the operation of Millstone.

1.2 Radiation and Radioactivity

All matter is made of atoms. Nuclear radiation is energy or particles that are given off from atoms in an excited state (e.g., unstable, radioactive atoms).

Radioactive material exists naturally and has always been a part of our environment. The earth's crust, for example, contains radioactive uranium, radium, thorium, and potassium. Some radioactivity is a result of fallout from nuclear weapons testing. Examples of radioactive fallout that could be present in environmental samples are cesium-137 and strontium-90. Some examples of radioactive materials released from a nuclear power station are hydrogen-3 (tritium), cesium-137, iodine-131, strontium-90, and cobalt-60.

Radiation is measured in units of mrem, much like temperature is measured in degrees. A mrem (mrem) is a measure of the biological effect of the energy deposited in tissue. The letter 'm' is for 'milli', or one-thousandth of a 'rem.' The word 'rem' is an acronym for roentgen equivalent man. One rem is equal to a 'rad' multiplied by factors to account for type of radiation and distribution within the body. The word 'rad' is an acronym for radiation absorbed dose. One rad is equal to the absorption of 100 ergs of energy per gram of tissue. The natural and man-made radiation dose received in one year by the average American is 300 to 600 mrem (References 2, 3, 4 & 5). The per capita dose has increased since the mid 1980's because of the increased usage of medical procedures involving exposure to radiation (see Reference 3).

Radioactivity is measured in Curies. Levels of radioactivity commonly seen in the environment are typically a small fraction of a Curie, therefore radioactivity in the environment is typically measured in picocuries. One picocurie (pCi) is one-trillionth of a Curie and is equal to 0.037 disintegrations per second (2.22 disintegrations per minute).

1.3 Sources of Radiation

As mentioned previously, naturally occurring radioactivity has always been a part of our environment. Table 1.3 shows the sources and doses of radiation from natural and man-made sources.

Table 1.3
Radiation Sources and Corresponding Doses (1)

NATURAL		MAN-MADE	
Source	Radiation Dose (mrem/year)	Source	Radiation Dose (mrem/year)
Internal, inhalation(2)	228	Medical(3)	300
External, space	33	Consumer(4)	13
Internal, ingestion	29	Industrial, security, educational, research	0.3
External, terrestrial	21	Occupational	0.5
		Weapons Fallout	< 1
		Nuclear Power Stations	< 1
Approximate Total	311	Approximate Total	314

(1) information from References 3 and 4
(2) from radon and thoron
(3) includes computerized tomography (147 mrem), nuclear medicine (77 mrem), interventional fluoroscopy (43 mrem) and conventional radiography and fluoroscopy (33 mrem)
(4) primarily from cigarette smoking (4.6 mrem), commercial air travel (3.4 mrem), building materials (3.5 mrem) and mining and agriculture (0.8 mrem)

Cosmic radiation (external, space) from the sun and outer space penetrates the earth's atmosphere and continuously bombards us with rays and charged particles. Some of this cosmic radiation interacts with gases and particles in the atmosphere, making them radioactive. These radioactive byproducts from cosmic ray bombardment are referred to as cosmogenic radionuclides. Isotopes such as beryllium-7 and carbon-14 are formed in this way. Exposure to cosmic and cosmogenic sources of radioactivity results in about 30 mrem of radiation dose per year.

Additionally, natural radioactivity is in our body and in the food we eat (about 30 mrem/year), the ground we walk on (about 20 mrem/year) and the air we breathe (about 230 mrem/year). The majority of a person's annual dose results from exposure to radon and thoron in the air we breathe. These gases and their radioactive decay products arise from the decay of naturally occurring uranium, thorium and radium in the soil and building products such as brick, stone, and concrete. Radon and thoron levels vary greatly with location, primarily due to changes in the concentration of uranium and thorium in the soil. Residents at some locations in Colorado, New York, Pennsylvania, New Jersey and even Connecticut have a higher annual dose as a result of higher levels of radon/thoron gases in these areas. In total, these various sources of naturally-occurring radiation and radioactivity contribute to a total dose of about 310 mrem per year.

In addition to natural radiation, we are normally exposed to radiation from a number of man-made sources. The single largest doses from man-made sources result from therapeutic and diagnostic applications of x-rays and radiopharmaceuticals. The annual dose to an individual in the United States from medical and dental exposure is approximately 300 mrem. Consumer products/uses, such as cigarettes, building materials and commercial air travel contribute about 10 mrem/year. Much smaller doses result from weapons fallout (less than 1 mrem/year) and nuclear power stations (less than 1 mrem/year). Typically, the average person in the United States receives approximately 310 mrem per year from man-made sources.

1.4 Nuclear Reactor Operations

Millstone generates about 2100 megawatts of electricity at full power, which provides approximately one-third of the power consumed in the State of Connecticut. Millstone Unit 2 and Millstone Unit 3 are pressurized water reactors (Millstone Unit 1, which is permanently shutdown, was a boiling water reactor). The nuclear station is located on an approximate 500-acre site about 5 kilometers (three miles) west of New London, Connecticut. Commercial operation of Millstone Unit 2 began in December 1975 and Millstone Unit 3 in May 1986.

Millstone was operational during most of 2014, with the exception of refueling outages at Millstone Unit 2 in April and at Millstone Unit 3 in October. Both units went offline on May 25 because of loss of offsite power with Unit 2 down for three days and Unit 3 for eight days. Unit 2 was offline for five days at the end of July because of a failed surveillance on the terry turbine. The annual capacity factor for Millstone Unit 2 was 85.4% and for Millstone Unit 3 was 88.1%.

Nuclear-generated electricity is produced by many of the same techniques used for conventional oil and coal-generated electricity. Both systems use heat to boil water in order to produce steam. The steam turns a turbine, which turns a generator, producing electricity. In both cases, the steam passes through a condenser where it changes back into water and re-circulates back through the system (see Figure 1.4-1). The cooling water source for Millstone is the Niantic Bay.

The key difference between nuclear power and conventional power is the source of heat used to boil the water. Conventional stations burn fossil fuels in a boiler, while nuclear stations use uranium fission in a nuclear reactor.

Inside the reactor, a nuclear reaction called fission takes place. Particles, called neutrons, strike the nucleus of a uranium-235 atom, causing it to split into fragments called radioactive fission products. The splitting of the atoms releases both heat and more neutrons. The newly-released neutrons then collide with and split other uranium atoms, thus making more heat and releasing even more neutrons, and on and on until the uranium fuel is depleted or spent. This process is called a chain reaction. When this chain reaction is self sustaining, the reactor is called "critical."

The operation of a nuclear reactor results in the release of small amounts of radioactivity and low levels of radiation. The radioactivity originates from two major sources, radioactive fission products and radioactive activation products. Radioactive fission products, as illustrated in Figure 1.4-1, originate from the fissioning of the nuclear fuel. These fission products get into the reactor coolant from their release by minute amounts of uranium on the outside surfaces of the fuel cladding, by diffusion through the fuel pellets and cladding and, on occasion, through defects or failures in the fuel cladding. These fission products circulate along with the reactor coolant water and will deposit on the internal surfaces of pipes and equipment. The radioactive fission products on the pipes and equipment emit radiation. Examples of some fission products are krypton-85 (Kr-85), strontium-90 (Sr-90), iodine-131 (I-131), xenon-133 (Xe-133), and cesium-137 (Cs-137).

SIMPLIFIED DIAGRAM OF A PRESSURIZED WATER REACTOR

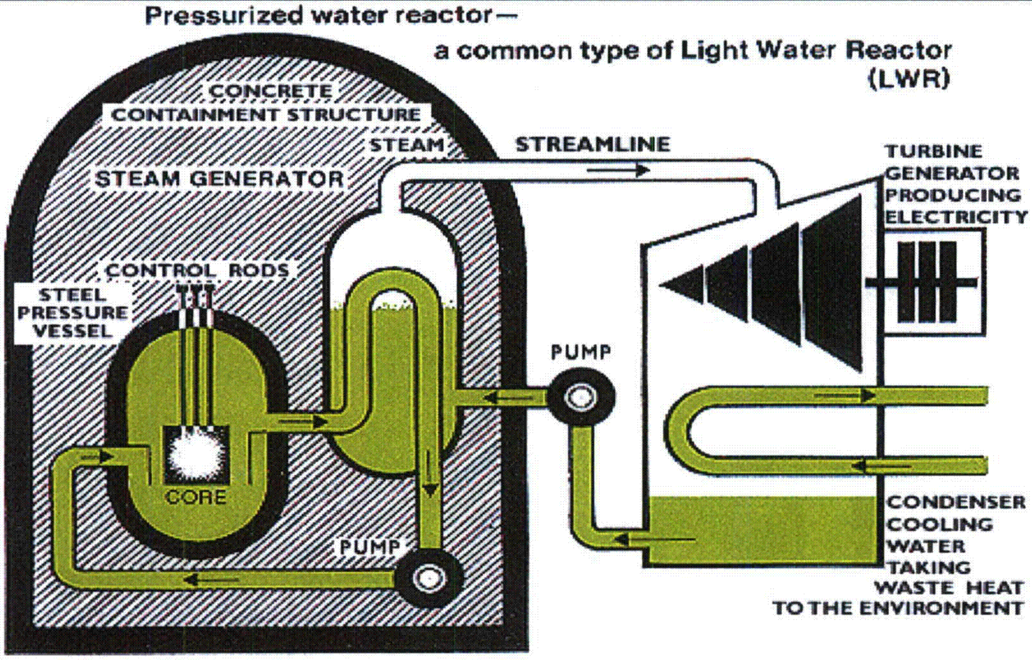


Figure 1.4-1

Nuclear Fission

Fission is the splitting of atoms (e.g., uranium-235) by a neutron to release heat and more neutrons, creating a chain reaction. Radiation and fission products are by-products of the process.

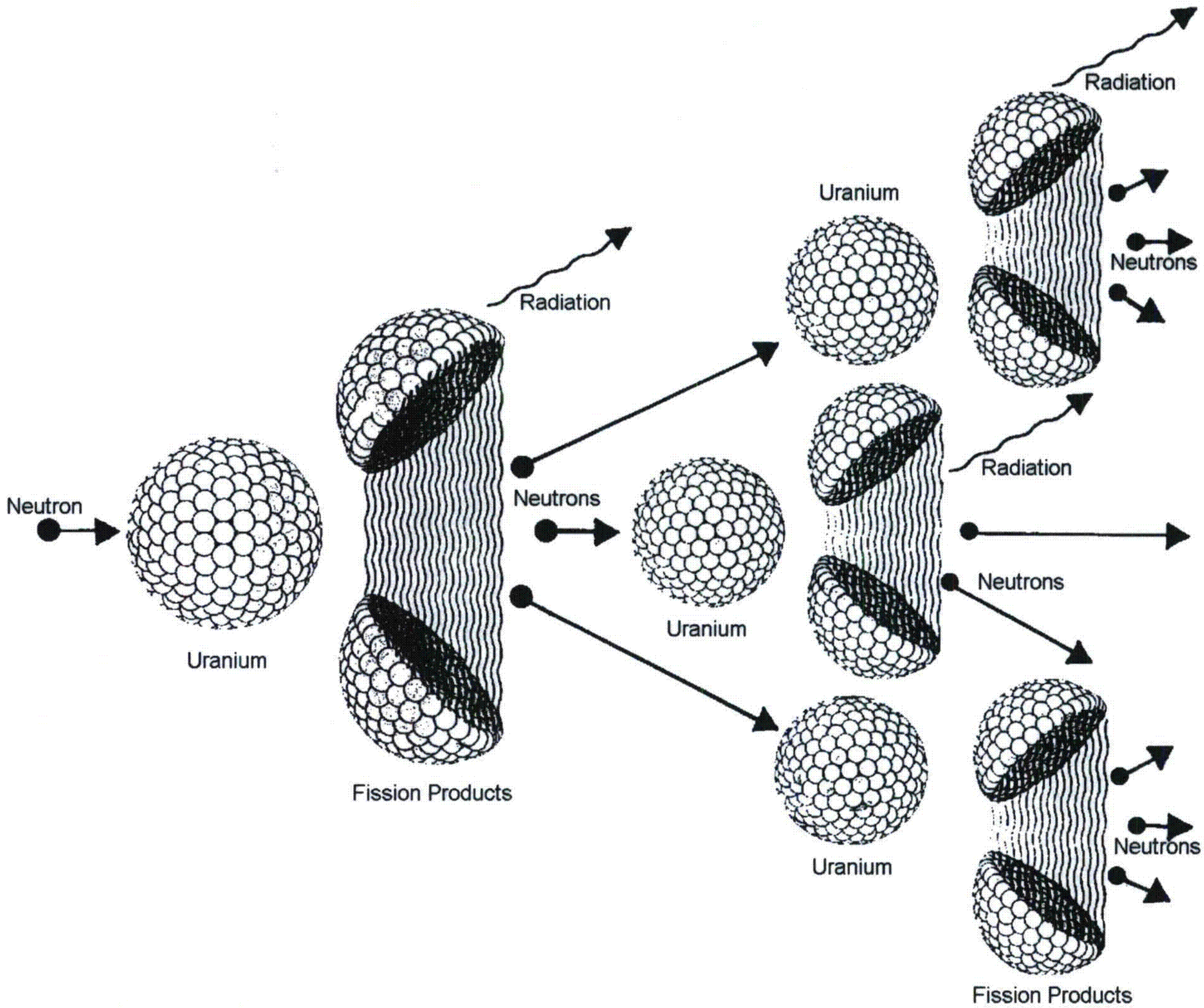


Figure 1.4-2
Radioactive Fission Product Formation

Radioactive activation products (see Figure 1.4-3), on the other hand, originate from two sources. The first is by neutron bombardment of the hydrogen, oxygen and other gas (helium, argon, nitrogen) molecules in the reactor cooling water. The second is a result of the fact that the internals of any piping system or component are subject to minute yet constant corrosion from the reactor cooling water. These minute metallic particles (for example: nickel, iron, cobalt, or magnesium) are transported through the reactor core into the fuel region, where neutrons may react with the nuclei of these particles, producing radioactive products. So, activation products are nothing more than ordinary naturally-occurring atoms that are made unstable or radioactive by neutron bombardment. These activation products circulate along with the reactor coolant water and will deposit on the internal surfaces of pipes and equipment. The radioactive activation products on the pipes and equipment emit radiation. Examples of some activation products are manganese-54 (Mn-54), iron-59 (Fe-59), cobalt-60 (Co-60), and zinc-65 (Zn-65).

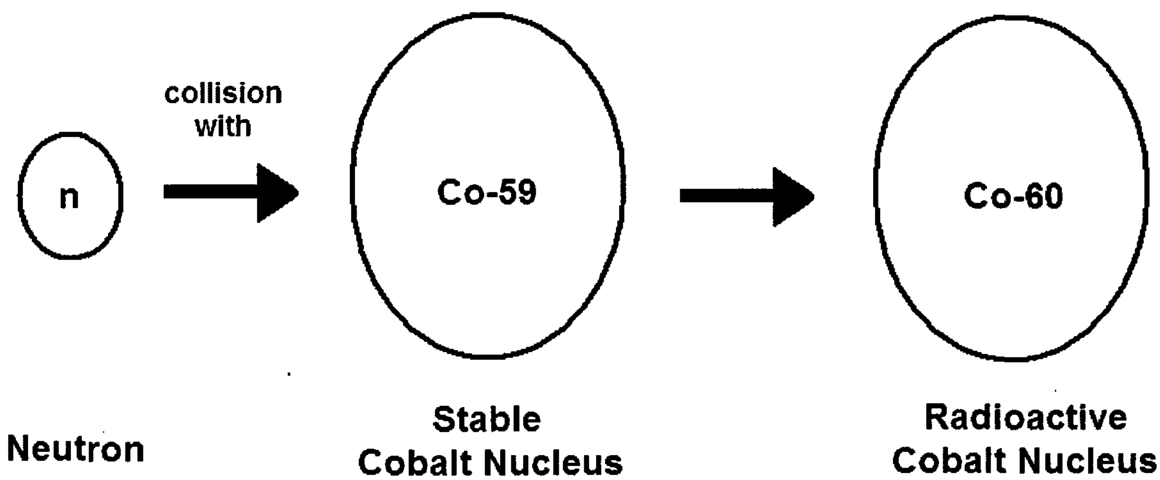


Figure 1.4-3
Radioactive Activation Product Formation

At Millstone there are five independent protective barriers that confine these radioactive materials. These five barriers are:

- fuel pellets;
- fuel cladding;
- reactor vessel and associated piping and equipment;
- primary containment and,
- secondary containment (enclosure building).

The ceramic uranium fuel pellets provide the first barrier. Most of the radioactive fission products are either physically trapped or chemically bound between the uranium atoms, where they will remain. However, a few fission products that are volatile or gaseous may diffuse through the fuel pellets into small gaps between the pellets and the fuel cladding.

The second barrier, the fuel cladding, consists of zirconium alloy tubes that confine the fuel pellets. The small gaps between the fuel and the cladding contain the noble gases and volatile iodines that are types of radioactive fission products. This radioactivity can diffuse to a small extent through the fuel cladding into the reactor coolant water. Radioactivity can also escape into coolant water through cladding defects and failures.

The third barrier consists of the reactor pressure vessel, steel piping and equipment that confine the reactor cooling water. The reactor pressure vessel, which holds the reactor fuel, is typically a steel tank 40 feet high by 14 feet in diameter with walls about five to nine inches thick. These vessels and associated piping provide containment for radioactivity in the primary coolant and the reactor core. However, during the course of operations and maintenance, small amounts of radioactive fission and activation products can escape through valve leaks or upon breaching of the primary coolant system for maintenance.

The fourth barrier is the primary containment. It is a cylindrical enclosure with approximately five-foot thick steel reinforced concrete walls lined by steel on the inside. During operation the containment is closed but small amounts of radioactivity may be released from primary containment by venting during operation to maintain proper containment pressure. During maintenance and refueling outages containment is open and small amounts of radioactivity is released during this time when the fuel has been moved out of the reactor cavity in containment.

The fifth barrier is the secondary containment or enclosure building. The enclosure building is a steel building that surrounds the primary containment. This barrier is an additional safety feature at Millstone's reactor units to contain radioactivity that may escape from the primary containment. This enclosure building is equipped with a filtered ventilation system that is used when needed to reduce the radioactivity that escapes from the primary containment.

The five barriers confine most of the radioactive fission and activation products. However, small amounts of radioactivity do escape via mechanical failures and maintenance on valves, piping, and equipment associated with the reactor cooling water system. The small amounts of radioactive liquids and gases that do escape the various containment systems are further controlled by the liquid purification and ventilation filtration systems. The control of radioactive effluents at Millstone will be discussed in more detail in the next section.

1.5 Radioactive Effluent Control

The small amounts of radioactive liquids and gases that might escape the first two barriers are processed in the liquid and gaseous waste treatment systems, then monitored for radioactivity, and released only if the radioactivity levels are below the federal release limits.

Radioactivity released from the liquid effluent system to the environment is limited, controlled, and monitored by a variety of systems and procedures which include:

- reactor water cleanup system;
- liquid radwaste treatment system;
- sampling and analysis of the liquid radwaste tanks; and,
- liquid waste effluent discharge radioactivity monitor.

The purpose of the reactor water cleanup system is to continuously purify the reactor cooling water by removing radioactive atoms and non-radioactive impurities that may become activated by neutron bombardment. A portion of the reactor coolant water is diverted from the primary coolant system and is directed through ion exchange resins where radioactive elements, dissolved and suspended in the water, are removed through chemical processes. The net effect is a substantial reduction of the radioactive material that is present in the primary coolant water and consequently the amount of radioactive material that might escape from the system.

Reactor cooling water that might escape the primary cooling system and other radioactive water sources are collected in floor and equipment drains. These drains direct this radioactive liquid waste to large holdup tanks. The liquid waste collected in the tanks is purified again using the liquid radwaste treatment system, which consists of a filter and ion exchange resins.

Processing of liquid radioactive waste results in large reductions of radioactive liquids discharged into Niantic Bay. Wastes processed through liquid radwaste treatment can be purified and, in some cases, re-used in station systems.

Prior to release, the radioactivity in any liquid radwaste tank is sampled and analyzed to determine if the level of radioactivity is below the release limits and to quantify the total amount of radioactive liquid effluent that will be released. If the levels are below the federal release limits, the tank is drained to the liquid effluent discharge header.

This liquid waste effluent discharge line is provided with a shielded radioactivity monitor. This detector is connected to a radiation level meter and a recorder in the Control Room. The radiation alarm is set so that the detector will alarm before radioactivity levels exceed the release limits. The liquid effluent discharge header has an isolation valve. If an alarm is received, the liquid effluent discharge valve will automatically close, thereby terminating the release to the environment and preventing any liquid radioactivity from being released that may exceed the release limits. An audible alarm notifies the Control Room operator that this has occurred.

Some liquid waste sources, which have a low potential for containing radioactivity, and/or may contain very low levels of contamination, may be discharged directly to the environment. One such source of liquid is the turbine building sump. However, periodic representative samples are collected for analysis of radioactivity content to track the amounts of radioactivity being discharged.

The preceding discussion illustrates that many controls exist to reduce the radioactive liquid effluents released to the environment to as far below the release limits as is reasonably achievable.

Radioactive releases from the radioactive gaseous effluent system to the environment are limited, controlled, and monitored by a variety of systems and procedures which include:

- containment building ventilation system;
- containment building radioactivity monitors;
- sampling and analysis of containment building vent and purge effluents;
- process gas treatment system;
- auxiliary building (and engineered safeguards and fuel building for Millstone Unit 3) ventilation system;
- Millstone station stack and units' vent effluent radioactivity monitors;
- sampling and analysis of Millstone station stack and units' vent effluents;
- process radiation monitors; and
- steam jet air ejector (SJAE) monitor

The primary sources of gaseous radioactive waste are degassing of the primary coolant, gaseous liquid drains, and gaseous vents. Additional sources of gaseous waste activity include ventilation air released from the auxiliary building and purging and venting of the containment building. The radiation level meter and recorders for the effluent radioactivity monitors are located in the Control Room. The station process computer aids in tracking the monitor readings. To supplement the information continuously provided by the detector, air samples are taken periodically from the units' containments, Millstone station stack and units' vents. These samples are analyzed to quantify the total amount of radioactive gases, radioactive iodines, radioactive particulate and tritium released in gaseous effluents.

Gases from the primary coolant are held up in waste gas decay tanks for decay at Millstone Unit 2. Gaseous waste at Millstone Unit 3 is purified through a process gas system, consisting of high-efficiency particulate air filters and charcoal adsorber beds. Gases from periodic venting of the Millstone Unit 2 containment are released through a similar process system (Enclosure Building Filtration System) while gases from the Millstone Unit 3 containment vacuum pumps are released without treatment. If necessary, Millstone Unit 3 containment air can be filtered by an internal particulate and charcoal treatment system. Containment purges (purge is the forced ventilation process while containment vents are pressure releases) for Millstone Unit 2 are filtered by high-efficiency particulate filters while at Millstone Unit 3 these are not normally filtered. If necessary, particulate and charcoal filters can be used for these purges.

Normally, for Unit 2, the air released from the unit vent is from the ventilation of the auxiliary (which includes the fuel pool), service and enclosure buildings. For Unit 2, fuel pool and enclosure building ventilation can be redirected to the Millstone Site Stack. Normally, for Unit 3, the air released from the unit vent is from the ventilation of the auxiliary, fuel, service, waste disposal and enclosure buildings. For Unit 3, enclosure building ventilation can be redirected to the Millstone Site Stack.

Therefore, for both liquid and gaseous releases, radioactive effluent control systems exist to collect and purify the radioactive effluents in order to reduce releases to the environment to as low as is reasonably achievable. The effluents are always monitored, sampled and analyzed to make sure that radioactivity levels are below the release limits. If the release limits are being approached, isolation valves are closed to stop the release and ensure that federal regulatory limits are always met.

1.6 Radiological Impact on Humans

The final step in the effluent control process is the determination of the radiological dose impact to humans and comparison with the federal dose limits to the public. This step is performed in three stages. As mentioned previously, the purpose of continuous radiation monitoring and periodic sampling and analysis is to measure the quantities of radioactivity being released to determine compliance with the radioactivity release limits. This is the first stage for assessing releases to the environment.

The second stage is calculation of the dose impact to the general public from Millstone's radioactive effluents. The purpose of this calculation is to periodically assess the dose to the general public resulting from radioactive effluents to ensure that the dose is being maintained as far below the federal dose limit as is reasonably achievable. This is the second stage for assessing releases to the environment.

The types and quantities of radioactive liquid and gaseous effluents released from Millstone during each year are reported to the NRC annually in the Radiological Effluent Release Report (RERR). Similar to this report, the RERR is submitted annually to the NRC. The liquid and gaseous effluents were well below the federal release limits and were a small percentage of the Millstone REMODCM effluent control limits.

The measurements of the physical and chemical nature of the effluents are used to determine how the radionuclides will interact with the environment and how they can result in radiation exposure to humans. The environmental interaction mechanisms depend upon factors such as the hydrological (water) and meteorological (atmospheric) characteristics in the area. Information on the water flow, wind speed, wind direction, and atmospheric mixing characteristics are used to estimate how radioactivity will distribute and disperse in the ocean and the atmosphere.

The most important type of information that is used to evaluate the radiological impact on humans is data on the use of the environment. Information on fish and shellfish consumption, boating usage, beach usage, locations of cows and goats, locations of residences, locations of gardens, and other usage information are utilized to estimate the amount of radiation and radioactivity received by the general public.

The radiation exposure pathway to humans is the path radioactivity takes from its release point at Millstone to its effect on man. The movement of radioactivity through the environment and its transport to humans is portrayed in Figure 1.6.

EXAMPLES OF Millstone's RADIATION EXPOSURE PATHWAYS

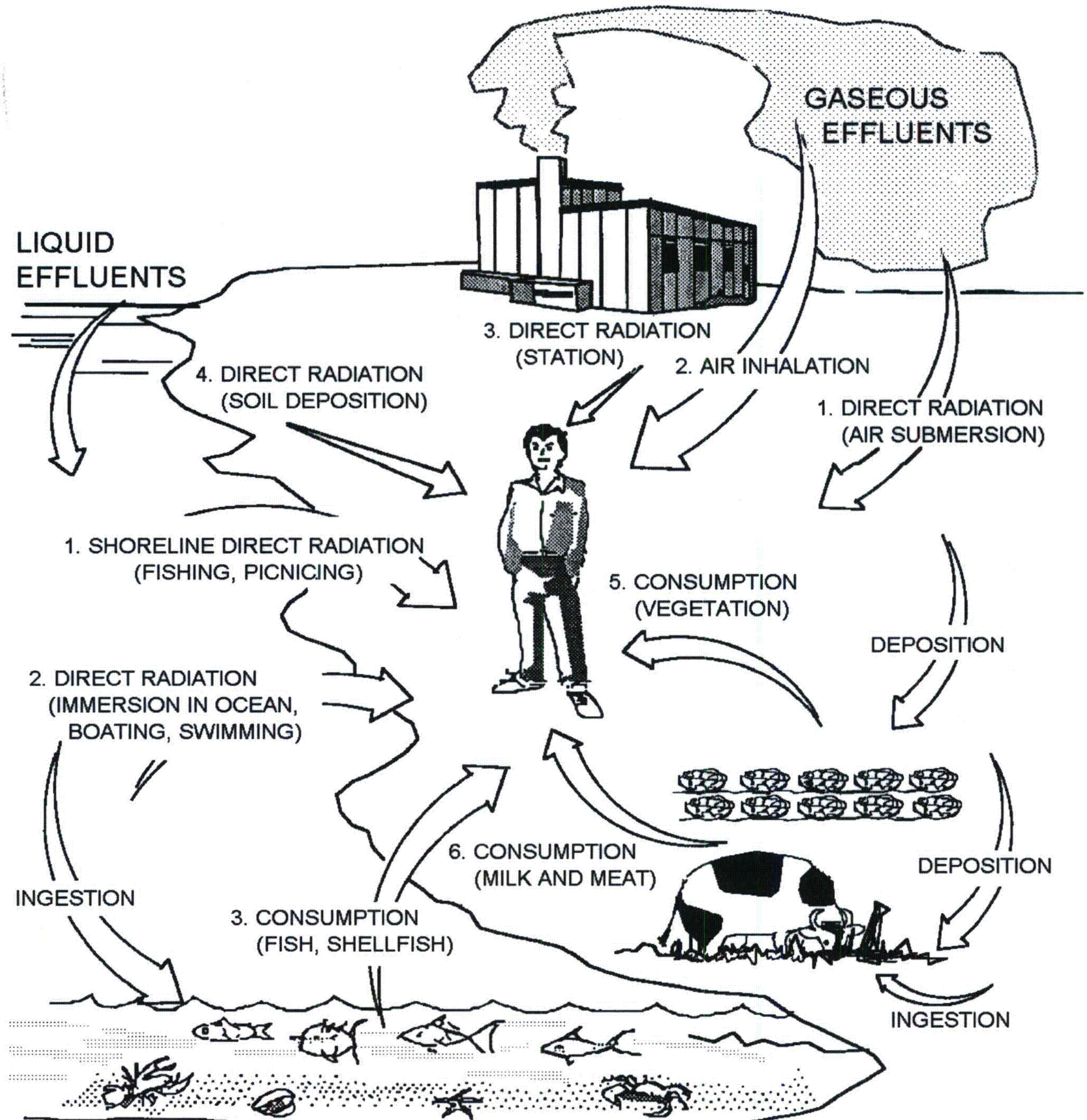


Figure 1.6
Radiation Exposure Pathways

There are four pathways in which liquid effluents affect humans:

- external radiation from liquid effluents that deposit and accumulate on the shoreline;
- external radiation during boating from radioactivity in ocean water;
- external radiation from immersion in ocean water containing radioactivity; and,
- internal radiation from consumption of fish and shellfish containing radioactivity absorbed from the liquid effluents.

There are five major ways in which gaseous effluents affect humans:

- external radiation from immersion in an airborne plume of radioactivity;
- internal radiation from inhalation of airborne radioactivity;
- external radiation from deposition of radioactive effluents on the ground;
- internal radiation from consumption of vegetation containing radioactivity deposited on the vegetation from airborne deposition and absorbed from the soil due to ground deposition of radioactive effluents; and,
- internal radiation from consumption of milk and meat containing radioactivity deposited on forage that is eaten by cattle and other livestock.

Ambient (direct) radiation emitted from sources of radioactivity at Millstone comes from low-level radioactive waste being processed and stored at the site prior to shipping and disposal. Also, the operation of the Independent Spent Fuel Storage Installation (ISFSI) which began in 2005 results in a small amount of direct radiation at the site boundary.

The radiological dose impact on humans is based both on effluent analyses and modeling and on direct measurements of radiation and radioactivity in the environment. However, the operation of Millstone results in releases of only small amounts of radioactivity, and, as a result of dilution in the atmosphere and ocean, even the most sensitive radioactivity measurement and analysis techniques cannot usually detect these tiny amounts of radioactivity above that which is naturally present in the environment. Therefore, radiation doses are calculated using radioactive effluent release data and computerized dose calculations that are based on conservative NRC-recommended models that tend to result in over-estimates of the resulting dose. These computerized dose calculations are performed by DNC personnel. These computer codes use the guidelines and methodology set forth by the NRC in Regulatory Guide 1.109 (Reference 7). The dose calculations are specified in the Millstone's REMODCM (Reference 8), which has been reviewed by the NRC.

It should be emphasized that because of the conservative assumptions made in the computer code calculations, the maximum hypothetical dose to an individual is considerably higher than the dose that would actually be received by a real individual.

After dose calculations are performed, the results are compared to the dose limits for the public as specified in NRC's technical specifications for Millstone (References 9-11).

The technical specifications limits for the dose to a member of the general public from radioactive material in liquid effluents released to unrestricted areas are:

- less than or equal to 3 mrem per year to the total body; and,
- less than or equal to 10 mrem per year to any organ.

The technical specifications limits for dose due to release of radioactivity in gaseous effluents is restricted to:

- less than or equal to 10 mrad per year for gamma radiation from noble gases,
- less than or equal to 20 mrad per year for beta radiation from noble gases and
- less than or equal to 15 mrem per year to any organ from iodine-131, iodine-133, tritium, and all particulate radionuclides with half-lives greater than 8 days.

The technical specifications limits for total dose from all three Millstone units due to release of radioactivity in gaseous and liquid effluents and direct radiation is restricted to:

- less than or equal to 25 mrem per year to the total body;
- less than or equal to 75 mrem per year to the thyroid; and,
- less than or equal to 25 mrem per year to any other organ.

The third stage of assessing releases to the environment is the REMP. The description and results of the REMP at Millstone during 2014 is discussed in Sections 2 through 4 of this report.

2. PROGRAM DESCRIPTION

2.1 Sampling Schedule and Locations

The sample locations and the sample types and frequency of analysis are given in Tables 2-1 and 2-2. The program as described on Table 2-2 only lists the required samples as specified in the REMODCM. However, in order to identify the locations of the extra samples, all locations (both required and extra) are listed in Table 2-1.

Table 2-1 Environmental Monitoring Program Sampling Types and Locations

No.-Type[1]	Location Name	Distance, Direction From Release Point[2]	Sample Media
1-I	Onsite - Old Millstone Rd.	0.6 Mi, NNW	TLD, Air Particulate, Iodine, Vegetation
2-I	Onsite - Weather Shack	0.3 Mi, S	TLD, Air Particulate, Iodine
3-I	Onsite - Bird Sanctuary	0.3 Mi, NE	TLD, Air Particulate, Iodine, Soil
4-I	Onsite - Albacore Drive	1.0 Mi, N	TLD, Air Particulate, Iodine, Soil
5-I	Onsite - MP3 Discharge	0.1 Mi, SSE	TLD
6-I	Onsite - Quarry Discharge	0.3 Mi, SSE	TLD
7-I	Onsite – Env. Lab Dock	0.3 Mi, SE	TLD
8-I	Onsite – Env. Lab	0.3 Mi, SE	TLD
9-I	Onsite - Bay Point Beach	0.4 Mi, W	TLD
10-I	Pleasure Beach	1.2 Mi, E	TLD, Air Particulate, Iodine, Vegetation
11-I	New London Country Club	1.6 Mi, ENE	TLD, Air Particulate, Iodine
12-X	Fisher's Island, NY	8.0 Mi, ESE	TLD
13-C	Mystic, CT	11.5 Mi, ENE	TLD
14-C	Ledyard, CT	12.0 Mi, NE	TLD, Soil
15-C	Norwich, CT	14.0 Mi, N	TLD, Air Particulate, Iodine
16-C	Old Lyme, CT	8.8 Mi, W	TLD
17-I	Site Boundary	0.5 Mi, NE	Vegetation
22-X	Cow	10.5 Mi, WNW	Milk
21-I[3]	Goat Location #1	2.0 Mi, N	Milk
24-C[3]	Goat Location #3	29.0 Mi, NNW	Milk
25-I	Within 10 Miles	< 10 Miles	Vegetation
25-X	Within 10 Miles	< 10 Miles	Fruits and/or Vegetables[4]
26-C	Beyond 10 Miles	> 10 Miles	Vegetation
26-X	Beyond 10 Miles	> 10 Miles	Fruits and/or Vegetables[4]
27-I	Niantic	1.7 Mi, WNW	TLD, Air Particulate, Iodine
28-I	Two Tree Island	0.8 Mi, SSE	Mussels[5], Fish[6]
29-I	West Jordan Cove	0.4 Mi, ENE-ESE	Clams, Fish[6]
29-X	West Jordan Cove	0.4 Mi, NNE	Fucus
30-I	Niantic Shoals	1.5 Mi, NNW	Mussels[5]
31-I	Niantic Shoals	1.8 Mi, NW	Bottom Sediment, Oysters
32-I	Vicinity of Discharge	< 0.1 Mi	Bottom Sediment, Lobsters[7], Oysters, Fish[5], Seawater
32-X	Vicinity of Discharge	< 0.1 Mi	Fucus
33-I	Seaside Point	1.8 Mi, ESE	Bottom Sediment
34-I	Thames River Yacht Club	4.0 Mi, ENE	Bottom Sediment
35-I	Niantic Bay	<0.5 Mi, SSW-W	Lobster, Fish
35-X	Niantic Bay	0.3 Mi, WNW	Fucus
36-X	Black Point	3.0 Mi, WSW	Fucus
37-C	Giant's Neck	3.5 Mi, WSW	Bottom Sediment, Oysters, Seawater
38-I	Waterford Shellfish Bed #1	1.0 Mi, NW	Clams
39-X	Jordan Cove Bar	0.8 Mi, NE	Bottom Sediment

No.-Type*	Location Name	Distance, Direction From Release Point**	Sample Media
41-I	Myrock Avenue	3.2 Mi, ENE	TLD
42-I	Billow Road	2.4 Mi, WSW	TLD
43-I	Black Point	2.6 Mi, SW	TLD
44-I	Onsite – Schoolhouse	0.1 Mi, NNE	TLD
45-I	Onsite - Access Road	0.5 Mi, NNW	TLD
46-I	Old Lyme - Hillcrest Ave.	4.6 Mi, WSW	TLD
47-I	East Lyme - W. Main St.	4.5 Mi, W	TLD
48-I	East Lyme - Corey Rd.	3.4 Mi, WNW	TLD
49-I	East Lyme - Society Rd.	3.6 Mi, NW	TLD
50-I	East Lyme - Manwaring Rd.	2.1 Mi, W	TLD
51-I	East Lyme - Smith Ave.	1.5 Mi, NW	TLD
52-I	Waterford - River Rd.	1.1 Mi, NNW	TLD
53-I	Waterford - Gardiners Wood Rd	1.4 Mi, NNE	TLD
55-I	Waterford - Magonk Point	1.8 Mi, ESE	TLD
56-I	New London - Mott Ave.	3.7 Mi, E	TLD
57-I	New London - Ocean Ave.	3.6 Mi, ENE	TLD
59-I	Waterford -Miner Ave.	3.4 Mi, NNE	TLD
60-I	Waterford - Parkway South	4.0 Mi, N	TLD
61-I	Waterford - Boston Post Rd.	4.3 Mi, NNW	TLD
62-I	East Lyme - Columbus Ave.	1.9 Mi, WNW	TLD
63-I	Waterford - Jordon Cove Rd.	0.8 Mi, NE	TLD
64-I	Waterford - Shore Rd.	1.1 Mi, ENE	TLD
65-I	Waterford - Bank St.	3.2 Mi, NE	TLD
66-X	NAP Parking Lot - Fit Center	0.4 Mi, NW	TLD
67-X	Golden Spur	4.7 Mi, NNW	Bottom Sediment
71-I	1-MW-XFMR-03	Onsite	Well Water
72-I	MW-GPI-1	Onsite	Well Water
73-X	Site Switchyard Fence	0.3 Mi, N	TLD
74-X	Ball Field Foul Pole	0.6 Mi, N	TLD
75-X	Waterford – Windward Way & Shotgun	0.5 Mi, NE	TLD
76-X	ISFSI-1	Up-gradient of ISFSI	Well Water
77-X	ISFSI-2	Down-gradient of ISFSI	Well Water
78-X	ISFSI-3	Down-gradient of ISFSI	Well Water
79-I	M3-MW-1	Onsite	Well Water
81-I	S2-MW-1	Onsite	Well Water
82-I	MW-6B	Onsite	Well Water
83-I	S3-MW-2	Onsite	Well Water
88-I	DEEP Dock	0.2 Mi, WNW	Oysters
89-C	Aquatic background	>0.4 Mi of discharge	Lobster[7]
90-X	Thames River	4 Mi, E	Fucus

Footnotes:
1. Key: I - Indicator C - Control X - Extra - sample not required by the REMODCM
2. Release points are the Millstone station stack for terrestrial locations and the quarry cut for aquatic locations.
3. Goat milk sampling was discontinued on July 1 due to lack of availability.
4. A fruit or vegetable sample may count as a required vegetation sample.
5. Beginning on July 1, mussels were not required.
6. Flounder and another type of fish, each required to be sampled at two separate locations. Beginning on July 1, flounder was not required.
7. Beginning on July 1, lobster was not required at vicinity of discharge but was required beyond 0.4 mile of discharge.

Table 2-2 Required Sampling Frequency & Type of Analysis

	Exposure Pathway and/or Sample	No. of Locations	Sampling & Collection Frequency	Type of Analysis
1.	Gamma Dose - Environmental TLD	39[1]	Quarterly	Gamma Dose - Quarterly
2.	Airborne Particulate	8	Continuous sampler - weekly filter change (Jan 1-June 30) and bi-weekly (July 1-Dec 31)	Gross Beta - Weekly Gamma Spectrum - Quarterly on composite (by location), and on individual sample if gross beta is greater than 10 times the mean of the weekly control station's gross beta results
3.	Airborne Iodine	8	Continuous sampler - weekly canister change	I-131 - Weekly
4.	Vegetation	3	One sample near middle and one near end of growing season	Gamma Isotopic on each sample
5.	Fruit and vegetables	2	One sample near middle and one near end of growing season	Gamma Isotopic on each sample
6.	Milk[2]	2	Semimonthly when animals are on pasture; monthly at other times.	Gamma Isotopic and I-131 on each sample; Sr-89 and Sr-90 on quarterly composite
6a.	Pasture Grass[3]	2	Sample as necessary to substitute for unavailable milk	Gamma Isotopic and I-131 on each sample
7.	Sea Water	2	Continuous sampler with a monthly collection at indicator location. Quarterly at control location - Composite of 6 weekly grab samples.	Gamma Isotopic and Tritium on each sample.
8.	Well Water	6	Semiannual	Gamma Isotopic and Tritium on each sample
9.	Bottom Sediment	5	Semiannual	Gamma Isotopic on each sample
10.	Soil	3	Annually	Gamma Isotopic on each sample
11.	Fin Fish – Flounder[4] and one other type of edible fin fish	2	Quarterly	Gamma Isotopic on each sample
12.	Mussels[5] (edible portion)	2	Quarterly	Gamma Isotopic on each sample
13.	Oysters (edible portion)	4	Quarterly	Gamma Isotopic on each sample
14.	Clams (edible portion)	2	Quarterly	Gamma Isotopic on each sample
15.	Lobster (edible portion)	2	Quarterly	Gamma Isotopic on each sample

Footnotes
1. Two or more TLDs or TLD with two or more elements per location.
2. Beginning July 1, milk not required.
3. Pasture grass as a substitute for milk not required during the first quarter.
4. Beginning July 1, flounder not required.
5. Beginning July 1, mussel not required.

2.2 Samples Collected During Report Period

The following table summarizes the number of samples of each type collected and analyzed during 2014:

Sample Type	Number of Technical Specification Required Samples	Number of Technical Specification Required Samples Analyzed	Number of Extra Samples Analyzed
Gamma Exposure (Environmental TLD)	156	156	20
Air Particulates	312	312	0
Air Iodine	312	312	0
Soil	3	3	0
Cow and Goat Milk	16[1]	0	18[1]
Pasture Grass/Feed	4[2]	4[2]	8[2]
Broad Leaf Vegetation, Fruit, Vegetables	10	10	6
Well Water	12	12	24
Sea Water	16	16	0
Bottom Sediment	10	10	2
Aquatic Flora	0	0	20
Fish	12	8[3]	0
Mussels	4	2[3]	0
Oysters	16	16	0
Clams	8	8	0
Lobster	8	8	0
Total All Types	**899**	877	98

1 Goat milk required; cow milk is extra.
2 Pasture grass sampled as necessary to substitute for unavailable goat milk. Not required during the first quarter. Four samples collected for two months when goats would have been on pasture. Extra samples are feed which are not required.
3 Due to sample unavailability, not all required fish and shellfish samples could be obtained

2.3 Required Samples Not Collected During the Report Period

During 2014 there were 22 required samples not collected. These included, sixteen goat milk, four fish and two mussel samples.

Goat milk samples were not collected during 2014 because the goat owners at the two required locations were not milking their goats. No other milking goats could be located within ten miles of the station. However, the REMODCM requires pasture grass as a substitute for goat milk when milk is not available. For the months of January thru April pasture grass was not available at the two required locations. Feed was substituted for the required pasture grass.

Repeated attempts were made to collect two types of fish (flounder and one other type) at the two required locations during the first quarter (January thru March) but were unsuccessful.

Mussels were not available or the sample collected was too small for analyses at one required locations for first two quarters of the year. Requirement to collect mussels was dropped during second half of year.

3. RADIOCHEMICAL RESULTS

3.1 Summary Table

In accordance with the REMODCM, Section I.F.1, a summary table of the radiochemical results has been prepared and is presented on the following pages. The mean and range recorded are based only upon detectable measurements.

A more detailed analysis of the data is given in Section 4.0 where a discussion of the variations in the data explains many aspects that are not evident in the Summary Table because of the basic limitation of data summaries. The data summaries include the extra ("X") samples collected throughout the year. These samples are taken to enhance the monitoring program or replace samples from required locations when they are not available.

RADIOLOCIAL ENVIRONMENT MONITORING PROGRAM SUMMARY
MILLSTONE POWER STATION
Dockets 50-245, 50-336 & 50-423 2014

Medium or Pathway Sampled (Units)	Analysis Type	Total Number	LLD[1]	Indicator Locations Mean (Range)	Location with Highest Mean Number	Location with Highest Mean Distance Direction	Location with Highest Mean Mean (Range)	Control Locations Mean (Range)
Direct Radiation *TLD (uR/hr)*	**Gamma Dose**	176	NA	7.7 (4.5 - 11.8)	9	0.04 Mi. W	10.9 (10.4 - 11.8)	7.5 (5.6 - 9.5)
Air Iodine *(pCi/m³)*	**I-131**	312	0.07	<LLD	NA	NA	<LLD	<LLD
Air Particulate *(pCi/m³)*	**GR-B**	312	0.01	13.8 (5.3 - 28.2)	11	1.6 Mi. ENE	14 (7.6 - 23.6)	13.8 (8.9 - 25.6)
	GAMMA							
	BE-7	32	NA	107 (66 - 159)	11	1.6 Mi. ENE	112 (86 - 159)	102 (86 - 119)
	Other Gammas		Note 2	<LLD	NA	NA	<LLD	<LLD
Soil *(pCi/g dry)*	**GAMMA**	3						
	K-40		NA	17.1 (16.1 - 18.1)	3	0.3 Mi. NE	18.1 NA	13.1 NA
	CS-137		0.18	0.35 (0.11 - 0.59)	4	1.0 Mi. N	0.59 NA	0.79 NA
	Other Gammas		Note 3	<LLD	NA	NA	<LLD	<LLD
Milk - Note 4 *(pCi/l)*	**SR-89**	4	10	NA	NA	NA	NA	<LLD
	SR-90	4	2	NA	NA	NA	NA	<LLD
	GAMMA	18						
	K-40		NA	NA	NA	NA	NA NA	1277 (1042 - 1469)
	Other Gammas		Note 5	NA	NA	NA	NA	<LLD
Pasture Grass/Hay *(pCi/g wet)*	**GAMMA**	16						
	K-40		NA	8.0 (5.5 - 12.6)	21	2.7 Mi. NE	8.0 (5.5 - 12.6)	6.2 (4.3 - 9.1)
	I-131		0.06	<LLD	NA	NA	NA	<LLD
	CS-137		0.08	<LLD	NA	NA	NA	<LLD
	Other Gammas		Note 6	<LLD	NA	NA	<LLD	<LLD

RADIOLOCIAL ENVIRONMENT MONITORING PROGRAM SUMMARY
MILLSTONE POWER STATION
Dockets 50-245, 50-336 & 50-423 2014

Medium or Pathway Sampled (Units)	Analysis Type	Total Number	LLD[1]	Indicator Locations Mean (Range)	Location with Highest Mean Number	Location with Highest Mean Distance Direction	Location with Highest Mean Mean (Range)	Control Locations Mean (Range)
Well Water - Note 7 *(pCi/l)*	**H-3**	36	2000	<LLD	NA	NA	NA	NA
	GAMMA	36						
	K-40		NA	66	82	Onsite	66	NA
	Other Gammas		Note 8	<LLD	NA	NA	NA	NA
Fruits & Vegetables *(pCi/g wet)*	**GAMMA**	8						
	K-40		NA	2.623 (0.789 - 4.269)	25	Within 5 miles	4.21 (4.14 - 4.27)	2.759 (0.568 - 4.776)
	Other Gammas		Note 9	<LLD	NA	NA	NA	NA
Broad Leaf Vegetation *(pCi/g wet)*	**GAMMA**	12						
	BE-7		NA	0.555 NA	01	0.6 Mi. NNW	0.555 NA	<LLD
	K-40		NA	2.566	01	0.6 Mi. NNW	2.566 NA	<LLD
	CS-137		0.08	<LLD	NA	NA	NA	<LLD
	Other Gammas		Note 10	<LLD	NA	NA	NA	<LLD
Sea Water *(pCi/l)*	**H-3**	16	NA	639 (209 - 1170)	32	< 0.1 Mi	639 (209 - 1170)	<LLD
	GAMMA	16						
	K-40		NA	285 (201 - 409)	32	< 0.1 Mi.	285 (201 - 409)	291 (252 - 328)
	Other Gammas		Note 8	<LLD	NA	NA	NA	<LLD
Bottom Sediment *(pCi/g dry)*	**GAMMA**	14						
	K-40		NA	<LLD	NA	NA	NA	<LLD
	CS-137		0.18	<LLD	NA	NA	NA	<LLD
	Other Gammas		Note 3	<LLD	NA	NA	NA	<LLD

RADIOLOCIAL ENVIRONMENT MONITORING PROGRAM SUMMARY
MILLSTONE POWER STATION
Dockets 50-245, 50-336 & 50-423 2014

Medium or Pathway Sampled (Units)	Analysis Type	Total Number	LLD[1]	Indicator Locations Mean (Range)	Location with Highest Mean Number	Distance Direction	Mean (Range)	Control Locations Mean (Range)
Aquatic Flora - Note 11	**GAMMA**	20						
(pCi/g wet)	BE-7		NA	0.224 (0.154 - 0.259)	29	< 0.5 Mi. SSW to W	0.259 NA	0.196 NA
	K-40		NA	7.21 (5.58 - 8.40)	32	0.1 Mi.	8.26 (8.00 - 8.40)	6.80 (5.80 - 7.29)
	I-131		0.06	<LLD	NA	NA	NA	NA
	Other Gammas			<LLD	NA	NA	NA	NA
Fish - Flounder	**GAMMA**	1						
(pCi/g wet)	K-40		NA	<LLD	NA	NA	NA	NA
	Other Gammas		Note 12	<LLD	NA	NA	NA	NA
Fish - Other	**GAMMA**	7						
(pCi/g wet)	K-40		NA	<LLD	NA	NA	NA	NA
	Other Gammas		Note 12	<LLD	NA	NA	NA	NA
Mussels	**GAMMA**	2						
(pCi/g wet)	K-40		NA	<LLD	NA	NA	NA	NA
	Other Gammas		Note 12	<LLD	NA	NA	NA	NA
Oysters	**GAMMA**	16						
(pCi/g wet)	K-40		NA	<LLD	NA	NA	NA	<LLD
	Other Gammas		Note 12	<LLD	NA	NA	NA	<LLD
Clams	**GAMMA**	8						
(pCi/g wet)	K-40		NA	<LLD	NA	NA	NA	NA
	Other Gammas		Note 12	<LLD	NA	NA	NA	NA
Lobster	**GAMMA**	8						
(pCi/g wet)	K-40		NA	<LLD	NA	NA	NA	<LLD
	Other Gammas		Note 12	<LLD	NA	NA	NA	<LLD

NOTES FOR SUMMARY TABLE

1 - The required LLD. LLD is the smallest concentration of radioactivity that will be detected with 95% confidence that the activity is real. See detailed discussion below.
2 - LLDs for air particulate other gamma are 0.05 pCi/M^3 for Cs-134 and 0.06 pCi/M^3 for Cs-137.
3 - LLD for soil and sediment other gamma is 0.15 pCi/g for Cs-134.
4 - Indicator location for milk was goat milk at Location 21 (2.7 miles NE) for January thru June. Goat milk was not available during first half of year. Requirement to collect goat milk was deleted in second half of year. Cow milk was collected throughout the year at a location 10.5 miles in the WNW direction. This is an extra (not required) sample, but results for this location are shown as a control location.
5 - LLDs for milk other gamma are 1 pCi/l for I-131, 15 pCi/l for Cs-134, 18 pCi/l for Cs-137, 70 pCi/l for Ba-140 and 25 pCi/l for La-140.
6 - LLD for grass/hay other gamma is 0.15 pCi/g for Cs-134.
7 - One well water had positive K-40 of 66 pCi/l.
8 - LLDs for water other gamma are 15 pCi/l for Mn-54, Co-58, Co-60, Nb-95, I-131, Cs-134 and La-140; 30 pCi/l for Fe-59, Zn-65 and Zr-95; 18 pCi/l for Cs-137 and 60 pCi/l for Ba-140.
9 - LLDs for fruits & vegetables, broadleaf vegetation and aquatic flora for other gamma are 0.06 pCi/M^3 for I-131, 0.06 pCi/M^3 for Cs-134 and 0.08 pCi/M^3 for Cs-137.
10 – LLDs for other gamma are 0.06 pCi/g for Cs-134 and I-131.
11 - All aquatic flora locations are extra, non-required samples with Locations 29, 32 and 35 treated as indicators and Location 36 as a control.
12 - LLDs for fish and shellfish for gammas are 0.13 pCi/g for Mn-54, Co-58, Co-60 and Cs-134; 0.26 pCi/g for Fe-59 and Zn-65; and 0.15 pCi/g for Cs-137.

Discussion of LLD

The LLD at a confidence level of 95% is the smallest concentration of radioactive material in a sample that will be detected with a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ S_b}{E * V * 2.22 * Y * \exp(-\lambda \Delta t)}$$

LLD	is the lower limit of detection as defined above (as pCi per unit mass or volume)
S_b	is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute)
E	is the counting efficiency (as counts per transformation)
V	is the sample size (in units of mass or volume)
2.22	is the number of transformation per minute per picoCurie
Y	is the *fractional radiochemical yield* (when applicable)
Δ	is the radioactive decay constant for the particular radionuclide
λt	is the elapsed time between sample collection (or end of the sample collection period) and time of counting

The LLD is defined as “a priori” (before the fact) limit representing the capability of a measurement system and not an “a posteriori” (after the fact) limit for a particular measurement.

Analyses was performed in such a manner that the stated LLDs were achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may have rendered these a priori LLDs unachievable. In such cases, the contributing factors are identified and described in this report. As shown in the equation above, for composite samples taken over a period of time, the LLD is decayed to the end of the sample period.

3.2 Data Tables

The data reported in this section are strictly counting statistics. The reported error is two times the standard deviation (2σ) of the net activity. Unless otherwise noted, the overall error (counting, sample size, chemistry, errors, etc.) is estimated to be 2 to 5 times that listed. Results are considered positive when the measured value exceeds 1.5 times the listed 2σ error (i.e., the measured value exceeds 3σ). Any errors listed as zero are the artifact that there were no background counts in the area of the peak for these nuclides.

Because of counting statistics, negative values, zeros and numbers below the Minimum Detectable Level (MDL) are statistically valid pieces of data. For the purposes of this report, in order to indicate any background biases, all the valid data are presented. This practice was recommended by Health and Safety Laboratory (HASL) ("Reporting of Analytical Results from HASL," letter by Leo B. Higginbotham), NUREG 0475 and NUREG/CR-4007 (Sept. 1984). In instances where zeros are listed after significant digits, this is an artifact of the computer data-handling program.

Data are given according to sample type as indicated below.

1. Gamma Exposure Rate
2. Air Particulates, Gross Beta Radioactivity
3. Air Particulates, Airborne I-131
4. Air Particulates, Gamma Spectra
5. Air Particulates, Strontium*
6. Soil
7. Milk - Cow
8. Milk – Goat**
9. Pasture Grass/Hay/Feed
10. Well Water
11. Reservoir Water*
12. Fruits & Vegetables
13. Broad Leaf Vegetation
14. Seawater
15. Bottom Sediment
16. Aquatic Flora (Fucus)
17. Fin Fish
18. Mussels**
19. Oysters
20. Clams
21. Scallops*
22. Lobster

* This type of sampling or analysis was not performed.
** Goat milk and mussels were only collected the first half of year.

TABLE 1
QUARTERLY
GAMMA EXPOSURE RATE
(uR/hr)*

LOCATIONS

PERIOD	1	(+/-)	2	(+/-)	3	(+/-)	4	(+/-)	5	(+/-)	6	(+/-)	7	(+/-)	8	(+/-)	9	(+/-)	10	(+/-)	11	(+/-)
1Q	7.7	0.5	9.1	0.5	6.9	0.4	7.0	0.5	8.7	0.6	8.3	0.6	5.2	0.5	10.3	0.5	10.5	0.8	9.4	0.5	6.7	0.4
2Q	8.0	1.0	9.8	0.9	7.5	0.8	7.8	0.8	8.8	1.1	8.6	0.9	4.8	0.7	10.6	1.6	10.4	1.0	9.9	1.0	6.7	0.8
3Q	8.1	0.9	9.9	0.9	7.3	0.7	7.4	0.8	9.4	0.7	8.2	0.7	4.5	0.5	10.8	1.1	11.1	0.8	9.4	0.7	6.9	0.7
4Q	8.3	0.5	10.0	0.7	7.9	0.7	8.1	0.5	9.6	0.8	8.9	0.5	5.2	0.5	11.5	1.0	11.8	0.7	10.2	1.0	7.3	0.8

PERIOD	12C	(+/-)	13C	(+/-)	14C	(+/-)	15C	(+/-)	16C	(+/-)	27	(+/-)	41	(+/-)	42	(+/-)	43	(+/-)	44	(+/-)	45	(+/-)
1Q	7.1	0.4	8.3	0.4	8.1	0.5	6.7	0.3	5.9	0.4	8.2	0.6	6.5	0.6	6.9	0.7	7.2	0.6	7.1	0.8	7.0	0.6
2Q	7.1	0.7	8.3	0.8	9.0	1.0	7.3	0.7	6.0	0.7	8.4	0.9	6.7	0.7	7.3	0.8	7.2	0.8	8.0	1.4	6.8	0.7
3Q	7.0	0.6	8.0	0.6	8.4	0.7	7.3	0.6	5.6	0.5	7.9	0.6	6.4	0.6	7.0	0.6	6.6	0.6	7.6	0.7	6.8	0.6
4Q	7.8	0.5	9.4	0.6	9.5	0.6	7.8	0.5	6.4	0.5	8.7	0.7	6.7	0.5	7.6	0.7	7.6	0.6	8.7	1.0	7.6	0.7

PERIOD	46	(+/-)	47	(+/-)	48	(+/-)	49	(+/-)	50	(+/-)	51	(+/-)	52	(+/-)	53	(+/-)	55	(+/-)	56	(+/-)	57	(+/-)
1Q	8.2	0.4	7.5	0.6	9.0	0.5	6.6	0.4	7.5	0.8	6.1	0.4	6.9	0.4	6.7	0.6	7.3	0.8	7.1	0.5	7.1	0.4
2Q	8.6	1.0	7.5	0.7	9.5	1.1	7.0	1.0	7.6	0.8	6.0	1.0	7.4	0.8	7.0	0.7	6.8	0.8	7.1	0.7	6.9	1.0
3Q	7.9	0.7	7.0	0.6	9.0	0.8	6.5	0.5	7.1	0.7	5.4	0.6	6.7	1.0	6.7	0.7	6.8	0.7	6.6	0.5	6.7	0.5
4Q	9.2	1.0	8.3	0.6	9.7	0.8	7.5	0.7	8.0	0.7	6.8	0.5	7.3	0.5	7.7	0.6	7.7	0.6	7.4	0.5	7.5	0.7

PERIOD	59	(+/-)	60	(+/-)	61	(+/-)	62	(+/-)	63	(+/-)	64	(+/-)	65	(+/-)	66	(+/-)	73	(+/-)	74	(+/-)	75	(+/-)
1Q	7.1	0.5	6.2	0.5	6.6	0.5	7.7	0.6	8.9	0.7	7.3	0.4	7.5	0.5	7.0	0.5	7.8	0.6	7.5	0.4	6.5	0.4
2Q	7.8	0.9	6.4	0.7	6.8	0.7	7.8	0.9	8.0	1.0	6.9	0.7	7.3	0.7	6.3	0.7	7.4	0.7	7.0	0.8	6.7	0.7
3Q	7.5	0.6	6.7	0.5	6.8	0.7	7.6	0.7	8.1	0.6	7.1	0.8	7.3	0.7	6.7	0.6	7.2	0.6	7.2	0.6	6.9	0.8
4Q	8.0	0.5	7.1	0.6	7.7	0.7	8.3	0.5	8.6	0.8	7.7	0.6	8.1	0.8	7.2	0.6	7.9	0.7	8.1	0.7	7.1	0.6

* READINGS ARE THE AVERAGE OF MULTI $CaSo_4(Tm)$ PHOSPHOR ELEMENTS WITHIN ONE PANASONIC TLD BADGE
ERRORS ARE TWO SIGMA AND INCLUDE COUNTING, TRANSIT, READER AND FADE UNCERTAINTIES

TABLE 2
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(pCi/m^3)
LOCATIONS

PERIOD ENDING	01	(+/-)	02	(+/-)	03	(+/-)	04	(+/-)	10	(+/-)	11	(+/-)	27	(+/-)	15C	(+/-)
01/06/14	0.014	0.003	0.012	0.003	0.014	0.003	0.015	0.003	0.016	0.003	0.017	0.003	0.016	0.003	0.019	0.003
01/13/14	0.017	0.004	0.019	0.004	0.015	0.003	0.015	0.003	0.017	0.003	0.021	0.004	0.016	0.003	0.016	0.003
01/21/14	0.016	0.003	0.016	0.003	0.018	0.003	0.016	0.003	0.022	0.004	0.019	0.003	0.020	0.003	0.018	0.003
01/27/14	0.014	0.004	0.012	0.004	0.011	0.003	0.013	0.004	0.014	0.004	0.014	0.004	0.015	0.004	0.013	0.004
02/03/14	0.017	0.004	0.020	0.004	0.018	0.004	0.020	0.004	0.021	0.004	0.020	0.004	0.020	0.004	0.017	0.004
02/10/14	0.020	0.003	0.020	0.004	0.019	0.003	0.020	0.004	0.021	0.004	0.017	0.003	0.017	0.004	0.017	0.003
02/17/14	0.017	0.003	0.019	0.004	0.015	0.003	0.018	0.004	0.017	0.004	0.018	0.004	0.022	0.004	0.019	0.004
02/24/14	0.013	0.003	0.012	0.004	0.011	0.003	0.011	0.003	0.011	0.003	0.014	0.003	0.013	0.003	0.012	0.003
03/03/14	0.027	0.004	0.024	0.004	0.028	0.004	0.027	0.004	0.028	0.004	0.023	0.004	0.023	0.004	0.026	0.004
03/10/14	0.019	0.004	0.022	0.004	0.019	0.004	0.019	0.004	0.019	0.004	0.024	0.004	0.022	0.004	0.024	0.004
03/17/14	0.019	0.004	0.015	0.004	0.016	0.004	0.016	0.004	0.015	0.004	0.015	0.004	0.016	0.004	0.018	0.004
03/24/14	0.012	0.003	0.012	0.003	0.013	0.003	0.014	0.003	0.010	0.003	0.015	0.004	0.010	0.003	0.011	0.003
03/31/14	0.017	0.003	0.015	0.003	0.013	0.004	0.015	0.004	0.015	0.003	0.016	0.004	0.015	0.003	0.015	0.003
04/07/14	0.017	0.004	0.013	0.003	0.012	0.003	0.013	0.003	0.012	0.003	0.011	0.003	0.012	0.003	0.013	0.003
04/15/14	0.016	0.003	0.016	0.003	0.013	0.004	0.017	0.003	0.016	0.003	0.021	0.004	0.015	0.003	0.015	0.003
04/21/14	0.020	0.004	0.019	0.004	0.019	0.004	0.019	0.004	0.018	0.004	0.017	0.004	0.018	0.004	0.014	0.003
04/28/14	0.009	0.003	0.009	0.003	0.012	0.003	0.013	0.004	0.012	0.003	0.013	0.004	0.012	0.003	0.009	0.003
05/05/14	0.008	0.003	0.010	0.003	0.009	0.003	0.010	0.003	0.008	0.003	0.008	0.003	0.011	0.003	0.009	0.003
05/12/14	0.013	0.003	0.017	0.004	0.013	0.003	0.012	0.004	0.013	0.003	0.013	0.004	0.013	0.003	0.011	0.003
05/19/14	0.014	0.003	0.013	0.003	0.011	0.003	0.010	0.003	0.011	0.003	0.013	0.003	0.012	0.003	0.013	0.003
05/27/14	0.010	0.002	0.010	0.002	0.009	0.002	0.012	0.003	0.011	0.003	0.011	0.002	0.011	0.003	0.012	0.003
06/03/14	0.010	0.003	0.009	0.002	0.009	0.003	0.009	0.003	0.010	0.003	0.010	0.003	0.010	0.003	0.009	0.003
06/10/14	0.011	0.003	0.008	0.003	0.010	0.003	0.009	0.003	0.008	0.003	0.009	0.003	0.009	0.003	0.010	0.003
06/17/14	0.016	0.003	0.016	0.003	0.014	0.003	0.014	0.003	0.014	0.003	0.011	0.003	0.012	0.003	0.014	0.003
06/24/14	0.012	0.003	0.011	0.003	0.013	0.003	0.011	0.003	0.012	0.003	0.010	0.003	0.012	0.003	0.012	0.003

TABLE 2
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(pCi/m^3)
LOCATIONS

PERIOD ENDING	01	(+/-)	02	(+/-)	03	(+/-)	04	(+/-)	10	(+/-)	11	(+/-)	27	(+/-)	15C	(+/-)
07/01/14*	0.012	0.003	0.008	0.003	0.011	0.003	0.011	0.003	0.010	0.003	0.010	0.003	0.010	0.003	0.010	0.003
07/15/14	0.012	0.002	0.010	0.002	0.012	0.002	0.011	0.002	0.012	0.002	0.011	0.002	0.013	0.002	0.013	0.002
07/29/14	0.012	0.002	0.011	0.002	0.011	0.002	0.010	0.002	0.012	0.002	0.010	0.002	0.010	0.002	0.011	0.002
08/12/14	0.011	0.002	0.011	0.002	0.011	0.002	0.011	0.002	0.011	0.002	0.014	0.002	0.012	0.002	0.010	0.002
08/26/14	0.010	0.002	0.011	0.002	0.009	0.002	0.010	0.002	0.012	0.002	0.008	0.002	0.009	0.002	0.010	0.002
09/09/14	0.013	0.002	0.014	0.002	0.012	0.002	0.013	0.002	0.013	0.002	0.013	0.002	0.014	0.002	0.013	0.002
09/23/14	0.011	0.002	0.012	0.002	0.015	0.002	0.012	0.002	0.013	0.002	0.012	0.002	0.011	0.002	0.011	0.002
10/07/14	0.015	0.002	0.013	0.002	0.013	0.002	0.012	0.002	0.014	0.002	0.014	0.002	0.011	0.002	0.013	0.002
10/21/14	0.005	0.001	0.014	0.002	0.015	0.002	0.013	0.002	0.011	0.002	0.012	0.002	0.013	0.002	0.014	0.002
11/04/14	0.012	0.002	0.012	0.002	0.012	0.002	0.012	0.002	0.011	0.002	0.013	0.002	0.014	0.002	0.014	0.002
11/18/14	0.015	0.002	0.014	0.002	0.017	0.003	0.015	0.002	0.014	0.002	0.014	0.002	0.013	0.002	0.016	0.002
12/02/14	0.017	0.002	0.016	0.002	0.015	0.002	0.016	0.002	0.010	0.002	0.015	0.002	0.016	0.002	0.018	0.002
12/16/14	0.012	0.002	0.012	0.002	0.011	0.002	0.011	0.002	0.012	0.002	0.011	0.002	0.011	0.002	0.009	0.002
12/30/14	0.011	0.002	0.012	0.002	0.013	0.002	0.011	0.002	0.010	0.002	0.011	0.002	0.012	0.002	0.013	0.002

*AIR PARTICULATE COLLECTION CHANGED FROM WEEKLY TO BI-WEEKLY

TABLE 3
AIRBORNE IODINE
(pCi/m^3)
LOCATIONS

PERIOD ENDING	01	(+/-)	02	(+/-)	03	(+/-)	04	(+/-)	10	(+/-)	11	(+/-)	27	(+/-)	15C	(+/-)
01/06/14	0.014	0.037	0.016	0.040	0.013	0.035	0.016	0.041	-0.038	0.035	-0.041	0.038	-0.038	0.035	-0.039	0.036
01/13/14	0.000	0.012	0.000	0.013	0.000	0.011	0.000	0.013	0.004	0.012	0.004	0.013	0.004	0.013	0.004	0.013
01/21/14	0.018	0.023	0.020	0.027	0.017	0.023	0.020	0.026	-0.018	0.023	-0.020	0.025	-0.020	0.025	-0.019	0.024
01/27/14	0.019	0.025	0.022	0.028	0.019	0.024	0.021	0.028	0.009	0.033	0.010	0.036	0.009	0.034	0.009	0.035
02/03/14	-0.032	0.038	-0.036	0.044	-0.031	0.037	-0.035	0.041	0.016	0.036	0.017	0.038	0.017	0.037	0.017	0.038
02/10/14	0.009	0.018	0.011	0.020	0.009	0.017	0.010	0.019	0.014	0.019	0.015	0.021	0.019	0.026	0.015	0.020
02/17/14	0.012	0.033	0.014	0.038	0.012	0.032	0.013	0.036	0.015	0.039	0.002	0.040	0.015	0.040	0.002	0.040
02/24/14	0.013	0.031	0.015	0.036	0.013	0.031	0.014	0.034	-0.008	0.034	-0.009	0.036	-0.009	0.035	-0.009	0.036
03/03/14	0.005	0.032	0.005	0.037	0.005	0.031	0.005	0.035	-0.006	0.035	-0.006	0.037	-0.006	0.035	-0.006	0.037
03/10/14	-0.001	0.031	-0.002	0.036	-0.001	0.030	-0.001	0.034	-0.020	0.036	-0.021	0.038	-0.020	0.036	-0.021	0.038
03/17/14	-0.028	0.036	-0.033	0.043	-0.028	0.036	-0.032	0.041	0.000	0.028	0.000	0.031	0.000	0.029	0.000	0.030
03/24/14	0.007	0.036	0.008	0.039	0.007	0.035	0.007	0.038	0.009	0.034	0.010	0.037	0.009	0.034	0.010	0.036
03/31/14	-0.006	0.024	-0.006	0.026	-0.007	0.030	-0.006	0.027	-0.009	0.028	-0.009	0.030	-0.009	0.027	-0.009	0.029
04/07/14	-0.012	0.026	-0.013	0.029	-0.014	0.030	-0.013	0.029	0.016	0.029	0.017	0.032	0.015	0.029	0.017	0.031
04/15/14	-0.004	0.025	-0.005	0.028	-0.006	0.036	-0.005	0.028	0.003	0.037	0.003	0.041	0.003	0.037	0.003	0.040
04/21/14	0.000	0.013	0.000	0.014	0.000	0.013	0.000	0.014	-0.002	0.014	-0.003	0.015	-0.002	0.014	-0.002	0.015
04/28/14	0.007	0.020	0.008	0.022	0.008	0.021	0.008	0.022	0.005	0.022	0.006	0.025	0.005	0.022	0.006	0.024
05/05/14	-0.002	0.038	-0.003	0.042	-0.003	0.040	-0.003	0.042	-0.013	0.028	-0.014	0.030	-0.013	0.027	-0.014	0.030
05/12/14	-0.009	0.024	-0.010	0.026	-0.010	0.025	-0.010	0.026	0.008	0.023	0.009	0.027	0.009	0.024	0.009	0.026
05/19/14	0.004	0.036	0.004	0.035	0.004	0.036	0.004	0.037	-0.012	0.037	-0.011	0.035	-0.011	0.036	-0.011	0.037
05/27/14	-0.007	0.022	-0.007	0.021	-0.007	0.021	-0.007	0.022	-0.008	0.020	-0.008	0.019	-0.008	0.020	-0.008	0.020
06/03/14	0.001	0.009	0.001	0.009	0.001	0.009	0.001	0.009	0.010	0.010	0.009	0.010	0.010	0.010	0.010	0.010
06/10/14	-0.013	0.035	-0.013	0.034	-0.013	0.034	-0.014	0.036	-0.016	0.034	-0.015	0.033	-0.016	0.034	-0.016	0.034
06/17/14	0.017	0.028	0.016	0.027	0.016	0.027	0.017	0.028	-0.028	0.028	-0.026	0.026	-0.028	0.027	-0.028	0.027
06/24/14	-0.008	0.034	-0.008	0.033	-0.008	0.033	-0.008	0.035	0.011	0.038	0.010	0.036	0.010	0.037	0.010	0.036

TABLE 3
AIRBORNE IODINE
(pCi/m^3)
LOCATIONS

PERIOD ENDING	01		02		03		04		10		11		27		15C	
07/01/14*	-0.001	0.022	0.003	0.031	0.003	0.030	0.003	0.030	0.003	0.031	-0.002	0.023	-0.001	0.022	-0.002	0.023
07/15/14	-0.031	0.041	-0.007	0.039	-0.007	0.038	-0.007	0.038	-0.007	0.040	-0.033	0.043	-0.030	0.040	-0.031	0.041
07/29/14	-0.004	0.011	-0.011	0.014	-0.010	0.013	-0.011	0.013	-0.011	0.014	-0.004	0.012	-0.004	0.011	-0.004	0.011
08/12/14	0.013	0.014	0.003	0.015	0.003	0.015	0.003	0.015	0.003	0.016	0.013	0.014	0.012	0.013	0.013	0.014
08/26/14	0.035	0.032	0.006	0.037	0.006	0.036	0.006	0.036	0.006	0.038	0.036	0.033	0.034	0.031	0.037	0.034
09/09/14	-0.002	0.024	-0.014	0.023	-0.015	0.024	-0.014	0.023	-0.015	0.024	-0.002	0.024	-0.002	0.023	-0.002	0.026
09/23/14	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.014	0.000	0.013	0.000	0.014
10/07/14	-0.009	0.010	-0.001	0.011	-0.001	0.011	-0.001	0.011	-0.001	0.012	-0.009	0.010	-0.008	0.010	-0.009	0.011
10/21/14	-0.008	0.016	0.022	0.024	0.023	0.026	0.022	0.024	0.024	0.026	-0.008	0.017	-0.007	0.016	-0.008	0.018
11/04/14	0.001	0.007	-0.004	0.006	-0.004	0.007	-0.004	0.006	-0.004	0.007	0.002	0.007	0.001	0.007	0.002	0.008
11/18/14	-0.019	0.029	0.003	0.006	0.003	0.007	0.006	0.012	0.004	0.007	-0.019	0.029	-0.018	0.027	-0.021	0.031
12/02/14	0.001	0.007	0.001	0.006	0.001	0.007	0.001	0.006	0.001	0.007	0.001	0.007	0.001	0.007	0.001	0.008
12/16/14	-0.026	0.042	-0.014	0.032	-0.017	0.040	-0.015	0.035	-0.017	0.040	-0.027	0.043	-0.024	0.039	-0.029	0.046
12/30/14	-0.020	0.029	0.002	0.021	0.002	0.025	0.002	0.022	0.002	0.025	-0.021	0.030	-0.019	0.028	-0.023	0.034

*** AIRBORNE IODINE COLLECTION CHANGED FROM WEEKLY TO BI-WEEKLY**

TABLE 4
AIR PARTICULATES
(pCi/m^3)

GAMMA SPECTRA - QTR 1 (12/30/13 - 03/31/2014)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	0.1126	0.0307	-0.0007	0.0017	0.0013	0.0028	-0.0012	0.0012	0.0017	0.0032	-0.0002	0.0025	-0.0013	0.0044
02	0.1444	0.0389	0.0002	0.0021	-0.0005	0.0033	0.0018	0.0020	0.0028	0.0043	0.0011	0.0031	-0.0020	0.0060
03	0.1476	0.0344	0.0001	0.0015	0.0011	0.0019	0.0006	0.0012	-0.0004	0.0030	0.0010	0.0023	0.0008	0.0037
04	0.0962	0.0291	-0.0001	0.0012	0.0005	0.0025	-0.0014	0.0018	0.0005	0.0037	-0.0012	0.0027	0.0007	0.0050
10	0.1050	0.0317	0.0006	0.0022	0.0002	0.0026	-0.0008	0.0016	0.0038	0.0039	0.0001	0.0033	0.0016	0.0056
11	0.0888	0.0315	0.0001	0.0013	-0.0009	0.0022	-0.0004	0.0012	0.0004	0.0024	-0.0007	0.0022	0.0011	0.0037
27	0.0955	0.0229	0.0001	0.0011	-0.0003	0.0016	-0.0002	0.0011	0.0009	0.0028	0.0002	0.0019	0.0002	0.0034
15C	0.0916	0.0256	0.0001	0.0012	0.0019	0.0018	0.0008	0.0011	0.0019	0.0030	-0.0019	0.0023	0.0018	0.0041

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	-0.0017	0.0044	-0.0043	0.0141	0.0022	0.0015	0.0007	0.0014	-0.0266	0.1934	0.0017	0.0060	-0.0022	0.0068
02	0.0045	0.0055	-0.0159	0.0180	0.0021	0.0019	-0.0008	0.0018	0.0140	0.1906	-0.0093	0.0079	-0.0012	0.0101
03	0.0009	0.0033	-0.0004	0.0108	0.0010	0.0013	0.0005	0.0011	0.0512	0.1483	0.0017	0.0049	-0.0029	0.0054
04	-0.0028	0.0038	-0.0052	0.0127	-0.0017	0.0015	-0.0001	0.0014	0.0309	0.2056	-0.0014	0.0051	0.0039	0.0062
10	0.0013	0.0047	-0.0009	0.0193	0.0001	0.0018	0.0004	0.0018	0.1164	0.2048	0.0017	0.0072	-0.0013	0.0077
11	0.0003	0.0032	-0.0080	0.0096	0.0001	0.0011	-0.0010	0.0010	-0.0165	0.1760	-0.0027	0.0043	-0.0022	0.0056
27	-0.0003	0.0028	-0.0057	0.0084	0.0001	0.0011	-0.0004	0.0009	0.0301	0.1253	-0.0038	0.0048	-0.0036	0.0053
15C	-0.0016	0.0033	-0.0007	0.0117	0.0002	0.0011	-0.0003	0.0011	-0.0568	0.1635	-0.0033	0.0048	0.0008	0.0057

GAMMA SPECTRA - QTR 2 (03/31/14 - 07/01/14)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	0.1061	0.0303	0.0006	0.0013	-0.0018	0.0021	0.0001	0.0014	0.0023	0.0033	-0.0014	0.0023	0.0022	0.0043
02	0.1112	0.0364	0.0007	0.0014	-0.0014	0.0023	-0.0005	0.0010	0.0008	0.0032	0.0002	0.0021	0.0010	0.0041
03	0.1146	0.0303	-0.0003	0.0011	-0.0001	0.0019	-0.0002	0.0013	0.0013	0.0031	0.0004	0.0022	-0.0020	0.0035
04	0.1418	0.0420	0.0004	0.0023	-0.0001	0.0036	0.0008	0.0017	0.0022	0.0050	0.0023	0.0036	-0.0034	0.0069
10	0.1399	0.0558	-0.0004	0.0011	-0.0026	0.0022	0.0003	0.0011	-0.0006	0.0028	0.0001	0.0023	0.0013	0.0036
11	0.1593	0.0478	0.0001	0.0021	0.0034	0.0033	0.0020	0.0019	-0.0013	0.0049	-0.0001	0.0035	-0.0031	0.0065
27	0.0852	0.0302	-0.0018	0.0020	-0.0003	0.0033	-0.0004	0.0015	-0.0013	0.0037	0.0010	0.0032	0.0017	0.0058
15C	0.1197	0.0320	0.0007	0.0010	-0.0016	0.0017	0.0006	0.0010	0.0001	0.0025	0.0016	0.0022	-0.0022	0.0037

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	-0.0003	0.0028	0.0039	0.0093	0.0004	0.0011	0.0009	0.0012	0.0157	0.1769	-0.0014	0.0034	-0.0036	0.0041
02	-0.0021	0.0040	-0.0061	0.0120	0.0007	0.0014	0.0004	0.0011	-0.0799	0.2270	0.0030	0.0060	0.0007	0.0060
03	-0.0028	0.0028	-0.0057	0.0119	0.0000	0.0011	0.0002	0.0009	-0.0533	0.2089	0.0042	0.0054	-0.0029	0.0054
04	0.0029	0.0058	-0.0037	0.0177	0.0002	0.0017	0.0006	0.0017	0.0278	0.3470	0.0006	0.0065	0.0029	0.0065
10	-0.0015	0.0036	0.0043	0.0119	0.0003	0.0012	0.0003	0.0011	-0.1497	0.1948	0.0007	0.0059	0.0031	0.0066
11	-0.0005	0.0112	0.0016	0.0199	0.0016	0.0019	-0.0002	0.0019	-0.0258	0.3443	0.0034	0.0091	-0.0004	0.0100
27	-0.0030	0.0064	-0.0112	0.0197	0.0008	0.0018	-0.0002	0.0017	-0.0532	0.3276	-0.0046	0.0078	-0.0019	0.0085
15C	0.0009	0.0029	0.0029	0.0085	0.0009	0.0009	-0.0002	0.0011	-0.0049	0.1661	-0.0032	0.0042	-0.0023	0.0045

TABLE 4
AIR PARTICULATES
(pCi/m^3)

GAMMA SPECTRA - QTR 3 (07/01/14 - 10/07/14)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	0.0748	0.0202	0.0001	0.0007	-0.0011	0.0011	0.0005	0.0006	0.0009	0.0019	0.0003	0.0013	0.0007	0.0018
02	0.1243	0.0300	0.0001	0.0012	-0.0002	0.0020	0.0010	0.0010	0.0026	0.0033	-0.0009	0.0020	0.0012	0.0033
03	0.1098	0.0280	0.0000	0.0009	-0.0003	0.0014	0.0000	0.0007	0.0003	0.0023	0.0006	0.0018	-0.0003	0.0030
04	0.1088	0.0251	-0.0010	0.0011	-0.0001	0.0017	-0.0006	0.0012	0.0003	0.0027	0.0008	0.0018	0.0009	0.0036
10	0.0981	0.0203	0.0001	0.0010	-0.0002	0.0017	0.0000	0.0008	0.0006	0.0022	-0.0010	0.0016	0.0003	0.0028
11	0.1121	0.0283	0.0002	0.0009	-0.0004	0.0015	0.0003	0.0008	-0.0001	0.0022	-0.0005	0.0017	0.0061	0.0037
27	0.1088	0.0335	0.0001	0.0006	0.0008	0.0010	0.0006	0.0006	0.0004	0.0015	0.0000	0.0011	-0.0002	0.0023
15C	0.0985	0.0374	0.0002	0.0010	0.0011	0.0013	0.0001	0.0009	0.0007	0.0024	-0.0005	0.0018	0.0006	0.0030

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	-0.0002	0.0022	-0.0043	0.0065	0.0003	0.0008	-0.0001	0.0005	0.0480	0.0926	-0.0002	0.0045	0.0015	0.0056
02	0.0001	0.0032	-0.0017	0.0099	0.0016	0.0014	0.0003	0.0012	-0.1037	0.1536	0.0015	0.0086	-0.0030	0.0100
03	-0.0016	0.0025	0.0020	0.0084	0.0000	0.0009	0.0003	0.0008	-0.0807	0.1229	-0.0023	0.0043	0.0006	0.0050
04	0.0014	0.0026	-0.0081	0.0114	0.0011	0.0012	-0.0003	0.0010	-0.0993	0.1359	-0.0018	0.0039	-0.0002	0.0047
10	-0.0016	0.0027	-0.0049	0.0096	0.0013	0.0010	-0.0003	0.0008	-0.0248	0.1182	-0.0001	0.0038	-0.0001	0.0042
11	0.0003	0.0027	-0.0053	0.0073	-0.0009	0.0009	-0.0004	0.0008	-0.0004	0.1215	-0.0013	0.0029	0.0028	0.0035
27	0.0007	0.0016	0.0022	0.0045	0.0000	0.0007	-0.0002	0.0007	0.0442	0.0880	0.0039	0.0025	0.0004	0.0028
15C	0.0007	0.0028	-0.0032	0.0084	0.0001	0.0009	0.0004	0.0008	0.0295	0.1330	0.0011	0.0039	0.0002	0.0049

GAMMA SPECTRA - QTR 4 (10/07/14 - 12/30/14)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	0.0800	0.0262	-0.0002	0.0010	-0.0001	0.0020	-0.0005	0.0010	0.0023	0.0022	-0.0002	0.0020	-0.0014	0.0035
02	0.0657	0.0249	0.0005	0.0011	-0.0007	0.0018	0.0004	0.0009	-0.0012	0.0026	-0.0006	0.0021	-0.0003	0.0034
03	0.0698	0.0270	-0.0010	0.0017	-0.0011	0.0022	0.0007	0.0013	0.0012	0.0025	-0.0013	0.0022	0.0011	0.0038
04	0.0973	0.0297	0.0000	0.0010	0.0013	0.0024	0.0007	0.0011	0.0007	0.0030	0.0011	0.0025	-0.0041	0.0039
10	0.0916	0.0363	-0.0005	0.0022	0.0006	0.0039	0.0007	0.0027	-0.0026	0.0049	0.0010	0.0036	0.0006	0.0061
11	0.0859	0.0324	-0.0004	0.0011	-0.0008	0.0018	-0.0008	0.0012	0.0010	0.0030	0.0001	0.0020	-0.0028	0.0037
27	0.1189	0.0399	0.0012	0.0022	0.0004	0.0029	-0.0004	0.0015	0.0013	0.0035	-0.0017	0.0032	0.0046	0.0061
15C	0.0981	0.0369	0.0000	0.0014	-0.0002	0.0025	-0.0006	0.0011	0.0038	0.0030	-0.0017	0.0028	0.0004	0.0048

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	-0.0035	0.0028	0.0029	0.0093	-0.0001	0.0011	0.0005	0.0010	-0.0491	0.1258	-0.0003	0.0039	0.0020	0.0044
02	0.0010	0.0030	-0.0036	0.0095	0.0010	0.0010	-0.0003	0.0010	0.0567	0.1296	-0.0014	0.0046	0.0005	0.0053
03	0.0019	0.0037	0.0052	0.0095	0.0002	0.0013	-0.0004	0.0012	-0.0479	0.1704	-0.0016	0.0053	0.0007	0.0057
04	0.0033	0.0032	0.0130	0.0106	0.0014	0.0012	-0.0008	0.0012	-0.1066	0.1757	0.0007	0.0059	-0.0020	0.0072
10	-0.0010	0.0061	0.0061	0.0156	-0.0001	0.0017	0.0006	0.0019	0.1117	0.3091	-0.0012	0.0063	0.0001	0.0073
11	-0.0003	0.0035	-0.0026	0.0102	-0.0003	0.0010	0.0004	0.0009	-0.0334	0.1528	-0.0036	0.0052	-0.0065	0.0059
27	-0.0008	0.0054	-0.0073	0.0163	0.0014	0.0017	0.0009	0.0016	0.2612	0.2775	0.0001	0.0087	-0.0040	0.0093
15C	0.0022	0.0065	-0.0027	0.0134	0.0014	0.0014	0.0004	0.0013	0.0076	0.2063	0.0045	0.0081	0.0021	0.0090

TABLE 5
AIR PARTICULATES
Strontium

Analyses for strontium in air particulate filters were not analyzed in 2014. See discussion in Section 4.5.

TABLE 6
SOIL
(pCi/g dry wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
03	11/05/14	0.076	0.391	18.060	1.708	-0.031	0.485	-0.035	0.044	-0.014	0.047	-0.078	0.108
04	11/04/14	0.031	0.594	16.110	1.847	-0.595	0.662	-0.053	0.064	0.067	0.066	0.010	0.135
14C	10/31/14	-0.049	0.492	13.120	1.585	0.030	0.590	-0.040	0.051	-0.034	0.053	0.106	0.118

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
03	11/05/14	0.002	0.038	-0.035	0.102	0.004	0.051	0.098	0.089	-0.003	0.050	0.090	0.380
04	11/04/14	-0.036	0.060	0.041	0.158	0.123	0.077	0.037	0.129	0.010	0.077	0.060	0.517
14C	10/31/14	0.009	0.042	-0.001	0.102	0.005	0.060	0.029	0.097	-0.029	0.062	0.040	0.433

LOCATION	COLLECTION DATE	Sb-125	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
03	11/05/14	-0.029	0.105	0.029	0.039	0.113	0.070	0.100	0.081	-0.024	0.253	0.842	0.246
04	11/04/14	0.067	0.159	0.030	0.064	0.591	0.105	0.145	0.112	-0.221	0.346	0.072	0.556
14C	10/31/14	-0.033	0.119	0.041	0.048	0.786	0.106	0.028	0.093	-0.062	0.269	0.221	0.378

TABLE 7
COW MILK
(pCi/l)

LOCATION	COLLECTION DATE	I-131	(+/-)	Sr-89	(+/-)	Sr-90	(+/-)	K-40	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)
22	01/23/14	-0.141	0.664					1373	125	-4.218	2.791	2.156	2.713	-30.080	19.940	7.910	6.680
	02/19/14	-0.055	0.460					1283	170	-4.362	3.998	0.290	4.186	6.598	19.560	3.143	5.824
	03/11/14	-0.172	0.405	6.8	4.8	-0.5	0.4	1469	166	-2.463	4.939	2.837	4.191	0.822	20.870	2.431	5.729
	04/23/14	-0.325	0.293					1314	148	-1.773	3.292	1.847	3.382	-5.289	15.330	-2.591	5.474
	05/14/14	-0.077	0.472					1042	153	-3.186	4.450	-3.581	4.678	4.094	17.070	-4.625	5.341
	05/29/14	-0.063	0.306					1386	125	-2.390	3.053	-0.395	3.195	5.451	12.420	-0.707	3.716
	06/11/14	-0.573	0.435					1165	171	3.545	4.987	-3.296	5.943	-9.067	23.690	-0.360	7.710
	06/25/14	-0.455	0.344	3.0	3.0	0.2	0.5	1239	169	-8.319	4.491	-0.375	4.022	10.150	20.000	2.352	5.477
	07/16/14	-0.182	0.324					1093	179	-6.127	5.780	4.977	5.315	-8.809	22.370	-3.194	6.001
	07/30/14	-0.122	0.246					1306	119	-3.407	3.643	1.052	3.568	-4.454	16.520	-3.305	2.885
	08/13/14	-0.333	0.312					1336	121	-2.910	2.864	0.069	3.037	1.053	17.110	0.911	4.192
	08/26/14	0.162	0.323					1297	151	-0.596	4.089	1.261	4.534	-7.438	25.800	2.085	8.779
	09/03/14	-0.018	0.326					1246	118	-1.789	3.754	0.202	4.106	12.820	26.030	-1.668	4.848
	09/15/14	-0.743	0.393	3.5	3.8	1.2	1.2	1301	126	-4.702	3.101	1.110	2.775	-0.647	14.530	-2.637	4.051
	10/07/14	-0.410	0.178					1275	164	-6.601	2.025	-0.514	1.859	0.725	9.549	0.209	2.864
	10/22/14	-0.188	0.237					1250	112	-5.349	3.437	-0.028	3.318	8.716	24.040	-1.078	6.102
	11/19/14	-0.236	0.274					1367	128	2.415	2.958	2.792	3.098	0.785	25.250	-2.680	5.669
	12/08/14	-0.421	0.458	8.0	5.2	0.3	1.0	1241	146	-1.886	4.012	-2.994	3.945	-13.150	25.320	0.898	7.576

TABLE 8

GOAT MILK

Goat Milk samples were not available during 2014. See discussion in Section 4.5

TABLE 9
PASTURE GRASS / HAY
(pCi/g wet wt.)

Location 21

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
01/23/14	-0.128	0.100	9.456	0.511	-0.019	0.113	0.004	0.011	0.001	0.011	-0.008	0.027	0.000	0.015
02/20/14	0.083	0.127	10.840	0.686	0.059	0.110	0.000	0.014	-0.008	0.014	0.001	0.033	0.036	0.022
03/11/14	0.107	0.156	12.630	0.827	0.016	0.160	-0.003	0.019	0.001	0.017	-0.020	0.048	0.021	0.029
04/23/14	0.042	0.129	10.990	0.763	-0.115	0.150	0.003	0.015	-0.011	0.015	-0.018	0.041	0.009	0.019
05/14/14	0.260	0.142	6.692	0.504	-0.036	0.094	-0.001	0.010	-0.002	0.010	0.010	0.026	0.003	0.012
05/29/14	0.207	0.114	5.543	0.512	-0.046	0.106	0.003	0.013	-0.008	0.013	0.019	0.029	0.024	0.013
06/11/14	0.188	0.187	5.830	0.539	-0.031	0.173	0.004	0.015	-0.016	0.017	-0.005	0.037	0.006	0.015
06/24/14	0.414	0.243	5.996	0.637	0.029	0.160	-0.006	0.017	0.001	0.018	-0.058	0.040	0.003	0.018

COLLECTION DATE	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
01/23/14	-0.025	0.028	0.007	0.011	0.005	0.020	-0.011	0.013	0.028	0.089	0.011	0.028	0.012	0.035
02/20/14	-0.025	0.041	-0.003	0.014	0.002	0.027	-0.001	0.013	0.053	0.142	-0.011	0.036	0.005	0.019
03/11/14	-0.055	0.051	0.009	0.020	-0.022	0.033	0.001	0.018	-0.191	0.146	-0.008	0.045	-0.013	0.028
04/23/14	-0.009	0.042	0.004	0.014	-0.021	0.028	0.002	0.017	0.012	0.154	0.035	0.039	0.007	0.029
05/14/14	-0.034	0.029	-0.001	0.011	0.000	0.018	-0.003	0.011	-0.056	0.103	0.018	0.029	0.002	0.016
05/29/14	0.007	0.031	0.000	0.012	0.005	0.020	-0.004	0.011	-0.096	0.108	-0.039	0.034	0.000	0.018
06/11/14	0.012	0.039	0.017	0.017	-0.018	0.031	0.012	0.022	0.168	0.172	-0.013	0.051	0.019	0.033
06/24/14	-0.011	0.046	0.011	0.019	0.012	0.030	-0.001	0.018	-0.081	0.155	-0.017	0.049	-0.001	0.033

COLLECTION DATE	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
01/23/14	0.003	0.012	0.000	0.011	-0.017	0.079	-0.010	0.019	-0.028	0.022	0.012	0.074	-0.003	0.043
02/20/14	-0.003	0.015	-0.011	0.015	0.006	0.058	0.006	0.015	-0.005	0.020	0.059	0.082	0.012	0.064
03/11/14	-0.019	0.018	-0.008	0.017	0.008	0.088	0.001	0.025	0.005	0.026	0.023	0.102	0.051	0.074
04/23/14	-0.015	0.017	-0.003	0.016	0.009	0.073	0.001	0.018	0.002	0.026	-0.016	0.106	0.004	0.062
05/14/14	-0.002	0.013	0.001	0.011	0.041	0.045	0.005	0.014	-0.001	0.018	-0.001	0.070	0.057	0.057
05/29/14	-0.020	0.012	0.006	0.012	-0.038	0.048	0.003	0.012	-0.005	0.020	0.049	0.079	0.041	0.046
06/11/14	0.035	0.022	0.014	0.017	-0.037	0.084	0.001	0.016	0.022	0.035	-0.126	0.139	-0.020	0.065
06/24/14	0.011	0.021	0.005	0.019	-0.088	0.084	0.009	0.023	0.005	0.032	0.049	0.128	0.073	0.067

TABLE 9
PASTURE GRASS / HAY
(pCi/g wet wt.)

Location 24C

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
01/23/14	0.585	0.209	6.884	0.505	0.016	0.115	0.002	0.011	0.006	0.011	-0.010	0.027	-0.013	0.011
02/19/14	0.243	0.285	7.898	0.668	-0.013	0.186	-0.004	0.019	0.010	0.018	0.020	0.040	-0.007	0.021
03/11/14	0.168	0.154	6.224	0.489	-0.181	0.168	0.009	0.016	-0.008	0.015	-0.011	0.032	0.010	0.017
04/23/14	-0.165	0.151	9.131	0.888	-0.039	0.166	-0.006	0.020	0.017	0.021	0.004	0.052	0.008	0.020
05/14/14	0.385	0.182	6.680	0.531	0.014	0.116	0.012	0.012	-0.003	0.013	-0.007	0.029	0.000	0.014
05/29/14	0.302	0.206	4.583	0.615	-0.019	0.125	-0.001	0.015	0.008	0.016	-0.008	0.028	0.001	0.012
06/11/14	0.266	0.202	4.308	0.687	-0.097	0.186	0.008	0.019	0.009	0.018	-0.032	0.040	0.002	0.020
06/24/14	0.291	0.179	6.239	0.657	-0.023	0.202	0.001	0.017	-0.005	0.017	-0.016	0.038	-0.003	0.016

	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
01/23/14	0.016	0.024	-0.003	0.012	-0.001	0.021	0.000	0.012	0.072	0.092	0.020	0.029	-0.013	0.035
02/19/14	-0.029	0.040	0.009	0.018	0.017	0.032	-0.011	0.020	0.109	0.174	0.002	0.048	0.006	0.032
03/11/14	-0.059	0.034	0.007	0.016	-0.001	0.029	0.002	0.018	0.025	0.148	-0.039	0.044	0.005	0.033
04/23/14	-0.052	0.055	0.002	0.021	-0.008	0.038	-0.012	0.020	0.007	0.183	0.020	0.051	0.000	0.031
05/14/14	-0.048	0.032	-0.003	0.013	0.003	0.025	0.010	0.014	0.015	0.119	-0.023	0.036	-0.002	0.023
05/29/14	-0.002	0.038	0.001	0.015	-0.025	0.026	-0.004	0.017	0.056	0.123	0.033	0.037	-0.025	0.021
06/11/14	-0.066	0.047	-0.004	0.022	-0.030	0.036	0.001	0.022	0.011	0.191	0.026	0.061	0.000	0.036
06/24/14	-0.034	0.037	0.000	0.020	-0.003	0.031	0.002	0.020	-0.069	0.176	-0.010	0.054	-0.004	0.035

	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
01/23/14	0.003	0.011	0.060	0.037	0.007	0.081	-0.008	0.021	-0.033	0.027	-0.032	0.076	0.017	0.067
02/19/14	-0.009	0.023	0.023	0.042	0.023	0.087	0.002	0.022	0.000	0.036	0.021	0.140	0.068	0.123
03/11/14	-0.059	0.018	0.059	0.035	0.034	0.087	-0.006	0.021	0.012	0.031	0.009	0.120	0.028	0.070
04/23/14	-0.002	0.021	-0.002	0.019	0.032	0.099	0.002	0.029	-0.006	0.022	-0.044	0.086	-0.093	0.087
05/14/14	-0.022	0.014	0.004	0.015	-0.025	0.058	-0.011	0.017	0.005	0.020	-0.034	0.090	0.028	0.052
05/29/14	-0.002	0.013	-0.015	0.015	-0.010	0.061	-0.008	0.019	-0.012	0.021	-0.014	0.078	-0.012	0.053
06/11/14	-0.003	0.023	0.031	0.020	-0.008	0.100	0.014	0.029	0.029	0.031	-0.024	0.131	0.082	0.076
06/24/14	0.016	0.020	-0.009	0.018	0.003	0.092	-0.012	0.021	-0.040	0.040	0.073	0.155	0.010	0.071

NOTE: ON JULY 1ST, THE REQUIREMENT FOR GOAT MILK WAS DROPPED; THEREFORE SUBSTITUTE PASTURE GRASS SAMPLING IS NO LONGER REQUIRED

TABLE 10
WELL WATER
(pCi/l)

LOCATION	COLLECTION DATE	H-3	(+/-)	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
71	03/19/14	825	1020	3.8	19.7	-9.4	31.6	-5.4	25.5	0.5	2.2	-0.7	2.2	1.9	4.6	2.0	2.2
	06/23/14	542	871	9.8	32.9	20.0	36.4	9.0	39.5	0.0	2.4	-1.2	3.3	-0.2	6.2	5.8	2.7
	09/16/14	401	904	-0.5	26.2	25.4	51.8	-4.8	30.6	0.0	3.1	-0.7	2.9	-1.6	6.1	2.1	3.1
	11/12/14	-138	841	5.0	42.1	60.4	76.0	7.1	45.4	3.1	3.9	-3.3	4.6	-1.2	8.9	-0.6	4.9
72	03/19/14	396	961	7.2	22.3	-8.4	42.0	20.7	27.4	-2.3	2.5	0.7	2.3	0.1	4.9	2.5	2.2
	06/23/14	-308	730	-2.5	37.2	-15.4	54.3	-44.4	44.7	0.5	3.9	-3.2	4.1	-2.4	8.6	-2.9	3.6
	09/16/14	400	903	-5.3	34.2	41.6	74.8	8.7	41.9	-1.1	3.4	0.0	4.0	-1.1	8.1	1.9	3.8
	11/12/14	654	945	-2.4	43.3	-31.2	58.9	31.2	51.0	-2.2	4.5	-1.3	5.0	-2.0	9.0	0.9	4.6
76	03/14/14	976	1030	0.8	20.7	3.5	28.6	-3.5	25.2	1.6	2.0	-2.6	2.4	2.3	4.1	-0.5	2.4
	06/12/14	-178	804	0.4	20.5	3.4	45.6	6.6	23.9	0.7	1.9	0.7	2.1	0.9	4.3	1.0	2.0
	09/11/14	407	906	11.6	31.7	1.1	47.5	9.2	36.8	0.0	3.1	0.8	3.7	-1.2	7.2	0.6	3.8
	11/12/14	37	844	-9.1	34.3	44.1	89.3	16.8	39.3	2.6	4.1	-4.0	4.0	-4.7	6.6	0.5	3.8
77	03/14/14	402	959	-8.2	33.8	17.5	59.7	12.6	41.7	-0.9	3.1	-2.6	3.5	3.9	6.9	5.7	4.3
	06/12/14	-132	811	-7.9	23.8	13.9	39.4	-7.1	30.0	-0.2	2.4	-0.5	2.5	0.1	5.6	-0.5	2.1
	09/11/14	-242	810	-14.8	28.7	21.8	45.5	3.0	34.3	0.4	3.0	1.0	3.4	0.2	6.6	-0.2	2.6
	11/12/14	-650	756	-6.1	12.4	25.0	35.6	-1.0	13.7	-2.3	1.5	-1.8	1.6	1.5	3.3	0.2	1.5
78	03/14/14	-32	890	-6.2	27.8	-12.4	37.2	-26.9	31.6	1.0	2.7	-1.8	2.8	1.5	5.7	-0.9	2.8
	06/11/14	195	851	8.6	26.5	3.4	40.7	-2.8	30.0	1.7	2.6	-0.1	2.7	-1.8	6.1	0.4	2.4
	09/11/14	637	938	12.6	27.7	7.8	44.1	9.5	31.0	1.9	2.9	0.8	3.0	3.8	4.9	0.3	3.4
	11/12/14	-12	847	2.3	11.3	-7.6	20.4	-9.5	12.9	-0.8	1.2	-0.6	1.3	0.3	2.8	2.2	1.3
79	03/18/14	0	925	31.1	24.3	35.9	63.5	-21.1	27.3	-0.8	2.7	0.7	2.7	-4.1	6.7	1.6	2.8
	06/23/14	-297	737	-28.9	34.0	21.4	47.4	17.9	33.6	1.0	3.5	1.6	3.3	-1.4	6.6	4.6	3.5
	09/16/14	248	882	-21.8	35.6	52.0	87.8	41.9	44.3	-0.7	4.8	-0.6	4.9	3.8	10.3	-0.3	5.0
	11/12/14	37	855	13.2	24.4	8.9	46.8	-15.3	28.1	-2.0	2.8	0.6	2.8	2.0	6.0	1.8	2.5
81	03/18/14	204	960	9.3	20.8	-9.7	33.6	-14.5	26.3	-1.1	1.9	0.5	2.2	3.0	4.7	-0.5	2.4
	06/23/14	671	890	23.4	38.3	25.8	79.5	-34.0	47.0	-0.6	3.7	-1.3	3.7	2.2	7.1	0.8	4.0
	09/16/14	64	855	-2.3	25.4	-45.7	32.7	-26.7	28.7	-1.5	2.8	-0.6	2.8	-0.2	5.4	-1.3	2.5
	11/12/14	-478	800	-7.8	32.1	-2.0	53.6	-0.5	34.9	1.4	3.2	-1.4	3.7	10.1	6.9	-1.3	3.9
82	03/19/14	75	902	-13.3	25.8	65.7	41.3	6.8	31.6	-0.9	2.3	-0.8	2.7	-1.5	5.0	0.4	2.2
	06/23/14	810	901	-31.4	39.1	3.9	70.8	16.5	48.2	4.4	4.0	-0.1	4.2	2.7	7.3	0.0	3.6
	09/16/14	-197	816	-10.3	32.7	70.9	65.3	-18.2	36.0	-3.1	3.2	0.7	3.4	-3.5	6.5	1.0	2.9
	11/12/14	-63	852	-23.1	36.8	-69.2	63.4	-12.0	38.6	0.2	4.1	-1.2	4.8	-3.0	8.5	0.2	5.2
83	03/18/14	85	939	0.2	19.2	4.4	35.3	-3.9	23.0	-0.1	2.0	-0.9	2.1	1.4	4.8	0.2	1.9
	06/23/14	116	808	-17.8	35.6	-23.0	59.4	-11.5	43.9	-3.0	3.8	-1.4	4.0	-0.3	7.7	-1.5	4.0
	09/16/14	369	899	6.2	30.7	68.7	51.1	-12.7	36.0	0.4	3.6	-2.5	3.9	-0.6	6.7	0.5	3.4
	11/12/14	461	907	-0.2	41.2	60.5	57.3	50.2	48.5	2.0	4.3	0.7	4.8	1.2	8.8	-2.3	4.5

TABLE 10
WELL WATER
(pCi/l)

LOCATION	COLLECTION DATE	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)
71	03/19/14	1.9	4.4	1.4	2.3	-0.8	3.8	-1.0	2.7	-2.2	19.1	-0.3	6.1	-2.1	7.3	1.1	2.1
	06/23/14	4.5	6.1	-0.4	3.2	2.0	5.5	0.6	3.3	-36.4	30.4	3.3	9.9	2.4	7.4	-3.4	3.7
	09/16/14	1.7	4.8	0.2	3.0	-2.4	4.8	-1.0	3.1	-4.9	25.3	1.8	8.0	-3.6	5.6	1.6	3.0
	11/12/14	1.1	10.7	-2.0	4.7	-8.4	8.3	-2.0	4.4	41.6	39.9	10.3	12.1	-2.8	7.8	-0.2	4.7
72	03/19/14	-4.3	5.7	1.5	2.4	0.6	4.1	-1.5	2.9	-7.0	19.4	-6.5	6.4	1.4	7.8	1.6	2.2
	06/23/14	-6.4	8.0	3.2	4.0	4.8	7.1	-0.1	4.9	11.4	41.7	2.1	12.6	-2.4	8.5	0.2	4.9
	09/16/14	-10.4	8.6	2.0	3.7	-3.2	7.3	-4.7	4.8	-1.2	32.0	2.7	11.2	2.2	8.1	0.5	3.9
	11/12/14	12.8	12.4	5.0	5.4	-4.2	9.4	1.4	5.3	35.2	47.9	-9.2	14.5	-6.2	9.5	15.5	7.0
76	03/14/14	-2.5	4.9	0.1	2.2	-0.8	4.1	0.5	2.6	2.2	20.8	-2.3	5.7	2.3	5.3	-1.1	2.7
	06/12/14	-3.7	4.8	-1.7	2.3	-2.6	3.7	0.0	2.7	-3.8	20.1	-1.9	6.2	0.0	5.8	-9.6	2.6
	09/11/14	1.6	7.7	2.1	3.4	10.9	6.5	-3.1	4.5	-17.4	33.7	-3.7	9.2	-8.4	9.5	-0.9	4.0
	11/12/14	-11.3	9.2	4.1	4.2	1.1	6.7	-0.7	4.0	9.9	34.3	-0.1	10.3	-0.3	7.4	-0.2	4.3
77	03/14/14	-1.7	8.0	4.3	3.8	-2.0	5.6	-0.2	4.0	8.0	31.0	-5.4	10.2	-7.0	9.5	-3.0	4.0
	06/12/14	-0.1	5.7	3.1	2.8	1.4	4.6	4.2	3.0	1.1	22.5	5.2	7.7	1.6	7.2	-0.8	2.8
	09/11/14	-0.7	6.3	3.0	4.0	2.8	5.7	-1.1	3.8	16.5	26.6	-3.7	8.9	-0.9	9.0	0.1	3.4
	11/12/14	-0.1	3.7	2.8	1.9	0.1	2.7	-0.3	1.6	2.8	13.3	1.2	3.8	1.3	2.9	0.9	1.5
78	03/14/14	-3.3	5.8	0.8	2.7	2.9	4.7	2.6	3.2	0.2	24.6	-1.8	7.9	-4.9	7.4	-7.4	3.3
	06/11/14	-7.7	6.0	-1.4	2.7	0.3	4.9	-4.2	3.3	-7.8	24.2	8.0	7.1	-2.0	7.8	-1.7	3.1
	09/11/14	-10.0	6.9	1.0	3.2	-2.6	4.5	0.4	3.4	9.3	26.0	-3.0	7.1	-0.2	7.6	-0.7	3.6
	11/12/14	1.1	3.0	1.4	1.4	1.8	2.3	-0.6	1.4	3.7	11.4	1.1	3.3	-0.2	2.5	0.2	1.5
79	03/18/14	-5.9	6.3	0.2	2.8	-2.5	5.5	-0.9	3.4	6.4	24.9	0.2	6.6	0.0	7.9	-1.3	2.9
	06/23/14	-3.1	7.8	5.1	3.7	-0.3	6.4	-0.4	4.2	7.6	32.8	-0.3	10.8	-3.0	7.6	-2.1	4.1
	09/16/14	-13.6	12.0	-1.8	4.9	-2.1	7.3	-1.4	5.2	31.4	42.3	-3.8	12.1	2.5	8.9	-0.3	5.5
	11/12/14	-1.8	6.2	3.6	3.0	0.7	4.8	-0.2	3.2	-21.2	24.6	-2.7	7.4	-3.6	5.2	3.0	3.6
81	03/18/14	-6.0	4.5	0.5	2.1	3.7	3.9	-2.4	2.8	-0.9	20.1	-3.0	6.3	-6.1	7.6	-0.2	2.3
	06/23/14	-9.0	9.7	-0.9	4.1	-6.0	7.1	-5.5	5.0	24.7	36.5	0.7	11.4	-0.6	8.6	-1.7	4.4
	09/16/14	-1.7	5.8	3.6	3.1	8.6	4.7	-3.3	3.1	0.0	27.3	1.8	8.2	0.5	6.1	-1.1	3.0
	11/12/14	5.8	8.4	4.6	4.0	1.1	6.0	-0.4	4.0	-30.3	32.4	-3.4	9.9	-3.3	6.8	0.7	4.0
82	03/19/14	4.1	5.5	5.0	2.8	-1.8	4.5	3.0	3.3	-1.8	22.4	-7.4	7.7	5.4	8.8	6.8	3.1
	06/23/14	38.1	10.6	13.7	4.8	3.6	7.8	3.8	4.7	50.0	40.9	-0.6	12.8	4.8	9.6	47.0	7.0
	09/16/14	-0.2	6.5	1.1	4.0	-6.0	5.9	1.9	3.7	5.2	28.7	-4.1	10.0	2.3	6.9	0.2	3.4
	11/12/14	8.3	9.9	1.4	5.5	2.6	8.3	-1.6	4.8	9.6	37.5	3.7	12.6	2.5	7.2	0.7	4.9
83	03/18/14	0.6	4.5	2.9	2.4	0.9	3.2	-2.5	2.6	-0.8	16.1	4.0	5.6	-0.1	6.8	0.1	2.0
	06/23/14	5.1	8.1	-0.2	4.7	1.3	7.5	-0.6	4.2	-11.8	37.7	-5.5	13.0	5.2	8.3	1.5	4.3
	09/16/14	0.2	8.8	2.0	3.8	0.2	5.9	0.1	4.1	2.9	29.3	-0.4	10.6	1.3	7.2	0.5	3.7
	11/12/14	24.6	13.4	2.4	5.3	3.2	9.1	1.0	5.4	-0.5	46.4	0.8	14.0	-5.7	9.0	30.5	7.1

TABLE 10
WELL WATER
(pCi/l)

LOCATION	COLLECTION DATE	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ac-228	(+/-)
71	03/19/14	1.4	2.2	-3.2	15.6	0.4	5.1	0.1	8.4
	06/23/14	-3.9	3.5	-0.9	17.6	-1.4	4.6	7.6	9.7
	09/16/14	0.1	3.1	5.4	16.4	0.6	4.8	-2.1	11.0
	11/12/14	0.1	4.7	4.7	23.8	-4.2	7.5	13.7	16.6
72	03/19/14	-0.9	2.2	-5.9	15.9	-2.3	5.7	-0.9	9.0
	06/23/14	0.6	4.0	5.0	22.0	1.4	7.6	-8.4	14.0
	09/16/14	-1.2	4.0	-8.5	24.0	1.8	6.1	4.8	14.3
	11/12/14	-1.9	5.5	-13.3	25.3	-8.6	7.4	7.6	18.6
76	03/14/14	0.7	2.2	9.8	12.7	-1.4	4.2	-5.4	9.1
	06/12/14	1.0	2.1	1.1	13.4	-1.0	4.0	-3.7	8.2
	09/11/14	1.1	3.7	0.6	23.9	-1.3	7.7	10.6	14.4
	11/12/14	-4.6	4.2	-3.7	19.8	0.6	6.5	6.0	17.9
77	03/14/14	-0.5	3.5	5.1	20.4	-3.7	7.2	-1.6	13.2
	06/12/14	-0.3	2.5	-20.8	16.0	0.5	5.2	-0.5	9.4
	09/11/14	0.8	2.9	15.1	18.6	1.1	6.0	0.8	11.4
	11/12/14	-0.9	1.5	-7.2	7.5	-0.5	2.6	-0.4	6.5
78	03/14/14	-1.8	2.9	-1.2	16.8	-4.0	4.8	1.2	10.0
	06/11/14	-0.4	3.0	-15.0	19.5	1.0	7.2	-4.4	9.7
	09/11/14	1.0	3.1	13.6	17.1	5.1	8.0	-1.9	11.5
	11/12/14	-0.7	1.3	-0.3	6.9	0.7	2.3	1.6	5.3
79	03/18/14	0.7	2.7	16.1	19.2	1.7	6.0	-11.9	10.5
	06/23/14	-0.5	3.5	3.9	18.0	-0.3	6.0	3.5	12.6
	09/16/14	3.9	5.3	-5.7	22.6	3.1	7.6	-10.8	16.5
	11/12/14	0.9	3.1	0.0	15.2	0.2	4.0	23.8	14.2
81	03/18/14	1.1	2.2	1.2	15.3	-0.8	4.5	4.7	11.9
	06/23/14	-0.5	3.9	3.7	22.9	1.1	5.4	-2.9	16.8
	09/16/14	4.0	3.2	0.2	14.9	3.3	4.6	3.3	12.3
	11/12/14	0.2	3.7	11.8	17.9	-1.5	5.6	-2.1	12.1
82	03/19/14	1.6	2.7	-9.1	18.5	-0.2	4.6	1.1	9.0
	06/23/14	5.2	4.1	-20.2	22.5	0.6	5.7	3.8	14.5
	09/16/14	1.1	3.8	6.5	17.1	0.8	5.3	2.9	12.2
	11/12/14	1.4	4.4	4.0	20.3	-3.9	7.3	-6.0	14.6
83	03/18/14	0.0	2.1	0.7	15.8	-0.4	4.4	-4.9	7.5
	06/23/14	-1.4	4.5	-2.7	20.5	-3.0	7.2	-6.6	16.1
	09/16/14	-4.3	3.8	10.9	17.2	3.6	5.8	-10.8	13.5
	11/12/14	8.0	5.2	-3.1	23.2	3.0	6.6	11.6	17.3

TABLE 11
RESERVOIR WATER
(pCi/l)

Reservoir water was not sampled in 2014. See discussion in Section 4.11.

TABLE 12
FRUITS & VEGETABLES
(pCi/g wet wt.)

LOCATION 25

COLLECTION DATE	Type	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/24/14	Greens	0.106	0.096	4.140	0.486	-0.108	0.104	0.006	0.009	-0.004	0.011	-0.013	0.024	0.005	0.012
07/24/14	Blueberries	-0.003	0.092	0.789	0.200	-0.039	0.093	0.004	0.010	-0.003	0.010	0.006	0.021	0.002	0.010
10/20/14	Greens	0.244	0.291	4.269	0.573	-0.108	0.141	-0.002	0.016	0.008	0.014	-0.021	0.034	0.005	0.015
10/20/14	Apples	0.092	0.136	1.293	0.367	0.061	0.135	0.011	0.014	0.011	0.015	-0.013	0.034	-0.006	0.013

COLLECTION DATE	Type	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/24/14	Greens	-0.021	0.028	-0.001	0.011	0.003	0.019	-0.009	0.012	-0.031	0.104	0.001	0.032	-0.006	0.019
07/24/14	Blueberries	0.000	0.021	0.000	0.011	-0.007	0.017	0.001	0.012	0.074	0.086	0.004	0.027	0.014	0.017
10/20/14	Greens	-0.050	0.042	0.010	0.015	0.017	0.026	-0.004	0.017	-0.117	0.132	-0.001	0.044	-0.019	0.034
10/20/14	Apples	-0.023	0.033	0.007	0.015	0.021	0.026	-0.002	0.017	-0.029	0.136	0.012	0.040	0.000	0.033

COLLECTION DATE	Type	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/24/14	Greens	-0.019	0.012	-0.004	0.012	-0.021	0.059	-0.001	0.014	-0.002	0.020	-0.008	0.082	-0.020	0.046
07/24/14	Blueberries	0.003	0.011	-0.002	0.011	-0.004	0.045	0.001	0.014	0.007	0.016	-0.002	0.065	-0.005	0.037
10/20/14	Greens	0.005	0.016	-0.012	0.013	0.135	0.087	0.005	0.022	-0.004	0.028	-0.035	0.103	-0.039	0.056
10/20/14	Apples	-0.013	0.017	0.011	0.017	-0.017	0.078	-0.019	0.029	0.023	0.023	-0.033	0.083	-0.040	0.056

TABLE 12
FRUITS & VEGETABLES
(pCi/g wet wt.)
LOCATION 26C

COLLECTION DATE	Type	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/24/14	Greens	-0.031	0.108	4.776	0.515	0.066	0.105	-0.002	0.012	-0.004	0.012	0.001	0.028	0.001	0.010
07/24/14	Blueberries	0.060	0.084	0.568	0.251	-0.019	0.084	0.005	0.009	0.003	0.009	0.011	0.017	-0.005	0.010
10/20/14	Greens	0.197	0.130	4.715	0.480	-0.036	0.109	-0.007	0.010	0.000	0.012	0.029	0.026	-0.009	0.009
10/20/14	Apples	0.086	0.091	0.977	0.299	0.009	0.106	-0.003	0.011	-0.002	0.010	0.004	0.026	-0.004	0.013

COLLECTION DATE	Type	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/24/14	Greens	-0.005	0.031	-0.006	0.012	-0.001	0.021	-0.003	0.013	-0.018	0.113	-0.012	0.032	-0.002	0.020
07/24/14	Blueberries	0.009	0.020	-0.001	0.009	0.000	0.015	0.004	0.010	-0.020	0.083	0.030	0.027	0.001	0.014
10/20/14	Greens	-0.027	0.030	0.001	0.012	0.010	0.018	0.000	0.013	0.058	0.102	0.001	0.031	0.009	0.024
10/20/14	Apples	-0.022	0.028	0.002	0.012	-0.002	0.020	-0.005	0.013	0.088	0.114	0.000	0.026	-0.009	0.023

COLLECTION DATE	Type	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/24/14	Greens	-0.008	0.011	0.003	0.012	0.004	0.062	-0.015	0.014	-0.014	0.019	-0.013	0.076	0.013	0.048
07/24/14	Blueberries	-0.012	0.009	0.001	0.009	0.011	0.042	-0.005	0.012	-0.002	0.015	-0.020	0.065	0.050	0.038
10/20/14	Greens	0.000	0.010	-0.015	0.012	0.005	0.062	-0.006	0.023	-0.002	0.020	-0.006	0.077	0.016	0.044
10/20/14	Apples	0.012	0.011	-0.011	0.013	0.099	0.063	0.007	0.017	-0.004	0.014	0.013	0.053	-0.021	0.042

TABLE 13
BROADLEAF VEGETATION
(pCi/g wet wt.)

LOCATION 1

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/15/14	0.555	0.189	2.566	0.440	-0.094	0.148	-0.002	0.013	0.003	0.013	-0.001	0.029	-0.011	0.014
10/15/14	1.762	0.278	2.870	0.371	0.025	0.126	-0.004	0.013	0.002	0.011	0.012	0.020	0.007	0.010

	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/15/14	-0.001	0.035	0.005	0.015	0.006	0.029	-0.016	0.017	-0.132	0.130	0.039	0.045	-0.014	0.028
10/15/14	0.000	0.027	-0.002	0.011	0.018	0.022	-0.004	0.013	0.033	0.105	0.030	0.032	0.009	0.023

	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/15/14	-0.014	0.016	-0.017	0.017	0.029	0.076	-0.022	0.026	-0.014	0.029	-0.100	0.113	0.076	0.056
10/15/14	-0.002	0.013	0.008	0.013	-0.036	0.054	0.003	0.016	0.007	0.029	-0.025	0.121	0.028	0.075

LOCATION 10

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/15/14	0.406	0.206	4.019	0.492	0.108	0.112	0.001	0.016	0.004	0.015	0.006	0.028	0.002	0.013
10/15/14	0.705	0.226	3.266	0.453	-0.054	0.132	0.000	0.015	0.004	0.015	-0.014	0.031	0.008	0.013

	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/15/14	-0.005	0.033	0.000	0.015	0.009	0.023	-0.008	0.015	0.032	0.116	0.018	0.039	0.011	0.025
10/15/14	-0.030	0.034	-0.001	0.013	-0.009	0.025	0.006	0.015	0.128	0.139	-0.022	0.035	-0.004	0.026

	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/15/14	-0.016	0.015	-0.003	0.015	0.015	0.071	0.000	0.018	0.015	0.020	-0.005	0.077	0.037	0.054
10/15/14	-0.033	0.015	0.007	0.014	-0.011	0.070	-0.003	0.019	0.012	0.029	-0.007	0.111	0.073	0.059

TABLE 13
BROADLEAF VEGETATION
(pCi/g wet wt.)

LOCATION 17

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/15/14	0.406	0.285	2.702	0.556	0.083	0.131	-0.012	0.014	0.010	0.014	-0.043	0.034	0.001	0.014
10/15/14	0.881	0.227	3.615	0.542	-0.058	0.127	0.002	0.015	-0.001	0.016	0.025	0.035	0.009	0.016

	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/15/14	-0.007	0.032	0.000	0.013	-0.007	0.022	-0.007	0.014	-0.058	0.121	-0.007	0.036	0.002	0.026
10/15/14	-0.033	0.034	0.002	0.016	-0.006	0.026	-0.010	0.014	0.011	0.131	-0.016	0.036	-0.013	0.026

	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/15/14	0.003	0.014	0.007	0.014	0.005	0.068	0.015	0.023	-0.004	0.024	0.052	0.085	0.143	0.108
10/15/14	0.002	0.013	0.011	0.016	-0.025	0.065	-0.002	0.016	-0.001	0.018	-0.023	0.070	0.054	0.065

LOCATION 26C

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/15/14	0.664	0.193	3.417	0.533	-0.114	0.140	-0.006	0.015	0.005	0.015	0.005	0.035	0.009	0.015
10/15/14	1.391	0.176	3.942	0.394	0.014	0.102	-0.001	0.010	-0.005	0.010	0.001	0.021	0.002	0.011

	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/15/14	-0.059	0.038	-0.011	0.015	0.008	0.024	-0.006	0.014	0.048	0.113	0.010	0.037	0.000	0.027
10/15/14	-0.003	0.023	0.003	0.010	0.015	0.017	0.005	0.010	0.028	0.092	0.008	0.026	-0.018	0.020

	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/15/14	0.000	0.016	0.004	0.015	0.051	0.069	0.001	0.017	-0.014	0.023	-0.031	0.087	0.096	0.057
10/15/14	-0.008	0.012	0.006	0.012	0.037	0.044	-0.001	0.013	-0.004	0.019	-0.028	0.073	0.026	0.124

TABLE 14
SEA WATER
(pCi/l)

LOCATION 32

COLLECTION DATE	H-3	(+/-)	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
01/27/14	209	122	3.8	19.2	201	56	-4.8	23.1	1.1	2.0	-1.1	2.3	3.1	4.8
02/24/14	801	201	-4.2	24.6	325	67	0.7	27.4	-1.6	2.7	-0.3	2.6	-0.9	6.5
03/31/14	1170	171	-11.7	24.6	274	69	3.7	25.7	-1.7	2.8	-0.7	3.0	2.4	5.4
04/28/14	539	117	13.4	26.5	409	66	-20.6	32.3	-2.8	3.1	1.0	3.1	-2.6	6.5
05/27/14	33	124	-3.4	33.0	276	101	-0.1	36.3	0.9	4.1	-0.8	4.0	1.9	7.4
06/24/14	525	148	-23.2	29.3	289	90	-3.6	28.2	-2.3	3.3	0.3	3.4	2.1	7.1
07/29/14	960	154	38.9	33.9	242	79	-13.7	36.9	0.6	2.6	2.7	3.1	0.5	6.7
08/26/14	745	138	4.9	18.3	264	46	14.2	22.4	2.1	1.7	-0.6	2.0	-1.6	4.2
09/30/14	331	132	13.1	17.2	273	72	5.8	22.7	0.3	1.8	-0.8	2.1	4.4	4.7
10/28/14	874	160	4.0	22.6	291	63	0.2	27.6	-1.2	2.3	0.0	2.2	0.6	4.8
11/25/14	662	151	13.3	27.2	312	59	1.3	32.2	2.0	2.5	1.4	2.6	-3.3	5.0
12/30/14	209	109	21.5	31.2	266	79	21.7	35.0	-0.5	3.0	1.1	3.4	5.8	7.2

COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)
01/27/14	0.6	2.0	-3.2	4.7	0.7	2.3	0.2	4.1	-0.5	2.5	10.6	17.4	4.9	5.4
02/24/14	2.5	2.9	-4.2	6.8	1.6	3.0	-3.5	4.9	-2.3	3.1	10.6	23.7	-4.2	8.5
03/31/14	0.9	3.2	-4.3	6.3	0.1	2.8	-2.1	4.7	-1.2	3.2	0.7	27.1	-8.1	8.0
04/28/14	-1.7	3.4	-0.9	6.4	0.6	3.3	0.2	6.0	-0.2	3.7	-20.9	27.4	-2.1	8.5
05/27/14	-0.9	4.2	-12.4	9.1	0.1	4.3	-6.8	7.6	2.7	3.7	2.8	35.7	2.8	10.1
06/24/14	1.0	3.3	-10.2	7.7	1.9	2.9	3.9	5.8	-0.4	3.3	12.9	28.6	-5.9	8.5
07/29/14	13.0	4.9	2.1	7.0	4.7	3.2	0.1	5.7	-0.6	4.1	9.7	32.8	-5.6	10.4
08/26/14	0.8	1.7	-2.0	3.7	-0.5	1.9	0.8	3.5	-0.7	2.2	-0.7	16.3	-1.5	5.1
09/30/14	0.1	1.9	4.5	4.2	0.8	2.1	1.0	3.6	0.5	2.5	6.4	17.4	-1.0	5.5
10/28/14	-0.3	2.5	-6.0	5.4	-0.2	2.2	-0.5	4.0	0.1	2.9	18.4	19.7	0.4	6.2
11/25/14	0.6	2.2	-2.3	5.0	0.9	2.7	-3.1	4.9	1.1	3.3	6.4	23.5	-1.9	8.1
12/30/14	-0.6	3.4	-2.5	7.8	1.6	3.1	5.2	5.3	-1.5	3.8	-13.4	26.8	-3.7	10.2

COLLECTION DATE	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ac-228	(+/-)
01/27/14	-3.7	7.6	0.4	2.0	-0.7	1.8	3.5	15.1	-4.5	4.2	-2.1	7.9
02/24/14	3.1	5.6	0.8	3.5	-0.6	2.8	6.3	15.8	1.8	4.5	11.0	11.8
03/31/14	-3.5	6.6	-1.9	3.1	-1.2	2.9	-8.4	17.2	-2.4	5.7	-1.6	10.4
04/28/14	1.7	6.4	-0.7	3.2	0.2	3.2	-1.6	16.2	-0.3	3.8	5.8	11.6
05/27/14	0.7	6.8	-2.5	4.1	-3.4	3.7	9.8	18.5	2.6	5.2	14.9	15.8
06/24/14	2.2	5.9	-3.5	3.6	-0.6	3.4	2.8	16.2	-0.6	5.5	-9.2	12.0
07/29/14	5.8	6.8	-3.3	3.5	-0.3	3.8	-9.4	17.9	-3.1	4.9	4.5	11.5
08/26/14	-0.7	6.9	-0.1	1.6	-0.8	1.9	-5.2	14.0	-1.9	3.8	-0.9	7.0
09/30/14	-2.2	7.5	1.3	1.7	0.3	1.7	3.9	13.7	-3.1	5.2	-0.7	8.4
10/28/14	-0.8	8.1	-6.7	2.5	0.6	2.2	-3.7	17.4	0.8	5.2	-2.3	8.4
11/25/14	8.7	6.4	-0.7	2.9	0.8	2.9	3.1	16.0	-3.8	3.2	-2.6	9.5
12/30/14	3.0	6.1	-6.6	3.6	-1.2	3.2	-9.9	17.1	0.5	4.9	13.8	12.6

TABLE 14
SEA WATER
(pCi/l)

LOCATION 37C

COLLECTION DATE	H-3	(+/-)	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
03/17/14	75	104	-10.2	30.3	328	89	-5.46	37.09	-0.5	3.4	0.9	3.7	8.3	7.1
06/10/14	88	102	-2.5	26.4	252	74	-8.57	32.06	-2.2	2.9	1.3	3.1	1.1	5.4
09/09/14	-19	150	-22.6	20.8	291	65	-12.76	28.35	0.2	2.2	-1.5	2.2	-0.9	5.3
12/08/14	-57	113	24.2	28.2	292	82	6.54	26.69	1.7	3.0	-2.1	3.5	0.8	7.1

	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)
03/17/14	3.2	3.9	3.6	8.4	4.2	3.8	0.2	6.1	0.5	3.7	23.6	33.7	-5.4	10.8
06/10/14	-0.8	2.7	-8.7	5.9	4.0	3.2	-1.8	4.9	2.0	3.4	5.0	25.4	1.0	9.2
09/09/14	0.2	2.1	2.0	5.2	0.0	2.4	0.4	4.2	-0.9	2.9	-2.6	20.1	-1.5	6.9
12/08/14	3.0	3.0	-16.8	6.9	2.1	3.3	0.5	5.5	-3.8	3.5	-7.1	29.8	-3.5	8.5

	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ac-228	(+/-)
03/17/14	0.2	4.7	2.5	4.3	1.2	3.7	0.7	15.1	0.9	5.0	2.3	16.0
06/10/14	-3.3	5.9	-2.8	3.2	1.3	3.0	-3.1	14.9	-1.7	5.3	-1.8	11.2
09/09/14	-8.4	8.2	2.4	2.3	-3.4	2.3	-15.2	15.4	0.5	4.7	-5.3	8.5
12/08/14	0.3	6.0	-4.4	3.2	-1.7	3.8	-3.0	16.1	-0.4	5.8	-2.6	12.4

TABLE 15
BOTTOM SEDIMENT
(pCi/g dry wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
31	01/06/14	0.029	0.265	17.66	1.25	0.076	0.344	0.005	0.026	-0.005	0.031	0.071	0.077
31	03/25/14	0.011	0.291	16.99	1.35	-0.243	0.328	0.011	0.039	-0.002	0.035	-0.049	0.072
31	09/15/14	0.216	0.279	21.10	1.49	0.288	0.323	0.027	0.034	0.009	0.034	-0.015	0.070
32	06/25/14	0.112	0.156	13.97	0.60	-0.174	0.195	0.010	0.018	-0.007	0.018	-0.019	0.039
32	12/05/14	0.241	0.278	14.75	1.17	-0.193	0.315	0.013	0.029	-0.011	0.032	-0.033	0.070
33	06/06/14	0.036	0.256	14.54	1.03	0.091	0.312	-0.012	0.027	-0.007	0.028	0.007	0.067
33	10/02/14	0.122	0.296	23.20	1.25	0.070	0.393	-0.002	0.031	0.002	0.035	-0.010	0.100
34	01/24/14	0.106	0.266	15.41	1.09	0.115	0.307	0.010	0.028	0.026	0.032	-0.055	0.073
34	06/06/14	-0.043	0.230	16.07	1.23	0.004	0.232	0.004	0.025	0.000	0.026	-0.039	0.067
34	08/06/14	-0.078	0.213	21.07	1.41	0.016	0.218	0.008	0.027	0.003	0.026	-0.016	0.079
37	06/06/14	-0.720	0.257	16.08	1.18	-0.093	0.294	-0.010	0.027	0.006	0.030	-0.015	0.068
37	09/15/14	-0.074	0.226	15.54	1.27	0.051	0.263	0.007	0.027	0.002	0.028	0.030	0.068
39	06/25/14	-0.047	0.208	18.06	0.98	-0.157	0.267	0.011	0.023	-0.024	0.024	-0.064	0.059
67	06/16/14	0.390	0.277	20.23	1.33	-0.058	0.264	-0.012	0.031	-0.004	0.030	-0.036	0.076

TABLE 15
BOTTOM SEDIMENT
(pCi/g dry wt.)

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
31	01/06/14	-0.001	0.034	0.017	0.071	0.006	0.032	0.001	0.056	0.002	0.037	0.084	0.212
31	03/25/14	0.012	0.032	-0.206	0.090	0.020	0.040	0.077	0.066	-0.013	0.035	-0.101	0.316
31	09/15/14	-0.004	0.032	0.034	0.080	0.003	0.038	-0.018	0.064	-0.014	0.034	0.165	0.296
32	06/25/14	-0.003	0.015	0.024	0.045	0.051	0.021	0.025	0.032	-0.009	0.019	0.110	0.144
32	12/05/14	0.000	0.028	-0.032	0.081	-0.020	0.035	0.005	0.051	0.005	0.032	-0.245	0.251
33	06/06/14	0.020	0.028	0.076	0.073	-0.005	0.035	0.052	0.057	0.009	0.032	-0.065	0.245
33	10/02/14	-0.003	0.027	0.010	0.092	0.034	0.036	-0.065	0.061	-0.037	0.039	-0.009	0.268
34	01/24/14	-0.016	0.036	-0.020	0.090	0.015	0.030	-0.008	0.053	-0.035	0.032	-0.028	0.234
34	06/06/14	-0.010	0.027	-0.137	0.075	-0.002	0.030	0.029	0.049	0.027	0.027	-0.087	0.201
34	08/06/14	-0.019	0.028	-0.082	0.077	-0.012	0.031	-0.029	0.049	-0.022	0.027	0.067	0.214
37	06/06/14	0.021	0.029	-0.060	0.075	0.011	0.031	-0.010	0.053	-0.011	0.031	-0.102	0.241
37	09/15/14	0.002	0.027	-0.017	0.070	0.016	0.029	-0.020	0.052	-0.018	0.029	0.075	0.288
39	06/25/14	0.033	0.029	-0.153	0.067	0.017	0.029	0.044	0.046	-0.009	0.027	0.037	0.214
67	06/16/14	-0.001	0.029	-0.103	0.081	0.010	0.032	0.030	0.057	-0.007	0.029	0.174	0.265

TABLE 15
BOTTOM SEDIMENT
(pCi/g dry wt.)

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
31	01/06/14	-0.001	0.025	-0.050	0.067	0.109	0.187	-0.014	0.028	0.005	0.026	0.117	0.217
31	03/25/14	-0.017	0.036	0.047	0.093	-0.036	0.066	0.005	0.034	0.004	0.037	0.281	0.384
31	09/15/14	-0.005	0.032	0.000	0.086	-0.033	0.074	0.012	0.035	-0.003	0.036	1.529	0.268
32	06/25/14	-0.019	0.016	0.031	0.046	-0.014	0.063	0.002	0.018	0.017	0.017	1.107	0.122
32	12/05/14	-0.010	0.027	-0.010	0.072	0.069	0.102	0.025	0.026	0.001	0.030	0.902	0.232
33	06/06/14	-0.009	0.028	0.036	0.075	-0.027	0.088	0.027	0.034	0.014	0.029	0.015	0.257
33	10/02/14	0.025	0.028	0.006	0.075	0.044	0.225	-0.012	0.033	-0.005	0.030	0.128	0.211
34	01/24/14	0.004	0.027	-0.023	0.064	0.065	0.120	0.006	0.029	0.010	0.029	0.095	0.107
34	06/06/14	-0.013	0.024	0.017	0.060	-0.045	0.072	-0.014	0.028	0.020	0.026	0.091	0.117
34	08/06/14	-0.024	0.023	0.006	0.062	0.048	0.062	0.006	0.025	-0.011	0.027	0.239	0.167
37	06/06/14	-0.010	0.028	0.055	0.069	0.054	0.085	-0.003	0.030	-0.007	0.030	0.053	0.279
37	09/15/14	0.011	0.022	0.036	0.071	0.039	0.060	-0.014	0.029	-0.011	0.026	0.217	0.139
39	06/25/14	0.014	0.025	0.024	0.059	-0.054	0.080	0.013	0.023	0.113	0.037	0.985	0.187
67	06/16/14	-0.054	0.030	0.005	0.074	0.052	0.055	0.034	0.031	0.038	0.035	0.112	0.277

TABLE 16
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
29	02/19/14	0.2591	0.1219	5.5840	0.3271	0.0281	0.0766	-0.0037	0.0077	-0.0020	0.0079	0.0069	0.0188
29	06/03/14	0.0535	0.0911	5.9590	0.4139	0.0306	0.0860	0.0082	0.0091	-0.0010	0.0103	-0.0085	0.0222
29	08/07/14	0.0770	0.0787	8.0350	0.5114	-0.0228	0.0905	0.0016	0.0098	-0.0008	0.0111	0.0261	0.0265
29	10/01/14	0.0075	0.0916	7.1570	0.4945	-0.0168	0.1009	0.0026	0.0095	-0.0073	0.0101	0.0282	0.0224
32	02/19/14	0.1162	0.0968	8.3640	0.4136	-0.0213	0.0813	-0.0070	0.0084	0.0022	0.0082	-0.0011	0.0196
32	06/03/14	0.0317	0.1010	8.4000	0.4995	-0.0273	0.1030	-0.0002	0.0104	0.0026	0.0101	-0.0040	0.0231
32	08/07/14	0.0573	0.0645	8.0000	0.3774	-0.0252	0.0655	0.0036	0.0066	-0.0003	0.0071	0.0185	0.0174
32	10/01/14	0.0843	0.1167	8.2660	0.6487	-0.0165	0.1297	-0.0045	0.0136	-0.0002	0.0149	-0.0089	0.0371
35	02/26/14	0.2579	0.1691	6.4860	0.4517	0.0291	0.0840	-0.0067	0.0100	-0.0010	0.0099	0.0213	0.0268
35	06/03/14	0.1628	0.1209	7.1670	0.5471	-0.0673	0.1358	0.0053	0.0136	-0.0005	0.0153	0.0009	0.0345
35	08/07/14	0.0904	0.0747	8.0590	0.4106	0.0176	0.0865	-0.0084	0.0083	-0.0054	0.0092	0.0073	0.0219
35	10/01/14	0.0179	0.0898	7.5450	0.5066	-0.0236	0.1104	0.0025	0.0110	0.0018	0.0109	-0.0003	0.0290
36	03/25/14	0.1239	0.1881	6.4190	0.4727	0.0279	0.0890	-0.0028	0.0099	0.0049	0.0106	0.0198	0.0258
36	06/06/14	0.1541	0.1201	5.8160	0.5173	0.0837	0.0982	-0.0058	0.0108	0.0042	0.0127	0.0010	0.0277
36	09/15/14	0.0744	0.1111	6.8600	0.6160	-0.0111	0.1228	0.0008	0.0150	-0.0120	0.0148	0.0189	0.0389
36	10/15/14	0.1464	0.0920	7.8490	0.5087	0.0075	0.0878	-0.0002	0.0090	0.0044	0.0109	0.0001	0.0240
90	01/24/14	0.1961	0.0915	5.7980	0.2449	0.0439	0.0599	-0.0016	0.0059	-0.0039	0.0064	-0.0152	0.0166
90	06/06/14	0.0664	0.1053	7.2600	0.5126	-0.0166	0.1137	-0.0022	0.0106	-0.0098	0.0113	0.0037	0.0268
90	08/06/14	-0.0284	0.1114	7.2690	0.6273	0.0424	0.1099	-0.0009	0.0125	0.0046	0.0136	-0.0192	0.0328
90	10/02/14	-0.0151	0.1125	6.8260	0.6544	-0.0523	0.1199	-0.0142	0.0128	0.0075	0.0133	0.0068	0.0342

TABLE 16
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
29	02/19/14	0.0003	0.0092	-0.0287	0.0211	0.0006	0.0081	0.0000	0.0149	0.0086	0.0086	0.0018	0.0687
29	06/03/14	0.0077	0.0105	-0.0123	0.0248	-0.0072	0.0088	0.0080	0.0171	-0.0027	0.0096	-0.0388	0.0865
29	08/07/14	0.0038	0.0102	-0.0090	0.0281	0.0030	0.0114	-0.0198	0.0183	0.0038	0.0108	-0.0604	0.0948
29	10/01/14	-0.0016	0.0122	-0.0068	0.0241	0.0063	0.0101	0.0110	0.0187	-0.0019	0.0112	-0.0471	0.0841
32	02/19/14	-0.0039	0.0095	-0.0132	0.0203	0.0098	0.0082	0.0161	0.0135	-0.0035	0.0085	-0.0057	0.0656
32	06/03/14	-0.0062	0.0104	0.0010	0.0251	0.0087	0.0105	-0.0023	0.0202	0.0008	0.0119	-0.0353	0.0890
32	08/07/14	0.0065	0.0072	-0.0132	0.0190	-0.0056	0.0080	-0.0053	0.0127	-0.0022	0.0074	0.0270	0.0564
32	10/01/14	0.0094	0.0144	-0.0162	0.0361	0.0176	0.0152	-0.0105	0.0274	-0.0085	0.0134	-0.0067	0.1092
35	02/26/14	0.0064	0.0145	-0.0299	0.0269	-0.0014	0.0113	-0.0056	0.0178	0.0002	0.0104	0.0662	0.0937
35	06/03/14	-0.0081	0.0124	0.0136	0.0355	-0.0040	0.0133	0.0020	0.0246	0.0103	0.0154	-0.0414	0.1317
35	08/07/14	-0.0080	0.0086	-0.0289	0.0213	0.0049	0.0080	0.0122	0.0157	0.0049	0.0089	-0.0080	0.0703
35	10/01/14	-0.0056	0.0113	0.0041	0.0255	0.0071	0.0114	0.0176	0.0189	0.0012	0.0116	-0.0012	0.0889
36	03/25/14	-0.0028	0.0085	-0.0309	0.0260	0.0015	0.0095	-0.0095	0.0159	0.0021	0.0108	0.0533	0.0817
36	06/06/14	0.0040	0.0115	-0.0470	0.0299	-0.0005	0.0113	0.0079	0.0197	0.0022	0.0108	-0.0888	0.0818
36	09/15/14	-0.0107	0.0156	-0.0187	0.0394	0.0098	0.0151	0.0048	0.0248	0.0038	0.0155	0.0011	0.1307
36	10/15/14	-0.0097	0.0086	0.0122	0.0241	0.0042	0.0099	0.0001	0.0195	0.0051	0.0098	-0.0547	0.0924
90	01/24/14	-0.0004	0.0080	-0.0123	0.0151	0.0018	0.0064	0.0152	0.0114	-0.0047	0.0067	-0.0442	0.0530
90	06/06/14	-0.0028	0.0114	-0.0304	0.0293	0.0043	0.0119	0.0161	0.0200	-0.0002	0.0126	-0.0033	0.0954
90	08/06/14	0.0045	0.0149	-0.0311	0.0349	0.0051	0.0116	-0.0027	0.0229	-0.0190	0.0145	-0.0157	0.1037
90	10/02/14	0.0034	0.0145	-0.0668	0.0359	-0.0103	0.0156	-0.0086	0.0269	0.0001	0.0149	0.0052	0.1095

TABLE 16
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
29	02/19/14	0.0018	0.0074	-0.0047	0.0198	0.0053	0.0247	-0.0197	0.0086	-0.0042	0.0076	0.1177	0.0551
29	06/03/14	0.0071	0.0087	-0.0024	0.0229	0.0124	0.0184	-0.0087	0.0099	0.0017	0.0096	0.0605	0.0711
29	08/07/14	0.0007	0.0094	-0.0055	0.0266	0.0047	0.0263	-0.0059	0.0114	0.0063	0.0105	0.0791	0.0726
29	10/01/14	-0.0015	0.0091	0.0165	0.0252	-0.0082	0.0253	-0.0139	0.0097	0.0081	0.0090	0.0462	0.0718
32	02/19/14	0.0065	0.0076	-0.0192	0.0193	0.0211	0.0246	-0.0012	0.0076	-0.0024	0.0080	0.0351	0.0630
32	06/03/14	0.0078	0.0114	0.0016	0.0271	0.0138	0.0225	-0.0175	0.0111	-0.0168	0.0119	0.0721	0.0767
32	08/07/14	0.0086	0.0070	-0.0158	0.0174	0.0153	0.0193	-0.0025	0.0073	-0.0045	0.0075	0.0067	0.0515
32	10/01/14	0.0007	0.0125	-0.0065	0.0340	0.0169	0.0313	-0.0215	0.0127	0.0004	0.0145	0.0968	0.0594
35	02/26/14	-0.0052	0.0099	0.0067	0.0248	0.0093	0.0173	0.0015	0.0109	0.0063	0.0108	0.0761	0.0653
35	06/03/14	-0.0028	0.0132	-0.0201	0.0360	0.0206	0.0294	-0.0090	0.0136	0.0033	0.0140	0.1063	0.0643
35	08/07/14	-0.0028	0.0080	0.0034	0.0215	0.0070	0.0230	-0.0035	0.0091	0.0004	0.0088	0.0883	0.0492
35	10/01/14	0.0018	0.0095	-0.0010	0.0273	-0.0046	0.0289	-0.0105	0.0109	-0.0047	0.0104	0.0577	0.0469
36	03/25/14	0.0008	0.0093	-0.0126	0.0267	0.0097	0.0182	0.0024	0.0102	0.0043	0.0100	0.0446	0.0427
36	06/06/14	0.0077	0.0097	0.0092	0.0260	0.0268	0.0282	0.0044	0.0103	-0.0140	0.0108	0.0449	0.0498
36	09/15/14	-0.0056	0.0147	-0.0234	0.0355	-0.0037	0.0276	-0.0032	0.0161	-0.0086	0.0161	0.0474	0.0605
36	10/15/14	-0.0037	0.0094	0.0061	0.0277	0.0055	0.0181	-0.0029	0.0098	0.0037	0.0102	0.0806	0.0536
90	01/24/14	0.0031	0.0053	0.0034	0.0131	0.0056	0.0234	-0.0024	0.0062	-0.0027	0.0056	0.0596	0.0403
90	06/06/14	-0.0020	0.0098	0.0221	0.0288	0.0106	0.0298	-0.0037	0.0119	0.0169	0.0114	0.1272	0.0643
90	08/06/14	0.0090	0.0123	-0.0225	0.0340	-0.0051	0.0250	-0.0173	0.0125	-0.0042	0.0141	0.0526	0.0526
90	10/02/14	0.0007	0.0121	0.0024	0.0338	0.0389	0.0311	-0.0067	0.0126	0.0031	0.0136	-0.0010	0.0517

TABLE 17A
FISH - FLOUNDER
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
35	05/07/2014	0.018	0.203	4.570	0.797	0.027	0.208	-0.006	0.027	0.018	0.023	0.039	0.048

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
35	05/07/2014	-0.019	0.026	-0.050	0.057	0.009	0.023	0.000	0.043	0.016	0.026	-0.011	0.230

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
35	05/07/2014	-0.014	0.024	-0.011	0.063	0.036	0.040	-0.010	0.029	0.020	0.026	-0.003	0.091

TABLE 17B
FISH - OTHER
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
29	06/18/14	0.042	0.056	4.577	0.310	0.010	0.070	0.005	0.006	-0.003	0.006	-0.005	0.015
29	08/27/14	0.035	0.093	4.709	0.362	0.023	0.113	0.004	0.009	-0.002	0.010	0.001	0.023
32	04/03/14	0.090	0.128	5.755	0.405	-0.098	0.153	0.004	0.013	0.005	0.014	-0.002	0.029
32	10/17/14	-0.028	0.056	4.206	0.514	0.029	0.070	-0.002	0.006	0.002	0.007	-0.005	0.017
35	05/27/14	0.034	0.111	6.456	0.435	-0.045	0.123	-0.014	0.013	-0.004	0.013	0.008	0.028
35	07/29/14	0.046	0.147	4.688	0.537	0.043	0.167	0.006	0.016	-0.002	0.017	0.034	0.043
35	10/21/14	0.039	0.098	4.285	0.528	0.083	0.118	0.001	0.010	-0.006	0.010	-0.014	0.022

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
29	06/18/14	-0.001	0.005	-0.001	0.012	-0.002	0.007	-0.008	0.012	-0.007	0.008	-0.044	0.049
29	08/27/14	0.011	0.009	-0.004	0.021	-0.004	0.010	0.011	0.019	-0.005	0.012	-0.085	0.081
32	04/03/14	0.014	0.013	0.031	0.033	0.026	0.015	-0.004	0.026	0.008	0.016	0.025	0.129
32	10/17/14	-0.001	0.006	0.010	0.012	-0.001	0.007	0.004	0.014	0.000	0.009	0.060	0.064
35	05/27/14	-0.002	0.014	-0.062	0.031	0.003	0.014	0.021	0.023	-0.006	0.014	0.096	0.118
35	07/29/14	0.017	0.016	-0.078	0.046	0.001	0.016	0.002	0.029	-0.004	0.019	-0.090	0.133
35	10/21/14	-0.001	0.009	0.006	0.021	0.004	0.011	-0.004	0.018	0.003	0.012	-0.010	0.089

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
29	06/18/14	0.000	0.005	0.001	0.014	0.003	0.045	-0.001	0.005	0.003	0.006	0.000	0.052
29	08/27/14	-0.006	0.008	-0.010	0.024	-0.050	0.052	-0.009	0.010	0.004	0.009	-0.045	0.045
32	04/03/14	0.002	0.014	0.000	0.037	0.056	0.043	-0.002	0.017	0.004	0.015	0.007	0.081
32	10/17/14	-0.003	0.006	0.010	0.017	-0.008	0.032	-0.001	0.006	0.003	0.006	0.093	0.100
35	05/27/14	0.002	0.012	-0.013	0.035	0.013	0.026	-0.005	0.014	-0.003	0.014	0.011	0.059
35	07/29/14	-0.007	0.014	-0.018	0.043	-0.008	0.056	0.000	0.017	-0.004	0.015	0.019	0.062
35	10/21/14	0.003	0.009	0.024	0.026	0.007	0.040	-0.006	0.011	-0.008	0.010	0.018	0.038

TABLE 18
MUSSELS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
30	03/07/14	0.146	0.273	1.774	0.776	0.087	0.288	-0.005	0.033	-0.020	0.028	0.016	0.061
30	06/10/14	-1.049	0.449	1.566	0.948	-0.116	0.428	0.001	0.047	-0.027	0.040	0.100	0.102

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
30	03/07/14	0.039	0.033	-0.034	0.061	0.009	0.032	0.031	0.062	-0.013	0.035	0.051	0.274
30	06/10/14	0.020	0.041	-0.064	0.110	0.008	0.047	-0.042	0.079	-0.032	0.050	-0.032	0.413

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
30	03/07/14	0.018	0.030	-0.016	0.070	0.049	0.074	-0.025	0.028	-0.004	0.035	0.047	0.115
30	06/10/14	-0.007	0.044	-0.057	0.131	-0.069	0.098	0.004	0.049	0.023	0.050	-0.094	0.174

TABLE 19
OYSTERS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
31	02/25/14	0.096	0.209	1.886	0.473	-0.088	0.212	0.010	0.023	-0.008	0.024	0.011	0.044
31	06/03/14	0.266	0.228	1.964	0.577	-0.017	0.228	-0.019	0.023	0.014	0.024	0.039	0.052
31	07/08/14	0.061	0.149	2.124	0.547	-0.104	0.154	-0.010	0.017	0.006	0.018	0.017	0.033
31	12/17/14	0.143	0.269	0.437	0.716	0.219	0.314	-0.013	0.024	0.006	0.028	0.010	0.047
32	03/05/14	0.080	0.280	2.428	0.711	-0.091	0.302	0.003	0.029	-0.009	0.029	0.025	0.052
32	05/27/14	0.472	0.352	2.549	0.919	0.107	0.360	0.011	0.038	0.000	0.042	0.041	0.075
32	07/11/14	0.048	0.222	1.986	0.538	-0.067	0.236	0.008	0.025	0.003	0.020	0.007	0.050
32	12/17/14	-0.325	0.392	1.889	1.030	-0.217	0.445	-0.015	0.041	0.002	0.043	-0.022	0.078
37	03/11/14	0.140	0.251	1.275	0.779	-0.029	0.249	-0.011	0.029	-0.015	0.032	-0.010	0.049
37	06/04/14	-0.026	0.330	1.693	0.787	-0.118	0.403	-0.001	0.035	-0.001	0.038	0.071	0.070
37	07/09/14	0.077	0.119	1.701	0.359	-0.033	0.124	0.000	0.013	0.001	0.013	0.003	0.028
37	12/16/14	0.055	0.234	1.887	0.684	-0.025	0.338	0.005	0.034	-0.009	0.035	0.051	0.077
88	02/27/14	-0.051	0.169	1.627	0.454	0.018	0.152	0.001	0.017	-0.008	0.019	0.022	0.040
88	05/27/14	0.038	0.333	2.016	0.939	0.345	0.329	0.016	0.039	-0.017	0.036	0.003	0.070
88	07/15/14	0.039	0.241	2.357	0.639	0.000	0.269	-0.010	0.030	-0.011	0.028	-0.025	0.056
88	12/16/14	0.003	0.304	3.731	0.613	0.002	0.375	-0.029	0.032	-0.011	0.033	-0.008	0.064

TABLE 19
OYSTERS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
31	02/25/14	0.014	0.021	-0.012	0.060	0.012	0.021	0.036	0.036	0.009	0.025	-0.039	0.203
31	06/03/14	0.017	0.032	0.015	0.051	-0.007	0.024	0.029	0.048	-0.009	0.026	-0.019	0.238
31	07/08/14	-0.003	0.018	-0.029	0.042	-0.011	0.020	-0.010	0.030	0.005	0.016	0.054	0.148
31	12/17/14	0.004	0.017	0.002	0.043	-0.021	0.029	0.003	0.055	-0.008	0.033	0.156	0.221
32	03/05/14	0.005	0.034	-0.062	0.064	0.031	0.032	-0.005	0.063	0.005	0.034	0.368	0.294
32	05/27/14	0.012	0.040	-0.089	0.099	0.044	0.063	-0.001	0.070	-0.040	0.044	-0.087	0.386
32	07/11/14	-0.015	0.025	-0.068	0.058	0.009	0.025	-0.012	0.044	-0.007	0.027	0.081	0.218
32	12/17/14	0.023	0.041	-0.007	0.096	0.013	0.045	0.011	0.073	-0.001	0.048	-0.124	0.356
37	03/11/14	0.036	0.034	0.028	0.071	0.004	0.027	0.012	0.041	0.014	0.027	-0.243	0.257
37	06/04/14	-0.006	0.036	-0.090	0.076	-0.008	0.038	-0.027	0.062	-0.061	0.045	0.224	0.360
37	07/09/14	0.002	0.014	0.008	0.030	-0.001	0.013	0.006	0.024	0.001	0.013	0.026	0.120
37	12/16/14	-0.011	0.023	-0.040	0.076	0.030	0.030	0.002	0.059	-0.008	0.035	-0.089	0.200
88	02/27/14	0.022	0.022	-0.024	0.041	0.024	0.019	0.042	0.032	-0.007	0.018	-0.066	0.165
88	05/27/14	0.027	0.036	0.026	0.082	-0.004	0.039	-0.003	0.065	-0.011	0.040	-0.141	0.352
88	07/15/14	0.006	0.028	-0.062	0.067	0.003	0.029	0.007	0.050	0.008	0.031	-0.062	0.272
88	12/16/14	-0.007	0.032	-0.002	0.070	0.035	0.034	-0.021	0.058	0.024	0.039	0.122	0.330

TABLE 19
OYSTERS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
31	02/25/14	0.013	0.022	-0.005	0.059	-0.006	0.047	0.004	0.026	-0.013	0.024	-0.069	0.088
31	06/03/14	0.005	0.024	-0.019	0.064	0.002	0.050	-0.031	0.026	-0.001	0.026	-0.067	0.106
31	07/08/14	0.000	0.015	-0.002	0.045	-0.008	0.031	-0.011	0.020	-0.001	0.018	0.014	0.063
31	12/17/14	0.015	0.025	-0.035	0.074	-0.073	0.083	-0.020	0.026	-0.007	0.028	0.015	0.116
32	03/05/14	0.063	0.036	0.018	0.087	-0.001	0.063	-0.023	0.034	-0.051	0.042	-0.032	0.112
32	05/27/14	0.485	0.059	0.002	0.108	0.047	0.079	-0.011	0.041	0.020	0.048	0.097	0.154
32	07/11/14	0.012	0.024	-0.035	0.070	-0.009	0.058	0.004	0.025	-0.014	0.027	-0.010	0.092
32	12/17/14	0.028	0.043	0.055	0.112	0.012	0.126	0.032	0.047	0.028	0.046	-0.065	0.160
37	03/11/14	0.017	0.024	-0.009	0.076	0.010	0.049	-0.005	0.031	-0.004	0.026	-0.011	0.114
37	06/04/14	0.013	0.029	0.028	0.100	-0.063	0.122	-0.003	0.042	-0.011	0.036	0.082	0.189
37	07/09/14	0.002	0.013	0.018	0.036	-0.004	0.022	-0.003	0.014	-0.009	0.015	0.008	0.052
37	12/16/14	0.008	0.031	-0.051	0.084	-0.048	0.093	-0.010	0.029	-0.029	0.034	0.001	0.140
88	02/27/14	-0.001	0.017	-0.031	0.047	-0.002	0.029	0.000	0.020	0.001	0.019	0.026	0.058
88	05/27/14	-0.002	0.032	-0.013	0.103	0.017	0.072	0.012	0.040	-0.024	0.035	-0.069	0.150
88	07/15/14	0.002	0.028	-0.023	0.079	-0.039	0.053	0.010	0.033	0.019	0.031	0.005	0.107
88	12/16/14	-0.027	0.028	-0.047	0.098	0.094	0.108	0.089	0.041	-0.023	0.031	-0.057	0.116

TABLE 20
CLAMS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
29	02/21/14	0.159	0.187	2.448	0.546	0.080	0.228	0.012	0.018	0.003	0.021	-0.011	0.044
29	06/19/14	-0.048	0.258	2.420	0.530	-0.082	0.306	0.015	0.022	-0.001	0.025	0.008	0.055
29	08/20/14	-0.059	0.163	2.031	0.678	-0.201	0.168	-0.015	0.020	-0.009	0.026	0.034	0.041
29	10/07/14	0.096	0.358	2.322	0.752	-0.081	0.388	-0.007	0.043	0.031	0.038	0.031	0.090
38	03/20/14	0.164	0.369	2.103	0.814	-0.074	0.482	0.002	0.035	-0.011	0.037	0.027	0.073
38	06/20/14	-0.174	0.253	2.243	0.551	-0.249	0.341	0.015	0.024	0.001	0.026	-0.012	0.059
38	08/19/14	-0.203	0.315	1.868	0.771	-0.048	0.337	-0.001	0.038	-0.009	0.031	0.064	0.062
38	11/12/14	0.112	0.212	2.104	0.628	-0.113	0.251	0.003	0.028	0.009	0.029	0.021	0.053

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
29	02/21/14	0.007	0.022	-0.024	0.043	0.008	0.025	-0.024	0.041	-0.022	0.025	-0.052	0.195
29	06/19/14	-0.007	0.020	-0.009	0.050	0.010	0.027	-0.009	0.047	-0.009	0.031	-0.134	0.206
29	08/20/14	0.017	0.021	-0.001	0.051	-0.013	0.027	-0.014	0.040	0.009	0.020	0.087	0.188
29	10/07/14	0.009	0.035	0.081	0.098	-0.013	0.041	0.001	0.071	-0.026	0.044	-0.101	0.371
38	03/20/14	0.037	0.034	-0.025	0.075	0.025	0.037	-0.056	0.067	0.008	0.046	-0.065	0.404
38	06/20/14	0.007	0.020	-0.028	0.055	0.017	0.027	0.028	0.050	-0.017	0.037	-0.077	0.251
38	08/19/14	0.011	0.038	-0.002	0.088	0.011	0.036	0.069	0.066	0.016	0.037	-0.144	0.334
38	11/12/14	0.044	0.027	0.010	0.068	-0.010	0.027	0.016	0.050	0.013	0.029	-0.027	0.258

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
29	02/21/14	-0.015	0.018	-0.064	0.054	0.021	0.062	-0.018	0.023	0.017	0.020	-0.001	0.076
29	06/19/14	-0.017	0.023	-0.047	0.059	0.076	0.180	-0.003	0.027	0.009	0.023	0.045	0.083
29	08/20/14	0.001	0.021	-0.023	0.057	0.010	0.035	0.013	0.025	0.014	0.025	0.050	0.099
29	10/07/14	0.006	0.041	-0.032	0.101	-0.016	0.109	-0.009	0.054	-0.027	0.046	0.064	0.147
38	03/20/14	0.017	0.037	-0.014	0.107	0.032	0.132	0.008	0.042	0.040	0.040	-0.008	0.121
38	06/20/14	-0.015	0.025	0.005	0.068	0.043	0.177	-0.021	0.024	-0.014	0.025	-0.088	0.079
38	08/19/14	-0.020	0.032	0.023	0.104	-0.017	0.066	-0.003	0.041	0.011	0.037	0.053	0.137
38	11/12/14	0.023	0.026	-0.040	0.070	-0.081	0.069	-0.043	0.030	-0.017	0.027	0.081	0.104

TABLE 21

SCALLOPS

Scallops were not sampled in 2014. See discussion in Section 4.21

TABLE 22
LOBSTERS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
32	02/26/14	0.051	0.328	2.875	0.979	0.087	0.395	-0.029	0.038	0.018	0.034	0.019	0.069
32	05/06/14	0.016	0.378	3.344	1.121	-0.093	0.423	0.003	0.040	0.000	0.035	-0.047	0.085
35	02/20/14	0.253	0.320	4.422	0.933	0.034	0.382	-0.001	0.035	0.003	0.038	0.040	0.084
35	05/06/14	-0.643	0.439	2.535	1.146	-0.047	0.483	-0.044	0.053	0.025	0.051	-0.056	0.114
35	07/28/14	0.374	0.411	3.526	0.897	0.233	0.448	0.015	0.036	0.007	0.042	-0.023	0.088
35	10/31/14	0.191	0.541	4.961	1.296	0.034	0.581	0.020	0.053	0.021	0.062	0.009	0.115
89	08/06/14	0.202	0.302	3.388	0.902	-0.038	0.374	0.013	0.039	-0.009	0.037	0.038	0.077
89	12/15/14	0.277	0.532	1.716	1.596	-0.242	0.646	-0.056	0.055	0.003	0.047	-0.005	0.102

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
32	02/26/14	0.012	0.035	0.022	0.081	0.033	0.043	0.040	0.064	0.019	0.043	0.564	0.363
32	05/06/14	-0.043	0.042	-0.014	0.096	0.015	0.038	0.028	0.076	0.003	0.054	0.144	0.391
35	02/20/14	0.020	0.039	-0.095	0.081	0.018	0.036	0.001	0.072	0.027	0.042	0.129	0.316
35	05/06/14	-0.005	0.050	0.055	0.118	-0.007	0.064	0.000	0.092	-0.020	0.056	-0.247	0.465
35	07/28/14	-0.036	0.045	-0.008	0.110	0.012	0.042	-0.009	0.073	0.014	0.049	-0.033	0.366
35	10/31/14	0.032	0.057	-0.048	0.134	-0.013	0.063	0.052	0.117	0.055	0.071	-0.072	0.539
89	08/06/14	0.025	0.041	-0.055	0.112	-0.001	0.038	0.040	0.071	-0.016	0.037	0.059	0.295
89	12/15/14	0.005	0.036	-0.150	0.139	0.011	0.069	-0.047	0.097	-0.011	0.076	-0.150	0.619

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
32	02/26/14	-0.025	0.036	-0.039	0.106	0.040	0.074	0.005	0.044	-0.011	0.041	0.235	0.211
32	05/06/14	-0.014	0.045	-0.123	0.120	-0.021	0.093	-0.109	0.049	-0.012	0.045	-0.088	0.181
35	02/20/14	0.024	0.035	-0.053	0.102	0.072	0.106	-0.036	0.042	-0.006	0.037	-0.157	0.137
35	05/06/14	-0.044	0.045	-0.008	0.134	0.065	0.103	-0.072	0.053	0.009	0.052	-0.113	0.220
35	07/28/14	-0.010	0.036	0.083	0.092	-0.033	0.150	-0.083	0.049	-0.009	0.038	-0.042	0.149
35	10/31/14	0.054	0.061	-0.076	0.164	0.011	0.182	-0.030	0.061	0.045	0.067	-0.088	0.234
89	08/06/14	0.003	0.035	0.023	0.096	-0.060	0.078	-0.016	0.044	0.028	0.039	0.174	0.157
89	12/15/14	-0.016	0.062	0.066	0.181	0.136	0.202	-0.013	0.061	0.054	0.062	0.013	0.160

4. DISCUSSION OF RESULTS

This section summarizes the results of the analyses on the REMP samples. DNC has carefully examined the data throughout the year and has presented in this section all cases where station related radioactivity could be detected. The results are compared with previous environmental surveillance data.

Few impacts of the station operation on the environment were observed. Sub-sections contain a description of each particular media or potential exposure pathway. Naturally occurring nuclides such as Be-7, K-40, and Th-232 (and its daughters Th-228 and Ac-228) were detected in numerous samples. Be-7, which is produced by cosmic processes, was observed predominantly in airborne and vegetation samples. Th-232 and daughter results were variable and are generally at levels higher than station related radionuclides.

Cs-137 and Sr-90 from atmospheric nuclear weapons testing in the 1960's have been observed in the past. During 2014 Cs-137 from weapons was detected in soil samples and in one sediment sample. Sr-90 was not detected in 2014.

4.1 Gamma Exposure Rate (Table 1)

Gamma exposure rate is determined from the integrated exposure measured over a calendar quarter using TLDs. Prior to 1990, Victoreen CaF_2(Mn) glass bulb dosimeters were used for these measurements. In 1990, these were replaced by Harshaw CaF_2(Mn) chips. In 2000, the CaF_2(Mn) TLDs, were replaced with the $CaSO_4$(Tm) Panasonic model UD-804 ASx TLDs. The Panasonic TLD design currently being used in the program is described in the vendor manual (Reference 19). Readings are recorded as uR/hr. The unit uR stands for 'micro (u)-roentgen' with a 'micro' being one-millionth of a roentgen. A roentgen is the quantity of radiation equal to 87.6 ergs of energy per gram of air.

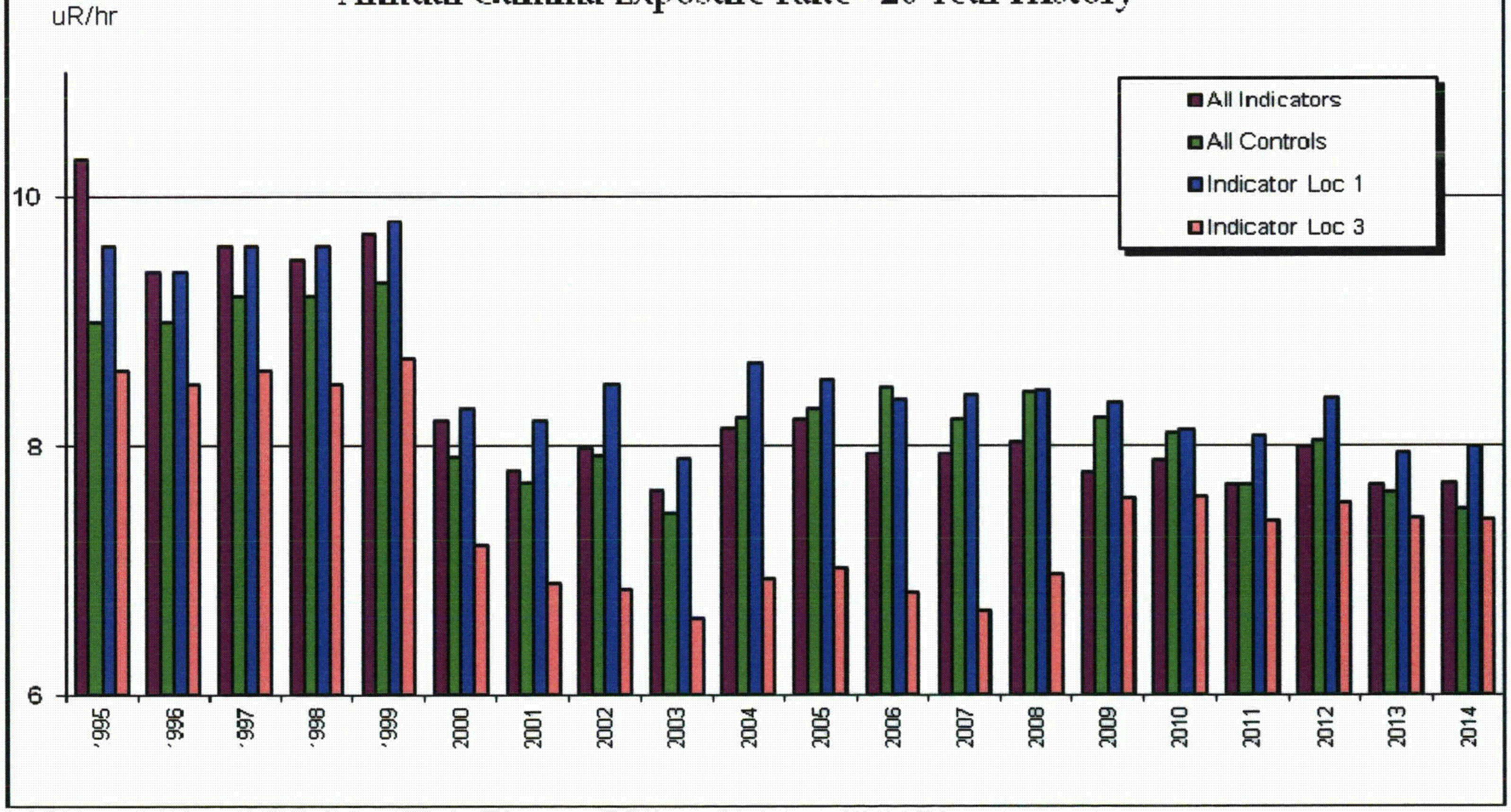
The dosimeters are strategically placed at a number of on-site locations, as well as at inner and outer off-site locations. Starting in 2001, the collection of TLDs was changed from monthly to quarterly and additional measurement locations were incorporated into the REMP requirements listed in the REMODCM (Reference 8). Three more locations (73-75) were added in mid-2003 to prepare for monitoring the potential effect from the ISFSI. Two Dry Cask Containers were loaded in the first quarter 2005. Three containers were loaded in mid 2006, three in October 2007, three in April 2009, and three in October 2010. None were loaded in 2008 or from 2011 to 2014. The exposure rate measurements at two of the three additional TLD locations remain basically unchanged from the background measurements performed prior to any cask loading (six quarter background average mid 2003 – 2004: 9.1 uR/hour at Location 73, 7.4 uR/hour at Location 74 and 6.7 uR/hour at Location 75). At Location 73 the readings in 2014 were lower.

Table 1 lists the exposure rate measurements for all 44 monitored locations. Trends similar to those of past years are apparent. These measurements demonstrate the general variations in background radiation between the various onsite and offsite locations and include gamma exposure from all sources of radioactivity. For example, the Weather Shack (Location 2), Millstone Unit 3 Discharge (Location 5), Environmental Laboratory (Location 8), Bay Point Beach (Location 9), Pleasure Beach (Location 10), Corey Road (Location 48), and Site Switchyard Fence (Location 73) experience higher exposure rates due to their proximity to granite beds and stonewalls. In addition, the Mystic (Location 13C) and Ledyard (Location 14C) control locations experience relatively higher background exposure rate than the other control locations at Norwich and Old Lyme (Locations 15C and 16C).

The only appreciable effect seen in the recent TLD data is that attributable to the variation in the background radiation that is consistent with previous years. Figure 4.1-1 shows a historical trend of TLD exposure rate measurements, comparing an annual average of all indicator TLDs, an annual average of all control TLDs, and the annual average of the two most critical indicator locations which are used to represent the two closest site boundary residences in the North-northwest and Northeast directions. Examination of the average measurements since 1990, shows interesting site changes and site characteristics. For example, the averages of all indicator locations for the period when Millstone Unit 1 was still in operation (through 1999) exhibit the effects of N-16 BWR turbine building skyshine to immediate areas onsite. As discussed in previous annual reports, the effects of skyshine at onsite monitoring stations were increased exposure rates as high as 6 uR/hr at certain onsite locations. The elevated exposure rates from skyshine decreased rapidly with distance to levels indistinguishable from normal background measurements at even the nearest offsite monitoring stations. Also apparent in Figure 4.1-1 is a change of the type of TLD dosimeter in the year 2000. The difference in response between the two types of TLD dosimeters is apparent, with the new type reading 15% to 20% lower. This lower response is consistent for all locations, including both indicator and control locations.

Figure 4.1-1 also relates the difference in critical indicator locations 1 and 3 and the annual average of all indicator TLDs to the annual average of the control TLDs collected and measured during coincident periods throughout the year. As discussed earlier, the exposure measurements of many indicator locations onsite (and two of the control locations) are influenced by natural background exposure differences caused by the many granite out-croppings typical of the local area. Figure 4.1-1 shows the annual average at indicator Location 1 is slightly higher in gamma exposure rate than the average control gamma exposure rate. An opposite trend is shown for Location 3. These differences are the result of the differences in granite at these locations. Location 3 was moved in the second quarter 2009 to minimize the effect of tree covering for the air sampler also located at this location. The 2009 to 2014 data for Location 3 shows an increase likely attributable to the being closer to granite at the new location.

Figure 4.1-1
Annual Gamma Exposure Rate - 20 Year History



4.2 Air Particulate Gross Beta Radioactivity (Table 2)

Air is continuously sampled at seven inner ring (0 to 2 miles) locations and one control location (14 miles N) by passing it through glass fiber particulate filters. These samples are collected weekly for the first six months and every two weeks for the second six months and analyzed for gross beta radioactivity. Results are shown on Figure 4.2-1 and Table 2. Gross beta activity remained at levels similar to that seen over the last decade. Inner and control monitoring locations continue to show no significant variation in measured activities (see Figure 4.2-2). This indicates that any station contribution is not measurable.

Figure 4.2-1
Air Particulate Gross Beta Activity
Monthly Average - 2014

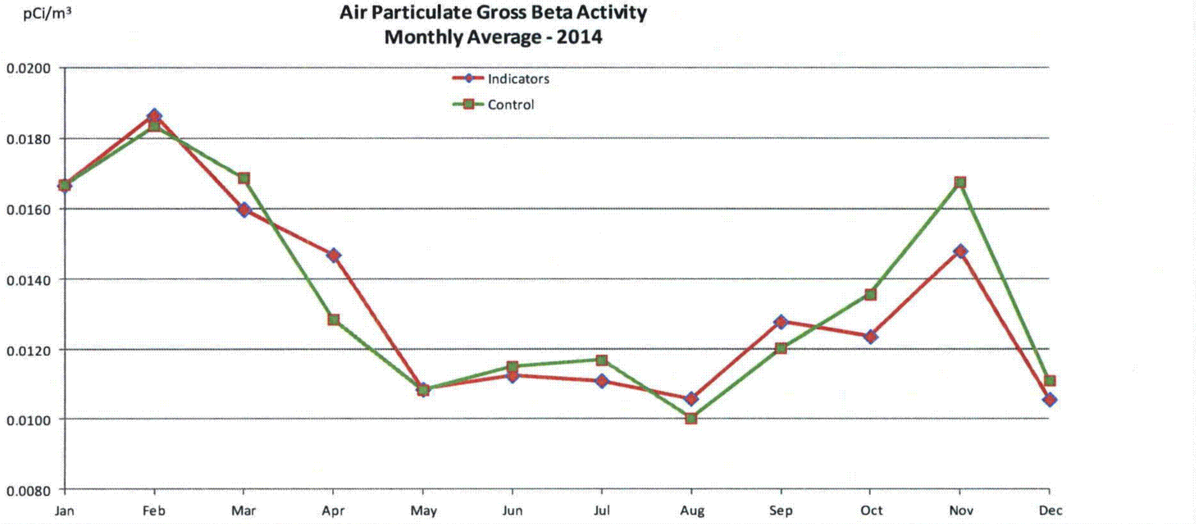
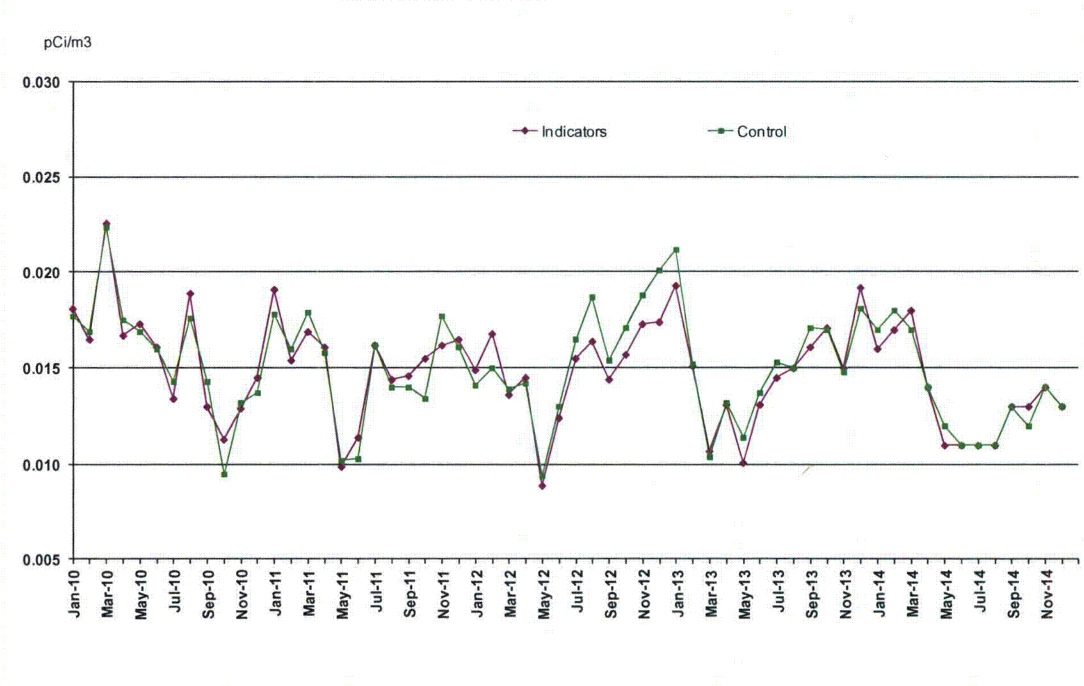


Figure 4.2-2
Air Particulate Gross Beta Activity
Monthly Averages - 5 Year Trend



4.4 Airborne Iodine (Table 3)

Charcoal cartridges are included at all of the air particulate monitoring stations for the collection of atmospheric iodine. These cartridges were analyzed for I-131 on a weekly for the first half of the year and every two weeks for the second half of the year. No detectable levels of I-131 were seen in the 2014 charcoal samples.

4.4 Air Particulate Gamma (Table 4)

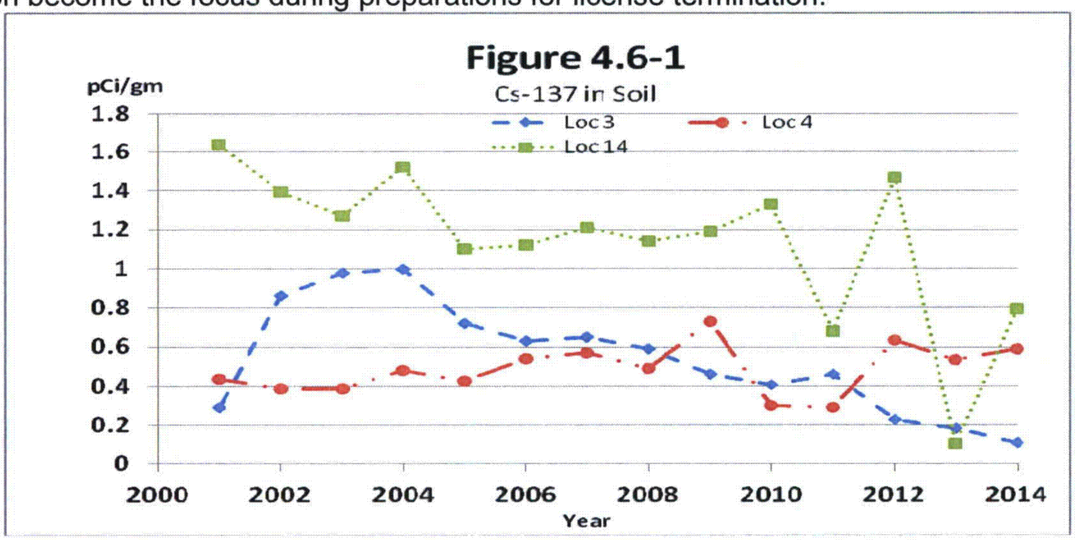
The air particulate samples that are utilized for the gross beta analyses are composited quarterly and analyzed for gamma emitting isotopes. The results, as shown in Table 4, indicate the presence of naturally occurring Be-7, which is produced by cosmic radiation. No other positive results are seen. These analyses indicate the lack of station effects.

4.5 Air Particulate Strontium (Table 5)

Prior to 1989 Table 5 was used for listing the data for measurements of Sr-89 and Sr-90 in quarterly composite air particulate filters. The historical data indicated the lack of any detectable station related activity. Since these analyses are not listed in NUREG-1301 (Reference 15), these measurements were discontinued. In the event of widespread station related contamination or other unusual events, these measurements could be made. Historically, when world events created conditions that caused detectable measurements of these nuclides, there was no difference noted between indicator and control locations. This further confirms that any of the detectable levels for these nuclides were not station related.

4.6 Soil (Table 6)

This media is collected annually from one control and two indicator locations. Millstone has collected and analyzed soil since 2001. Prior to 2001, soil had not been sampled for over fifteen years because station related detectable activity had not been detected. Similarly, since 2001, no station detectable activity has been seen in these samples. Naturally occurring K-40 and Ac-228 is detected in soil. Also detected is Cs-137 from nuclear weapons testing. The results of these samples, allows for the determination of baseline activity levels in soil. This is particularly important for Cs-137, since significant levels from past weapons testing fallout remain in the soil. Figure 4.6-1 shows the trend of Cs-137 in soil samples. Except for Location 4, the trend appears to be declining with time. Baseline levels should be useful in the future, when site characterization and decommissioning of the station become the focus during preparations for license termination.



4.7 Cow Milk (Table 7)

Typically, the most sensitive indicator of fission product existence in the terrestrial environment is the radiological analysis of milk samples. Milk is a widely consumed food, therefore it is usually one of the most critical exposure pathways. Since 1996 all dairy (cow) farms close enough to Millstone to be considered an indicator location (i.e. within 10 miles) have ceased operation. One cow milk location, about ten and half miles from the station, was sampled as an extra (i.e.; not required) sample and results are shown in Table 7. Naturally occurring K-40 is the only positive result seen in cow milk.

Each year the Land Use Census is used to identify locations of milk animals that should be included in the monitoring program. It is performed annually and is maintained by observations, door-to-door surveys and consulting with local agriculture authorities. The 2014 census is listed in Appendix A. If a new dairy farm is identified close enough to Millstone to be considered an indicator location, the collection of cow milk at that location would be added.

4.8 Goat Milk (Table 8)

When available, these samples are collected twice per month during grazing season and once per month during the rest of the year. Because goat milk was not available in 2014, no samples were collected.

4.9 Pasture Grass/Hay/Feed (Table 9)

Per REMODCM requirements, pasture grass is collected as a substitute when goat milk is not available. Although not required by the REMODCM, hay or feed is substituted when pasture grass is not available. During the winter months and early spring, insufficient growth often prohibits sampling of pasture grass. No station effects are noted in these samples. Cosmic produced Be-7 was observed in the samples of pasture grass which were taken during the warmer months. Naturally occurring K-40 was present in all samples being approximately two times higher in hay and feed compared to pasture grass samples.

4.10 Well Water (Table 10)

There were no station related activity detected in the samples collected as part of the REMP. Additional samples from this well, and other wells, were obtained as part of the Groundwater Protection Program (GWPP). Results from the GWPP are reported in the Millstone annual "Radioactive Effluent Release Report" for 2014.

4.11 Reservoir Water (Table 11)

Reservoir water samples are special samples not required by the REMP. Previous data has shown the lack of detectable station activity in this media. This fact and the extremely unlikely possibility of observing routine station effluents in this media have resulted in discontinuing these samples. In the event of widespread station related contamination, these samples may be collected.

4.12 Fruits and Vegetables (Table 12)

Consistent with past years, this media did not show any station effects. Naturally occurring K-40 was detected in all samples.

4.13 Broad Leaf Vegetation (Table 13)

Consistent with past years, this media did not show any station effects. Most samples had detectable levels of cosmic produced Be-7 and naturally occurring K-40 at levels consistent with previous years. Occasionally these samples indicate positive levels of Cs-137 in the past. This can be attributed to fallout from weapons testing which has been widespread in terrestrial samples for many years.

4.14 Seawater (Table 14)

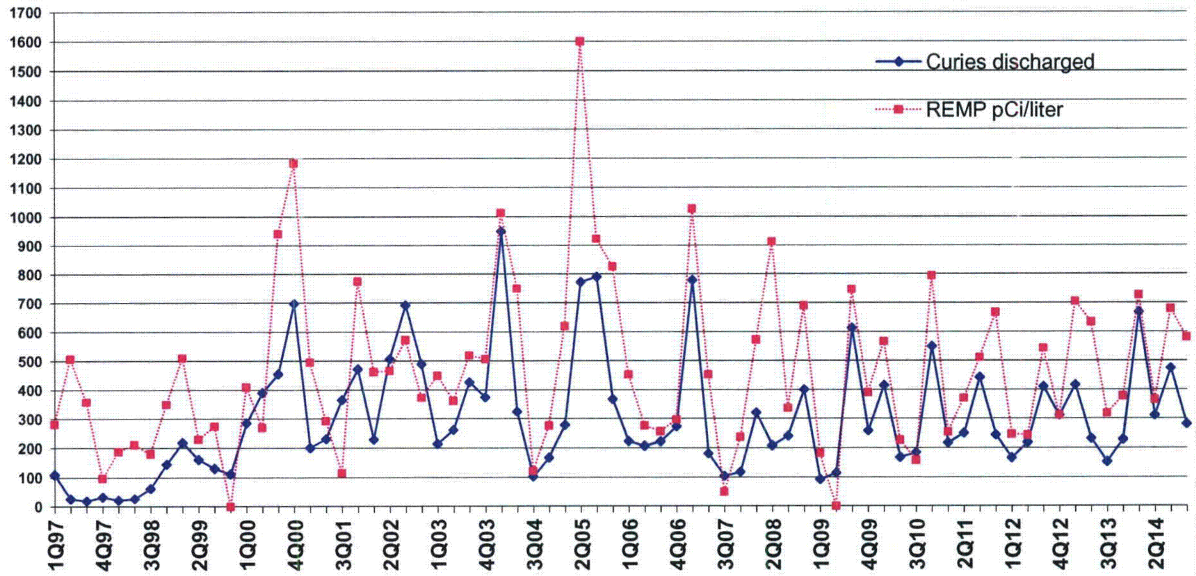
The guidance in Reference 15 specifies one sample upstream (control – beyond significant influence of the discharge) and one sample downstream (indicator – beyond but near the mixing zone) for surface water samples. Historically the downstream sample for Millstone has been located in the vicinity of discharge (location 32 – see Reference 8) which is prior to the mixing zone. This location was chosen since it was readily accessible and not affected by cold weather conditions. Operation of an automatic sampler at the indicator location is necessary for providing a representative sample. Any dose consequences can be assessed by use of the appropriate dilution factors. It's not as necessary to have a continuous sampler at the control location due to the historical relative consistency noted in seawater background activity near the Millstone.

A technician collects an aliquot from the automatic sampler at Location 32 on a weekly frequency. These samples are composited for monthly analyses. For the Control Location, Giant's Neck (Location 37C), six weekly grab samples are obtained for quarterly compositing.

Naturally occurring K-40 was the only detectable gamma activity seen in these samples. Measured station related levels of H-3 in seawater from the immediate vicinity of discharge (location 32) were observed in most samples. Tritium releases are typically higher near outages due to the need for increased liquid processing during these times. As mentioned above, these samples are taken directly from liquid effluent flow prior to dilution into the Long Island Sound. Dilution studies performed for this discharge have determined that a dilution factor of 3 is appropriate to estimate concentrations immediately outside the quarry within a near-field area.

Tritium builds up in the reactor coolant during each fuel cycle. It is generated during station operation from fission and neutron reactions. Between 1992 and 2002, H-3 was not typically detected. However, due to the enhanced detection sensitivity, H-3 levels are now often detected at the indicator location. Figure 4.14-1 shows an eighteen-year trend of H-3 releases in the Millstone liquid effluents versus the measured environmental concentrations from the vicinity of discharge location.

Figure 4.14-1
H-3 Curies Released versus Seawater Concentration
18 Year Trend



4.15 Bottom Sediment (Table 15)

There was no station related radioactivity detected in bottom sediment samples in 2014. Naturally occurring K-40 is seen in all samples and naturally occurring Ac-228 in some samples. Cs-137 from nuclear weapons testing was seen in one sample from Location #39. This location is where inland streams deposit sediment and can be correlated to soil sample results for Cs-137. Bottom sediment is not a significant dose pathway to man, especially at areas not typically used by the public.

4.16 Aquatic Flora (Table 16)

Although sampling of this media is not required, it provides useful information since it a very sensitive indicator of radioactivity in the environment. Naturally occurring Be-7 and Ac-228 appear in some samples and K-40 in all samples. Low levels of man-made radioactivity (e.g., Mn-54, Co-58, Co-60, Zn-65, I-131 and Ag-110m) have been detected in the past but not in 2014.

4.17 Fish (Tables 17A and 17B)

The activity in Flounder (Table 17A) and Other Fish (Table 17B) is the same as that seen in the past. No activity was observed except for the naturally occurring K-40.

4.18 Mussels (Table 18)

Similar to the last several years, this sampling media showed no activity except for the naturally occurring K-40. Mussels were not available at Two Three Island (Location #28) and were only available at Niantic Shoals (Location #30) for two quarters during 2014.

4.19 Oysters (Table 19)

All locations utilize oysters stocked in trays. The stocked trays are kept at sampling areas and represent conditions in those areas. Due to safety concerns Location #32 was moved over eight years ago to a more accessible area in the middle of the quarry. Although it is labeled as vicinity of the discharge, it was previously located at the end of the quarry. For 2014, no Millstone activity was observed in oysters both in the quarry and beyond the Millstone discharge area. The near-field dilution factor for liquid discharges from the Millstone Quarry discharge is a factor of 3.

Naturally occurring K-40 is seen in most samples. Millstone related Ag-110m and Zn-65 in oysters collected at Location #32 have been seen historically. Oysters have a high capacity for accumulating silver and zinc. Studies have shown that oysters can accumulate as much as 50 times or more the amount of zinc compared to most other seafood. A remarkable correlation existed between the Zn-65 concentration measured in the native quarry oysters and the amount of Zn-65 discharged into the environment. However, since the permanent shutdown of Millstone Unit 1 in 1996, the amount of Zn-65 in liquid effluents has decreased significantly. Starting in 2001, no Zn-65 has been detected in either the liquid effluents or in oysters. Figure 4.19-1, shows a historical trend that existed between Zn-65 releases and measured concentrations in quarry oysters. The decreasing trend in effluent radioactive releases is apparent in both the curies released and the measured concentrations in oysters.

Figure 4.19-2 shows the trend of Ag-110m concentration in quarry oysters compared to the liquid effluents discharged. Similar to Zn-65, the correlation between Ag-110m discharged and the Ag-110m concentration measured in the native quarry oysters is apparent. Per regulatory guidance (Reference 7), the bioaccumulation factors for both zinc and silver were adjusted based upon several years of historical data to account for the higher measured uptakes.

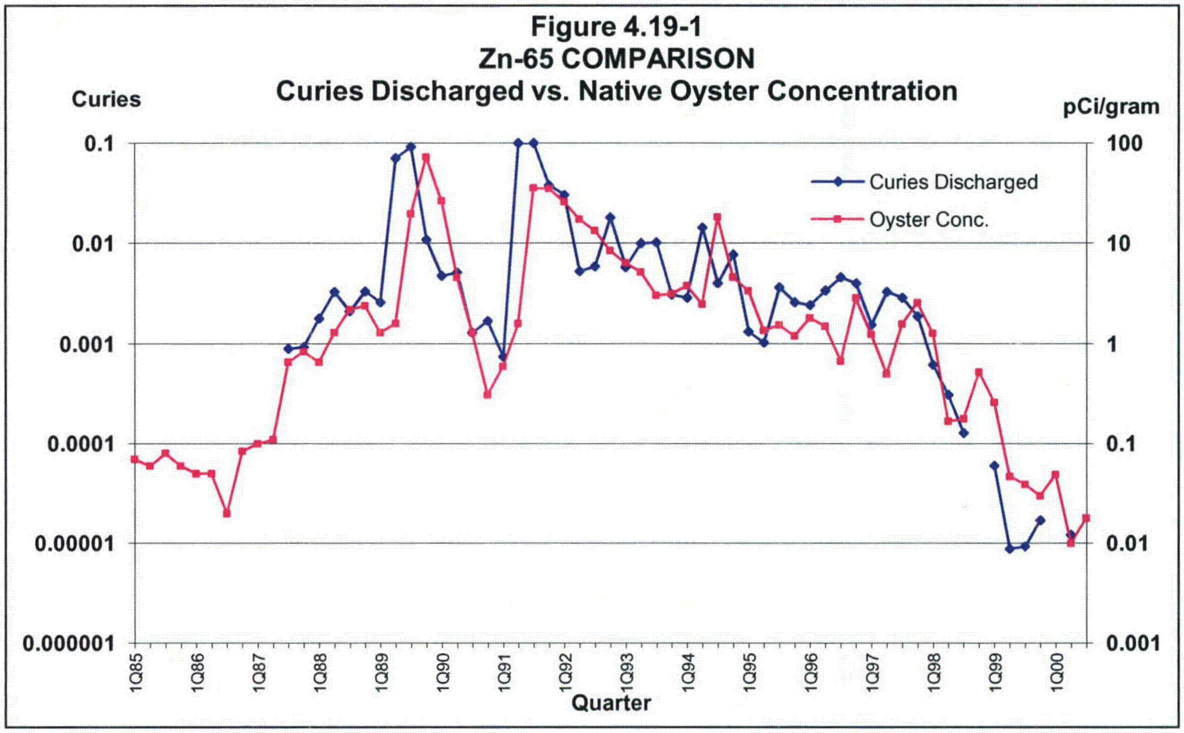


Figure 4.19-1
Zn-65 COMPARISON
Curies Discharged vs. Native Oyster Concentration

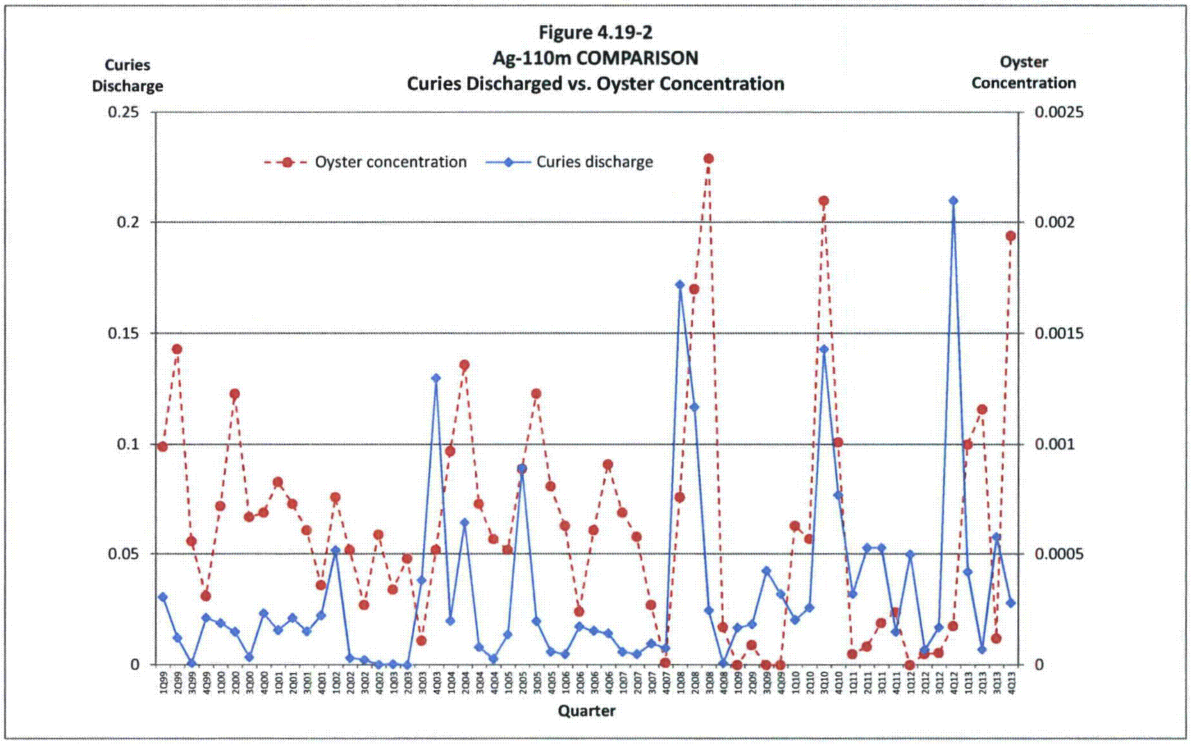


Figure 4.19-2
Ag-110m COMPARISON
Curies Discharged vs. Oyster Concentration

4.20 Clams (Table 20)

Occasionally this media indicates the presence of station related radioactivity. In 2014 no activity was observed except for the naturally occurring K-40.

4.21 Scallops (Table 21)

No scallop samples have been available for several years.

4.22 Lobsters (Table 22)

No activity was observed except for the naturally occurring K-40.

5. REFERENCES

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2) Donald T. Oakley, "Natural Radiation Exposure in the United States." U. S. Environmental Protection Agency, ORP/SID 72-1, June 1972.
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6) United States of America, Code of Federal Regulations, Title 10, Part 20.1302.
7) United States Nuclear Regulatory Commission, Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977.
8) Millstone Power Station Radiological Effluent Monitoring and Offsite Dose Calculation Manual, Revision 027-00, March 13, 2014.
9) Millstone Nuclear Power Station Unit 1 Defueled Technical Specifications.
10) Millstone Nuclear Power Station Unit 2 Technical Specifications, License No. DPR-65 .
11) Millstone Nuclear Power Station Unit 3 Technical Specifications, License No. NPF-49.
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14) International Commission of Radiological Protection, Publication No. 43, "Principles of Monitoring for the Radiation Protection of the Population," May 1984.
15) United States Nuclear Regulatory Commission, NUREG-1301, "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors," April 1991.
16) United States Nuclear Regulatory Commission, Branch Technical Position, "An Acceptable Radiological Environmental Monitoring Program," Rev. 1, November 1979.
17) Reassessment of Millstone Power Station's Environmental Monitoring Data, Connecticut Department of Environmental Protection, Division of Radiation, March 2006.
18) Nuclear Regulatory Commission Regulatory Guide 4.1, Radiological Environmental Monitoring for Nuclear Power Plants, Revision 2, June 2009.
19) Environmental Dosimetry Company Quality System Manual, Manual 1, Revision 3, Aug. 1, 2012.

APPENDIX A

LAND USE CENSUS FOR 2014

The annual land use census in the vicinity of Millstone was conducted as required by the Millstone REMODCM. Typically the cow milk locations are identified by a review of the annual registration information obtained from the State of Connecticut Department of Agriculture. Gardens are located by a drive-by during the harvest season. Although broadleaf sampling was performed and may be used in lieu of a garden census, gardens were included in the 2014 census. Only vegetable gardens having an area of more than 500 square feet need to be identified. Due to the difficulty of measuring individual gardens, the nearest garden within each directional sector identified by a drive-by survey is listed. Garden distances are based on nearest resident assuming that a resident may plant a new garden. Goat locations are more difficult to determine, but best efforts are made to consult goat association records, contact previous owners or perform drive-bys, if necessary.

Results of the land use census are given in Tables A-1 through A-3. No new dairy animals within 10 miles of the Millstone were located during the census. From 2013 to 2014 one dairy cow locations was deleted and two locations were added. For goat milk locations, four were deleted and three added from 2013 to 2014. The closest goat location at 2.1 miles has not had milk available for three years and was dropped from the sampling program in 2014. The control location at 20.8 miles was also dropped. Distances to closest resident and garden were changed in three downwind directions.

The dose modeling incorporates the distances listed in Tables A-1, A-2 and A-3.

TABLE A-1

Active Dairy Cows Within 20 Miles of Millstone Point - 2014

Direction	Distance		Location
	miles	meters	
N	18.0	29,000	Bozrah
N	18.5	29,800	North Franklin
N	19.3	31,100	North Franklin
N	19.5	31,400	North Franklin
NNE	15.3	24,600	Preston
NNE	16.2	26,100	Preston
NNE	16.6	26,700	Norwich
NNE	17.7	28,500	Preston
NNE	17.9	28,800	Preston
NE	15.3	24,600	Preston
NE	18.9	30,400	North Stonington
NE	19.3	31,100	North Stonington
ENE	17.9	28,800	North Stonington
WNW	10.3	16,600	Lyme (REMP Location #22)
NNW	19.5	31,400	Lebanon

TABLE A-2

Dairy Goats Within 20 Miles of Millstone Point - 2014

Direction	Distance miles	Distance meters	Location
N	2.1	3,400	Waterford (REMP Location #21 discontinued on 7/1/14)
N	10.0	16,100	Oakdale
N	17.3	27,800	Lebanon
N	19.2	30,900	Lebanon
NNE	17.1	27,500	Preston
NE	17.9	28,800	North Stonington
ENE	11.5	19,000	Stonington (Mystic)
ENE	12.8	20,600	Stonington
ENE	13.3	21,400	Stonington (Mystic)
ENE	17.8	28,600	North Stonington
WNW	7.3	11,700	Old Lyme
WNW	14.6	23,500	Hadlyme
WNW	17.6	28,300	Haddam
NW	17.9	28,800	East Haddam
NNW	12.2	19,600	Salem
NNW	18.1	29,100	Colchester
NNW	19.5	31,400	Lebanon
NNW	20.8	33,500	Hebron (REMP Location #24 discontinued on 7/1/14)

TABLE A-3

2014 Resident and Garden Survey

Downwind Direction	Closest Distance For: Resident		Garden	
	miles	meters	miles	meters
N	0.96	1552	0.96	1552
NNE	0.53	851	0.53	851
NE	0.46	741	0.46	741
ENE*	1.00	1601	1.00	1601
E	0.91	1457	0.91	1457
ESE	1.06	1698	1.06	1698
SE	N/A	N/A	N/A	N/A
SSE	N/A	N/A	N/A	N/A
S	N/A	N/A	N/A	N/A
SSW	N/A	N/A	N/A	N/A
SW*	2.26	3643	2.26	3643
WSW	1.98	3184	1.98	3184
W	1.77	2846	1.77	2846
WNW*	1.50	2418	1.48	2381
NW	1.34	2152	1.34	2152
NNW	0.51	816	0.51	816

* New location for 2014

N/A - not applicable (over water sectors)

APPENDIX B

SUMMARY OF INTERLABORATORY COMPARISONS

INTRODUCTION

This appendix summarizes the Intercomparison Program of the Teledyne Brown Engineering (TBE) Laboratory as required by technical specifications for each Millstone unit. Teledyne uses QA/QC samples provided by Eckert & Ziegler Analytics, by the Environmental Resource Associates (ERA) Proficiency Test (PT) Program and by the Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP) to monitor the quality of analytical processing associated with the REMP. The suite of samples are comparable with the pre-1996 US EPA Interlaboratory Cross-Check Program in terms of sample number, matrices, and nuclides. It includes:

- milk for gamma (9 nuclides) analyses once per quarter
- milk for low level Iodine-131 analyses once per quarter
- milk for Sr-89 and Sr-90 analyses once per quarter
- water for gamma (6 to 8 nuclides) once per quarter
- water for tritium analyses once per quarter
- water for Sr-90 analyses three of four quarters
- water for gamma Sr-89 analyses twice per year
- air filter for gamma (9 nuclides) analyses once per quarter
- air filter for gross beta analysis twice per year
- charcoal filter for I-131 once per quarter
- air filter for Sr-90 analyses twice per year
- soil for gamma (7 or 9 nuclides) analyses twice per year
- vegetation for gamma (6 nuclides) analyses twice per year
- vegetation for Sr-90 analyses twice per year

Intercomparison program results are evaluated using the laboratory's internal bias acceptance criterion. Teledyne Brown's acceptance criterion is defined as within 20% of the known value. Sample results which are less or greater than 20% of the known value but within 30% is acceptable with warning. Samples results outside 30% of the known value are not acceptable. All sample analyses which are not acceptable are investigated.

RESULTS

For the TBE laboratory, 163 out of 169 analyses performed met the specified acceptance criteria. Six analyses did not meet the specified acceptance criteria or internal QA requirements. This included Ni-63, K-40 and I-131 in water and two Sr-90 and one Gross Alpha in air filters. (Although Sr-90 and Gross Alpha in air filters is not applicable to the Millstone REMP it is included here as a check on the overall vendor program.) The six analyses which did not meet acceptance criteria are discussed below:

1. Teledyne Brown Engineering's MAPEP March 2014 Ni-63 in water result of 32.7 ± 1.69 Bq/L was overlooked when reporting the data but would have passed the acceptance range of 23.9 – 44.2 Bq/L.
2. Teledyne Brown Engineering's MAPEP March 2014 K-40 in water result of 1.63 ± 2.49 Bq/L was overlooked when reporting the data but would have passed the false positive test.
3. Teledyne Brown Engineering's ERA November 2014 I-131 in water result of 15.8 pCi/L was lower than the known value of 20.3 pCi/L, failing below the lower acceptance limit of 16.8. The result was evaluated as failed with a found to known ratio of 0.778. No cause could be found for the slightly low result. All ERA I-131 evaluations since 2004 have been acceptable.

4. Teledyne Brown Engineering's MAPEP March 2014 Sr-90 in AP result of 0.822 Bq/sample was lower than the known value of 1.18 Bq/sample, failing below the lower acceptance limit of 0.83 Bq/sample. The rerun result was still low, but fell within the lower acceptance range of 0.836. The rerun result was statistically the same number as the original result. No cause could be found for the slightly low results.
5. Teledyne Brown Engineering's MAPEP September 2014 Sr-90 in AP result of 0.310 Bq/sample was lower than the known value of 0.703 Bq/sample. The gravimetric yield of 117% was very high (we normally see yields of 60% to 70 %) and could account for the low activity.
6. Teledyne Brown Engineering's MAPEP September 2014 Gr-Alpha in AP result of 0.153 Bq/sample was lower than the known value of 0.53 Bq/sample. The AP sample was counted on the wrong side. The AP was flipped over and recounted with acceptable results.