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

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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
2016 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

This letter transmits the Annual Radiological Environmental Operating Report for the Millstone Power Station, for the period January 2016 through December 2016. 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. Jeffry A. Langan at (860) 444-5544.

Sincerely,

B. L. Stanley
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IE25
NMSS01
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Attachments: 1

Commitments made in this letter:

1. None.

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NPF-49

ATTACHMENT 1

2016 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

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

Millstone Power Station

2016

Radiological Environmental Operating Report

January 1, 2016 – December 31, 2016

Dominion Nuclear Connecticut, Inc.

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

Dominion Energy

ANNUAL
RADIOLOGICAL ENVIRONMENTAL
OPERATING REPORT

MILLSTONE POWER STATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

2016

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, 2016. 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 and goat milk, 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 2016, there were 503 samples collected from the atmospheric, aquatic, and terrestrial environments. In addition, 156 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 2016 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, naturally occurring radionuclides.

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

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 43 and 98 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 2016, 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 (whole body) dose to the maximally exposed member of the general public from radioactive effluents and ambient radiation resulting from Millstone operations for 2016 was approximately 0.22 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 2016 REMP for Millstone resulted in the collection and analysis of 659 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 2016 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, 2016.

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 and goat milk, well water, broadleaf vegetation, fruits, vegetables, seawater, bottom sediment, aquatic flora, fish, 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 early 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 Approximate 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 33 mrem of radiation dose per year.

Additionally, natural radioactivity is in our body and in the food we eat (about 29 mrem/year), the ground we walk on (about 21 mrem/year) and the air we breathe (about 228 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 311 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 13 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 314 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 2016, with the exception of a refueling outage at Millstone Unit 3 in April and part of May. The annual capacity factor for Millstone Unit 2 was 97.5% and for Millstone Unit 3 was 85.8%.

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

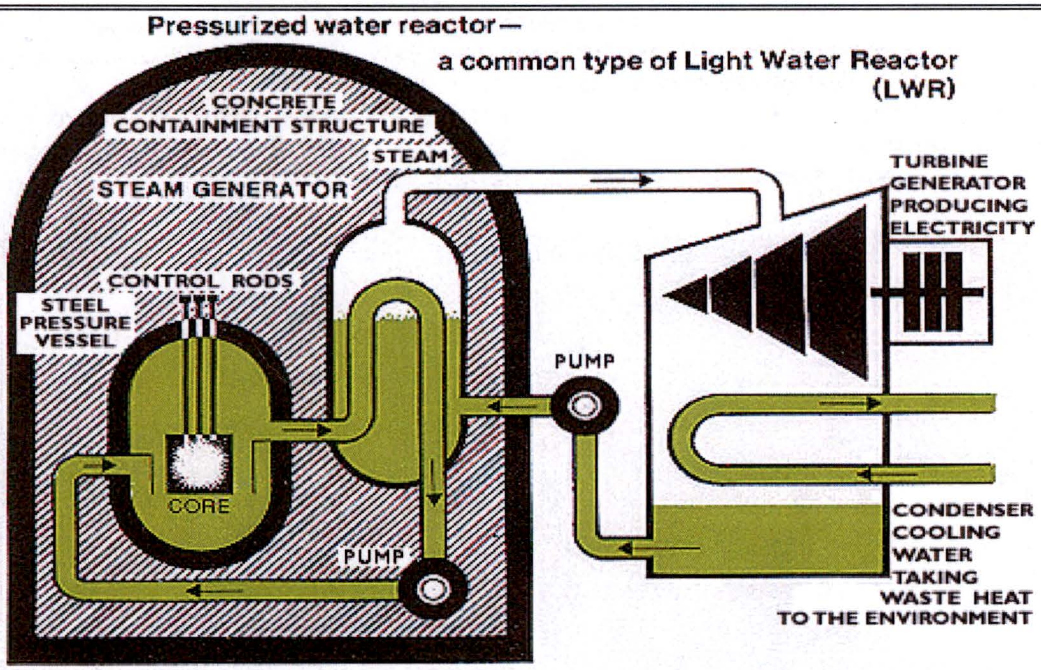


Figure 1.4-1

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 (see Figure 1.4-2).

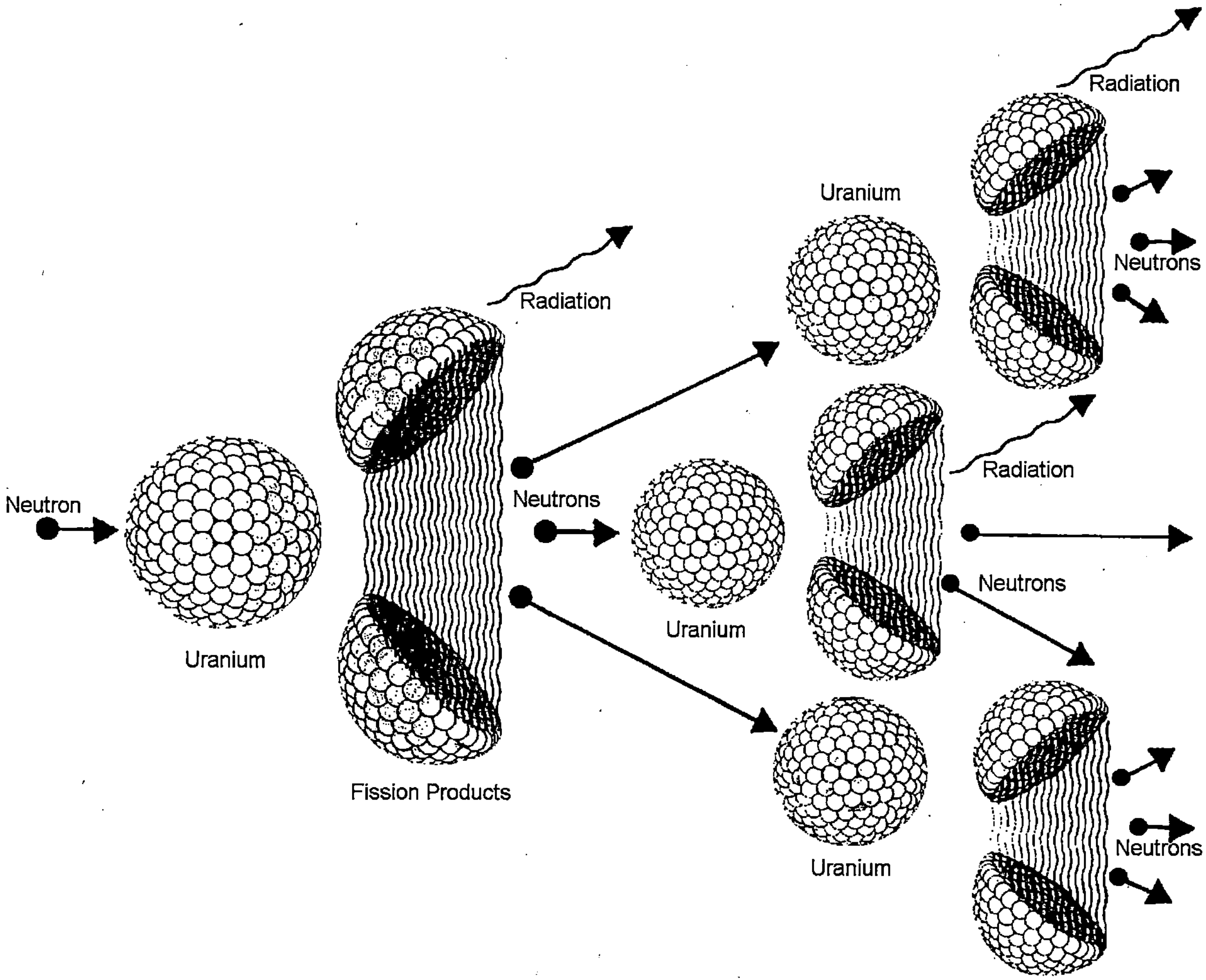


Figure 1.4-2
Radioactive Fission Product Formation

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).

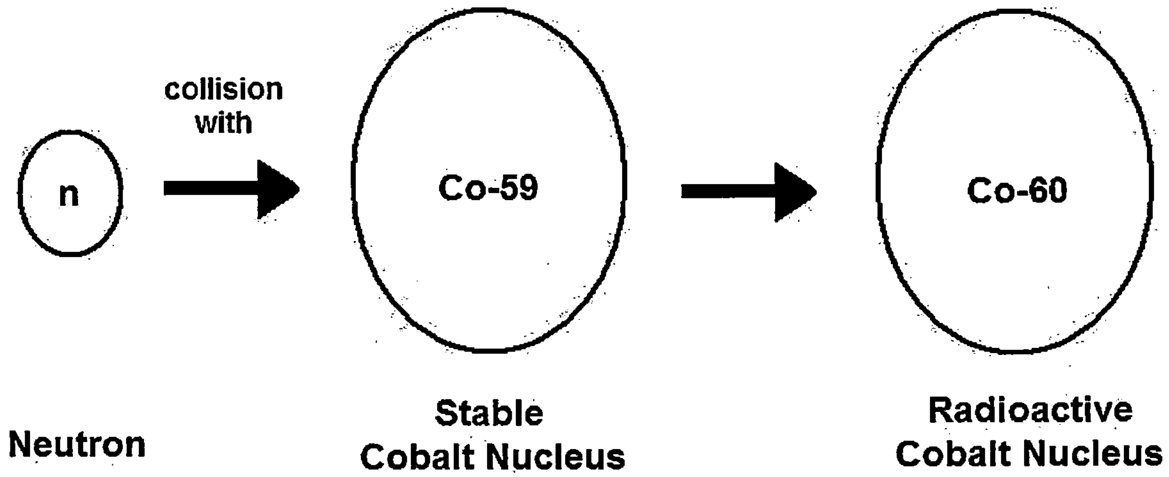


Figure 1.4-3
Radioactive Activation Product Formation

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 radioactivity in 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. 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

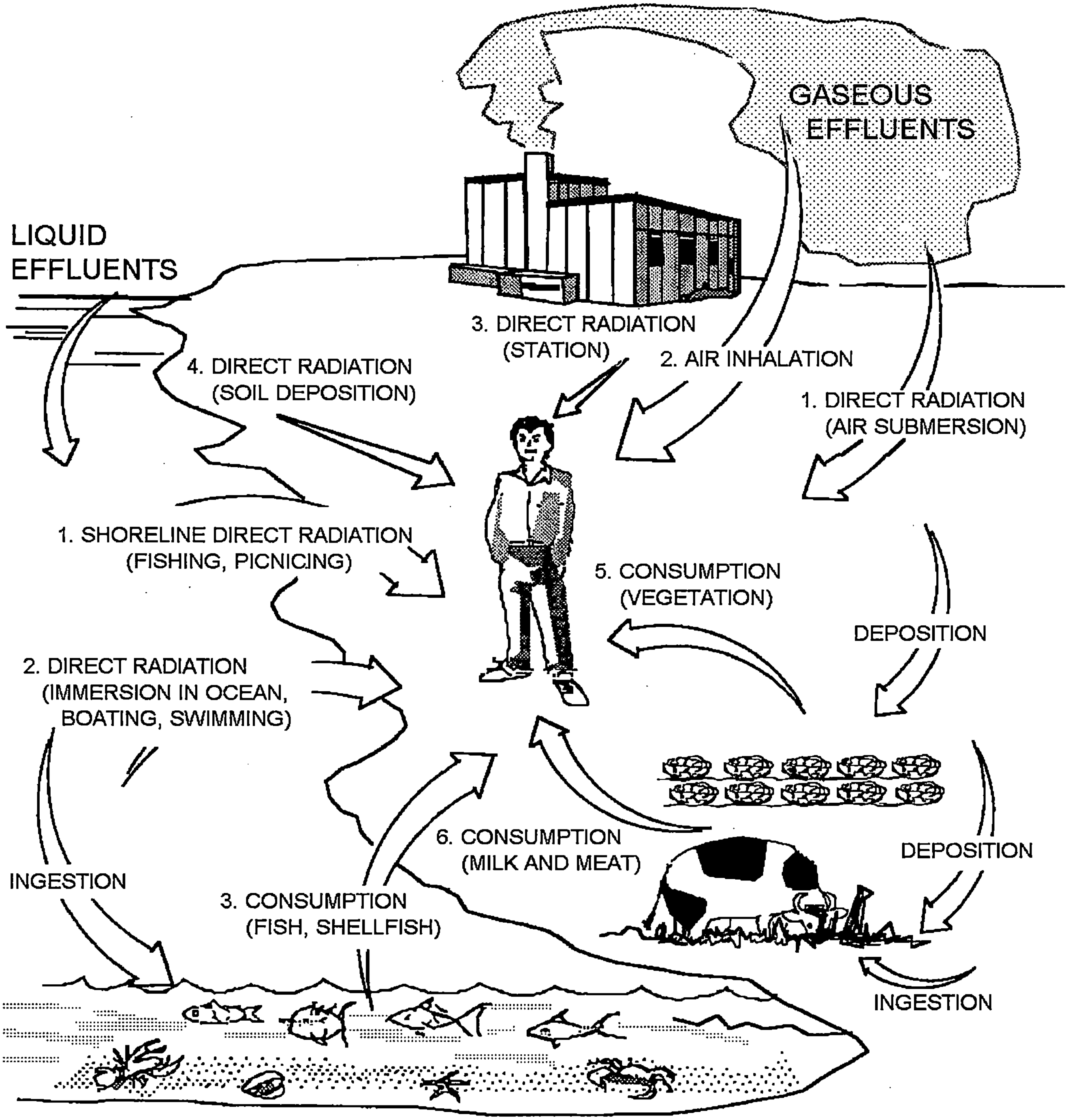


Figure 1.6
Radiation Exposure Pathways

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 six major pathways in which gaseous effluents affect humans:

- external radiation from immersion in an airborne plume of radioactivity;
- external radiation from shine from an overhead, 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.

Drinking water is not a pathway of exposure for radioactivity released in liquid or gaseous effluents from Millstone. All liquid effluents are released to either Long Island Sound or Niantic Bay. Both are salt water bodies which are not used as sources of drinking water. The closest reservoir is Lake Konomoc, 6.5 miles from Millstone. Radioactivity deposited in the reservoir from Millstone gaseous effluents would not yield a significant dose to the public compared to doses from the six major pathways listed.

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.

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 and shown in Figures 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 – NAP Parking Lot N	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 – Quarry East	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	Goshen Fire Dept.	1.2 Mi, E	TLD, Air Particulate, Iodine, Vegetation
11-I	Great Neck Country Club	1.6 Mi, ENE	TLD, Air Particulate, Iodine
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 – Halls Rd.	8.8 Mi, W	TLD
17-I	Site Boundary	0.5 Mi, NE	Vegetation
22-X	Tiffany Cow	10.5 Mi, WNW	Milk
23-X	Soelti Goat	11.9 Mi, NNW	Milk
25-I	Within 10 Miles	< 10 Miles	Vegetation
25-X	Within 10 Miles	< 10 Miles	Fruits and/or Vegetables[3]
26-C	Beyond 10 Miles	> 10 Miles	Vegetation
26-X	Beyond 10 Miles	> 10 Miles	Fruits and/or Vegetables[3]
27-I	East Lyme Police Dept.	1.7 Mi, WNW	TLD, Air Particulate, Iodine
28-I	Two Tree Island	0.8 Mi, SSE	Fish[4]
29-I	West Jordan Cove	0.4 Mi, ENE-ESE	Clams, Fish[4]
29-X, I[6]	West Jordan Cove	0.4 Mi, NNE	Fucus
31-I	Niantic Shoals	1.8 Mi, NW	Bottom Sediment, Oysters, Clams
32-I	Vicinity of Discharge	< 0.1 Mi	Bottom Sediment, Oysters, Fish[4], Seawater
32-X, I[6]	Vicinity of Discharge	< 0.1 Mi	Fucus
33-I	Seaside Point	1.8 Mi, ESE	Bottom Sediment
35-I	Niantic Bay	<0.5 Mi, SSW-W	Lobster, Fish[4]
35-X, I[6]	Niantic Bay	0.3 Mi, WNW	Fucus
36-X, I[6]	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
41-I	Waterford - Myrock Avenue	3.2 Mi, ENE	TLD
42-I	East Lyme - Billow Road	2.4 Mi, WSW	TLD
43-I	East Lyme–Old Black Point	2.6 Mi, SW	TLD
44-I	Onsite – Schoolhouse	0.1 Mi, NNE	TLD
45-I	Onsite - Access Road #1	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

No.-Type[1]	Location Name	Distance, Direction From Release Point[2]	Sample Media
48-I	East Lyme – Corey&Roxbury Rd.	3.4 Mi, WNW	TLD
49-I	East Lyme - Society Rd.	3.6 Mi, NW	TLD
50-I	East Lyme – Manwaring/Terrace	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 – Ocean&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&Cross	4.0 Mi, N	TLD
61-I	Waterford–Oil Mill&Boston Post	4.3 Mi, NNW	TLD
62-I	East Lyme - Columbus Ave.	1.9 Mi, WNW	TLD
63-I	Waterford - Gardiners Wood & Jordon Cove	0.8 Mi, NE	TLD
64-I	Waterford - Shore Rd.	1.1 Mi, ENE	TLD
65-I	Waterford – Boston Post Rd.	3.2 Mi, NE	TLD
66-X	NAP Parking Lot - Fit Center	0.4 Mi, NW	TLD
71-I	1-MW-XFMR-03 [5]	Onsite	Well Water
72-I	MW-GPI-1 [5]	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 [5]	Onsite	Well Water
81-I	S2-MW-1 [5]	Onsite	Well Water
82-I	MW-6B [5]	Onsite	Well Water
83-I	S3-MW-2 [5]	Onsite	Well Water
88-I	DEEP Dock	0.2 Mi, WNW	Oysters
89-C	Aquatic background	>4 Mi of discharge	Lobster
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. A fruit or vegetable sample may count as a required vegetation sample.
4. Fish required to be sampled at Location #35 and from one of three other locations (#28, #29 or #32).
5. Any onsite well may be substituted.
6. Fucus became a required, indicator sample for the 4th quarter.

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 - filter change every two weeks	Gross Beta – Every two weeks 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 – canister change every two weeks	I-131 – Every two weeks
4.	Vegetation	5	One sample near middle and one near end of growing season	Gamma Isotopic on each sample
5.	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.
6.	Well Water	6	Semiannual	Gamma Isotopic and Tritium on each sample
7.	Bottom Sediment	5	Semiannual	Gamma Isotopic on each sample
8.	Soil	3	Annually	Gamma Isotopic on each sample
9.	Fin Fish (edible portion)	2	Quarterly Semiannual beginning 4th quarter	Gamma Isotopic on each sample
10.	Aquatic flora (fucus)	4	Quarterly beginning 4th quarter	Gamma isotopic on each sample
11.	Oysters (edible portion)	4	Quarterly First three quarters only.	Gamma Isotopic on each sample
12.	Clams (edible portion)	2	Quarterly Semiannual beginning 4th quarter	Gamma Isotopic on each sample
13.	Lobster (edible portion)	2	Quarterly Semiannual beginning 4th quarter	Gamma Isotopic on each sample

Footnotes
1. Two or more TLDs or TLD with two or more elements per location.

Figure 2.1, "Inner TLD, Air, Grass, Soil, and Aquatic Locations"

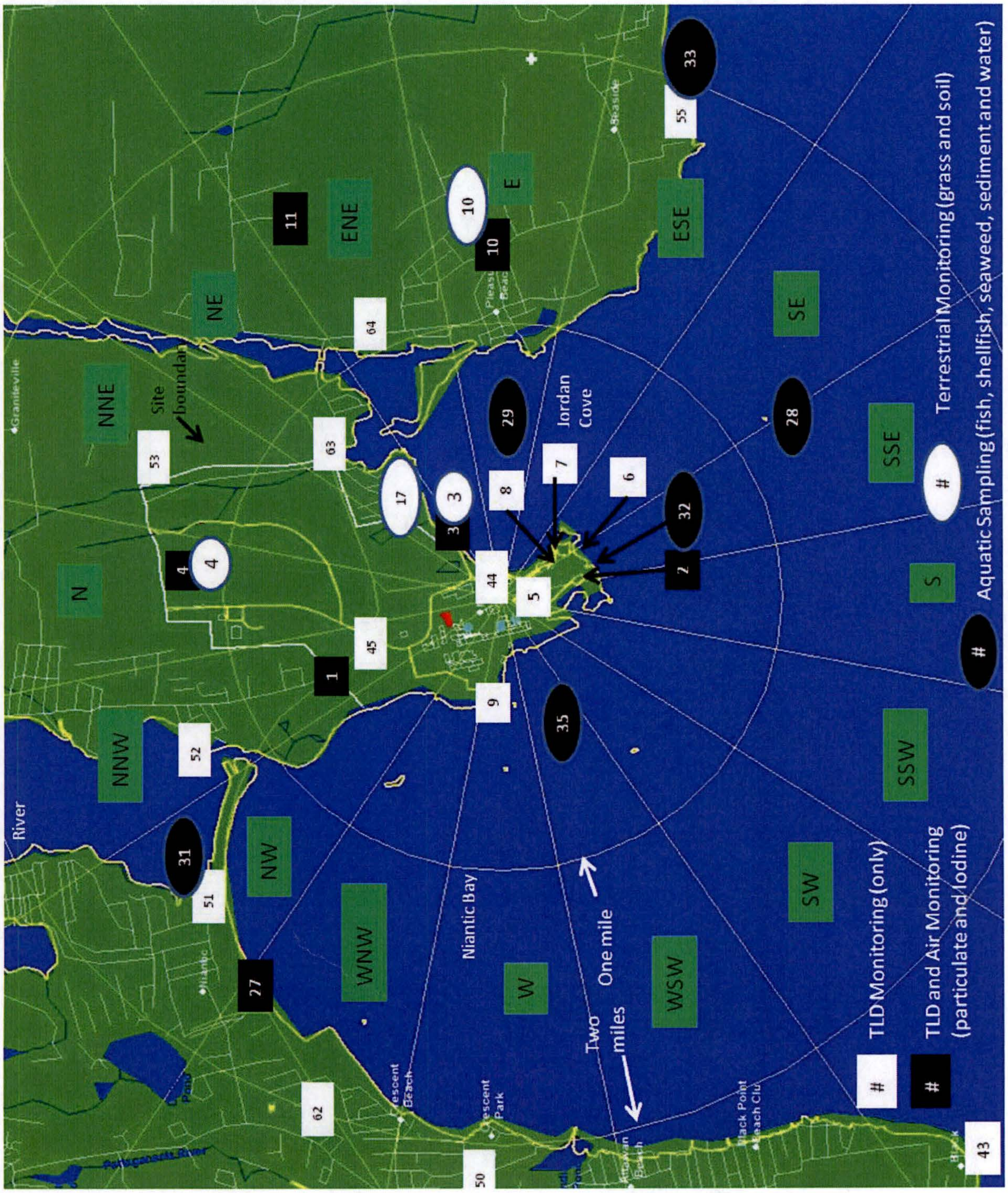
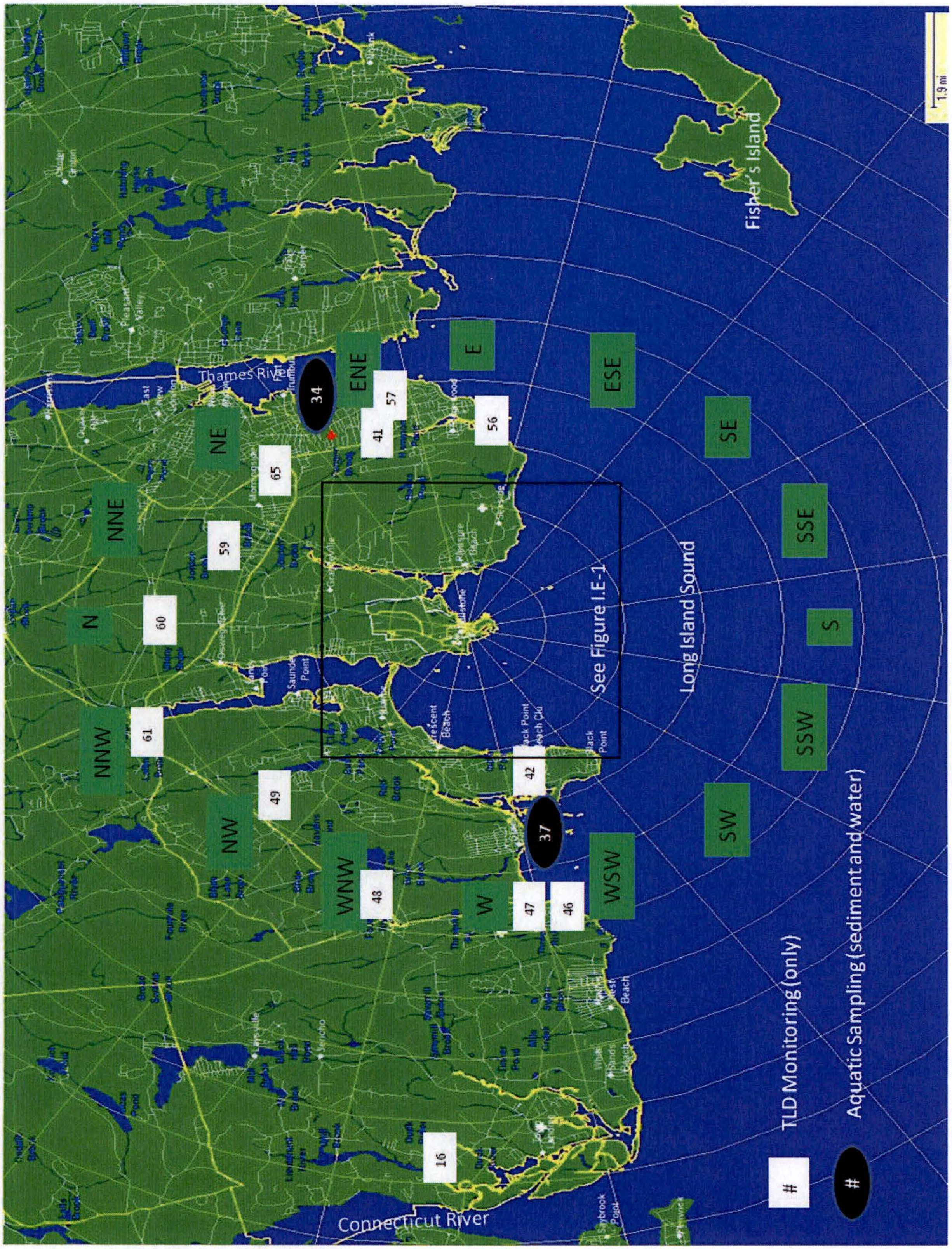


Figure 2.2, "Outer TLD and Aquatic Locations"



2.2 Samples Collected During Report Period

The following table summarizes the number of samples of each type collected and analyzed during 2016:

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	16
Air Particulates	208	208	0
Air Iodine	208	208	0
Soil	3	3	0
Milk	0	0	22
Well Water	12	12	24
Fruits & Vegetables	4	4	4
Broadleaf vegetation	8	8	0
Sea Water	16	16	0
Bottom Sediment	10	10	0
Aquatic Flora	4	4	15
Fish	6	6	0
Oysters	12	12	2
Clams	6	6	0
Lobster	6	6	0
Total All Types	**659**	659	83

2.3 Required Samples Not Collected During the Report Period

During 2016 all required samples were collected. The air sample volume collected on February 10, 2016 for particulates (Table 2) and iodine (Table 3) was half the normal volume because of a lost of power at the sampler for part of the two week sample period. The volume collected was still sufficient to attain the required minimum analyses sensitivities for the samples.

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.

RADIOLOCGIAL ENVIRONMENT MONITORING PROGRAM SUMMARY
MILLSTONE POWER STATION
Dockets 50-245, 50-336 & 50-423 2016

Medium or Pathway Sampled (Units)	Analysis Type	Total Number	LLD Note 1	Indicator Locations Number Mean (Range)	Location with Highest Mean: Location Number	Location with Highest Mean: Distance Direction	Location with Highest Mean: Mean (Range)	Control Locations Number Mean (Range)
Direct Radiation *TLD (uR/hr)*	Gamma Dose	172	NA	156 7.7 (0.3 - 11.6)	9	0.4 Mi. NW	11.2 (11.0 - 11.6)	16 8.1 (5.8 - 9.6)
Air Iodine *(pCi/m³)*	I-131	208	0.07	182 <LLD	NA	NA	<LLD	26 <LLD
Air Particulate *(pCi/m³)*	GR-B	208	0.01	182 0.0123 (0.006 - 0.0177)	15	14.0 Mi. N	0.0128 (0.0065 - 0.0172)	26 0.0128 (0.0065 - 0.0172)
	Gamma BE-7	32	NA	28 0.121 (0.077 - 0.200)	01	0.6 Mi. NNW	0.132 (0.108 - 0.200)	4 0.120 (0.105 - 0.132)
	Other Gammas		Note 2	<LLD	NA	NA	<LLD	<LLD
Soil *(pCi/g dry)*	Gamma K-40	3	NA	3 13.85 (12.30 - 16.28)	3	0.3 Mi. NE	16.28 (NA)	NA
	CS-134		0.15	<LLD	NA	NA	<LLD	NA
	CS-137		0.18	3 0.39 (<LLD - 0.39)	4	1.0 Mi. N	0.39 (<LLD - 0.39)	NA
	Other Gammas		Note 3	<LLD	NA	NA	<LLD	NA
Cow Milk *(pCi/l)*	SR-89	4	10	4 <LLD	NA	NA	<LLD	NA
	SR-90	4	2	4 <LLD	NA	NA	<LLD	NA
	Gamma K-40	18	NA	18 1171 (1114 - 1527)	22	10.5 Mi. WNW	1171 (1114 - 1527)	NA
	Other Gammas		Note 4	<LLD	NA	NA	<LLD	NA

RADIOLOCCIAL ENVIRONMENT MONITORING PROGRAM SUMMARY
MILLSTONE POWER STATION
Dockets 50-245, 50-336 & 50-423 2016

Medium or Pathway Sampled (Units)	Analysis Type	Total Number	LLD Note 1	Indicator Locations Number Mean (Range)	Location with Highest Mean Location Number	Distance Direction	Mean (Range)	Control Locations Number Mean (Range)
Goat Milk *(pCi/l)*	SR-89	1	10	<LLD	NA	NA	<LLD	NA
	SR-90	1	2	<LLD	NA	NA	<LLD	NA
	GAMMA K-40	3	NA	3 1870 (1687 - 2031)	23	11.9 Mi. NNW	1870 (1687 - 2031)	NA
	Other Gammas		Note 4	<LLD	NA	NA	<LLD	NA
Well Water *(pCi/l)*	H-3	36	2000	32 <LLD	NA	NA	<LLD	4 <LLD
	GAMMA K-40	36	NA	32 <LLD	NA	NA	<LLD	4 <LLD
	Other Gammas		Note 5	32 <LLD	NA	NA	<LLD	4 <LLD
Fruits & Vegetables *(pCi/g wet)*	GAMMA K-40	8	NA	4 1.418 (0.802 - 2.111)	25	Within 10 Miles	1.418 (0.802 - 2.111)	4 1.284 (0.770 - 1.793)
	Other Gammas		Note 6	<LLD	NA	NA	<LLD	<LLD
Broad Leaf Vegetation *(pCi/g wet)*	GAMMA BE-7	8	NA	6 0.907 (0.620 - 1.629)	1	0.6 Mi. NNW	1.222 (0.814 - 1.629)	2 0.696 (0.69 - 0.743)
	K-40		NA	6 4.441 (4.105 - 4.9466)	10	1.2 Mi. E	4.544 (4.142 - 4.946)	2 4.068 (4.019 - 4.117)
	Other Gammas		Note 7	6 <LLD	NA	NA	<LLD	2 <LLD
Sea Water *(pCi/l)*	H-3	16	3000	12 1099 (302 - 3660)	32	Onsite	1099 (302 - 3660)	4 <LLD
	GAMMA K-40	16	NA	12 321 (236 - 498)	32	Onsite	321 (236 - 498)	4 289 (203 - 379)
	Other Gammas		Note 5	<LLD	NA	NA	<LLD	<LLD

RADIOLOCIAL ENVIRONMENT MONITORING PROGRAM SUMMARY
MILLSTONE POWER STATION
Dockets 50-245, 50-336 & 50-423 2016

Medium or Pathway Sampled (Units)	Analysis Type	Total Number	LLD Note 1	Indicator Locations Number Mean (Range)	Location with Highest Mean Number	Location with Highest Mean Distance Direction	Location with Highest Mean Mean (Range)	Control Locations Number Mean (Range)
Bottom Sediment *(pCi/g dry)*	GAMMA K-40	10	NA	6 15.25 (10.77 - 18.39)	31	1.8 Mi. NW	16.67 (15.40 - 17.94)	2 14.73 (14.61 - 14.85)
	Other Gammas		Note 3	<LLD	NA	NA	<LLD	<LLD
Flora *(pCi/g wet)* Note 8	GAMMA BE-7	20	NA	16 0.124 (<LLD - 0.394)	29	<0.5 Mi. ENE to ESE	0.181 (0.054 - 0.349)	4 0.523 (0.177 - 1.330)
	K-40		NA	16 7.278 (5.308 - 8.306)	29	0.5 Mi. ENE to ESE	7.648 (5.308 - 8.306)	NA
	I-131		0.06	<LLD	NA	NA	<LLD	<LLD
	Other Gammas		Note 6	<LLD	NA	NA	<LLD	<LLD
Fish - Other *(pCi/g wet)*	GAMMA	6						
	K-40		NA	6 3.663 (3.293 - 4.280)	32	<0.1 Mi. SSE	3.914 (3.547 - 4.280)	NA
	Other Gammas		Note 9	<LLD	NA	NA	<LLD	NA
Oysters *(pCi/g wet)*	GAMMA K-40	14	NA	6 1.773 (1.101 - 2.522)	32	<0.1 Mi. SSE	1.837 (1.472 - 2.127)	8 2.341 (1.025 - 3.206)
	Other Gammas		Note 9	<LLD	NA	NA	<LLD	<LLD
Clams *(pCi/g wet)*	GAMMA K-40	6	NA	6 2.217 (1.762 - 2.723)	31	1.8 Mi. NW	2.254 (one value)	NA
	Other Gammas		Note 9	<LLD	NA	NA	<LLD	NA
Lobster *(pCi/g wet)*	GAMMA K-40	6	NA	3 2.323 (2.102 - 2.762)	35	<0.5 Mi. SSW to W	3 2.323 (2.102 - 2.762)	3 2.411 (1.465 - 3.453)
	Other		Note 9	<LLD	NA	NA	<LLD	NA

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 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 gamma is 0.15 pCi/g for Cs-134.
4 - LLDs for milk 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.
5 - LLDs for water 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.
6 - LLDs for fruits & vegetables, broadleaf vegetation and aquatic flora for 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.
7 - LLDs for other gamma are 0.06 pCi/g for Cs-134 and I-131.
8 - Aquatic flora locations were extra, non-required samples for the first three quaerters of 2016. For the fourth quarter aquatic flora added as a requirement to the REMODCM with Locations 29, 32 and 35 treated as indicators and Location 36 as a control. Location 90 is an extra, non-required location which is downstream from the New London water treatment plant. Although it is not influenced by any Millstone releases, at times it will detect radioactivity released from the water treatment plant.
9 - 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)
λ	is the radioactive decay constant for the particular radionuclide
Δt	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.
(continue on next page)

Analyses were 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 results of analyes on all samples. All gamma exposure rates (Table 1) and air beta results (Table 2) are positive because of natural radioactivity. For all other results positive results are shown as bolded type. Results are considered positive when the measured value exceeds 1.5 times the listed 2σ error (i.e., the measured value exceeds 3σ). 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. 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).

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. Soil
6. Milk
7. Well Water
8. Fruits & Vegetables
9. Broad Leaf Vegetation
10. Seawater
11. Bottom Sediment
12. Aquatic Flora (Fucus)
13. Fin Fish
14. Oysters
15. Clams
16. Lobster

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

LOCATIONS

PERIOD	1	(+/-)	2	(+/-)	3	(+/-)	4	(+/-)	5	(+/-)	6	(+/-)	7	(+/-)	8	(+/-)	9	(+/-)	10	(+/-)	11	(+/-)
1Q	8.0	0.5	9.9	1.1	7.4	0.7	7.7	0.4	9.2	0.5	8.9	0.4	5.4	0.5	11.1	0.7	11.0	0.7	8.7	0.4	7.0	0.5
2Q	7.7	0.6	9.7	0.35	7.2	0.4	7.3	0.6	9.2	0.6	8.5	0.4	4.5	0.4	11.0	0.5	11.0	0.6	8.6	0.6	6.5	0.5
3Q	7.7	0.5	11.6	0.7	7.3	0.6	7.8	0.5	9.9	0.7	8.4	0.5	4.8	0.6	11.1	0.9	11.3	0.6	9.0	0.6	7.3	0.5
4Q	8.2	0.5	11.2	0.6	7.6	0.7	7.6	0.4	9.4	1.2	8.9	0.5	5.2	0.3	11.2	0.9	11.6	0.7	8.9	0.5	7.2	0.5

PERIOD	13C	(+/-)	14C	(+/-)	15C	(+/-)	16C	(+/-)	27	(+/-)	41	(+/-)	42	(+/-)	43	(+/-)	44	(+/-)	45	(+/-)	46	(+/-)
1Q	9.1	0.5	9.1	0.6	8.1	0.7	6.2	0.8	8.1	0.9	6.7	0.3	7.8	0.4	7.5	0.4	8.3	0.4	7.0	0.7	8.7	0.5
2Q	8.4	0.6	9.0	0.6	7.4	0.6	5.8	0.5	7.4	0.5	6.2	0.4	7.1	0.4	6.8	0.4	7.9	0.4	7.0	0.4	8.2	0.6
3Q	8.9	0.8	9.6	0.5	8.4	0.5	6.0	0.7	7.5	0.5	6.6	0.5	7.3	0.5	6.9	1.1	7.8	0.5	7.1	0.7	8.4	0.6
4Q	9.0	0.6	9.2	0.7	8.6	0.6	6.2	0.5	7.8	0.7	6.7	0.4	7.3	0.5	7.6	0.6	7.9	0.7	7.6	0.4	8.6	0.5

PERIOD	47	(+/-)	48	(+/-)	49	(+/-)	50	(+/-)	51	(+/-)	52	(+/-)	53	(+/-)	55	(+/-)	56	(+/-)	57	(+/-)	59	(+/-)
1Q	7.8	0.4	9.5	0.5	6.9	0.3	7.9	0.4	6.5	0.3	7.4	0.7	7.4	0.4	7.8	0.7	7.5	0.5	7.1	0.6	8.2	0.5
2Q	7.3	0.4	9.0	1.1	6.6	0.4	7.1	0.4	6.1	0.4	6.7	0.4	6.8	0.4	7.3	0.6	6.5	0.3	6.7	0.4	7.5	0.4
3Q	7.7	0.5	9.4	0.6	6.7	0.5	7.3	0.8	6.4	0.7	6.9	0.7	7.3	0.6	7.1	0.8	6.6	0.5	6.7	0.7	7.6	0.5
4Q	8.2	0.4	9.5	0.5	6.8	0.4	7.9	0.6	6.2	0.7	7.4	0.4	7.1	0.4	7.8	0.6	7.1	0.4	7.5	0.5	8.1	0.4

PERIOD	60	(+/-)	61	(+/-)	62	(+/-)	63	(+/-)	64	(+/-)	65	(+/-)	66	(+/-)	73	(+/-)	74	(+/-)	75	(+/-)
1Q	6.9	0.5	7.3	0.4	7.9	0.4	8.5	0.5	7.5	0.5	7.9	0.4	7.6	0.4	8.2	0.6	7.8	0.6	6.6	0.4
2Q	6.2	0.3	6.6	0.3	7.5	0.4	7.9	1.1	7.1	0.4	7.2	0.4	7.0	0.7	7.4	0.6	7.2	0.4	6.3	0.6
3Q	6.3	0.6	6.6	0.6	7.3	0.5	8.2	0.8	6.9	0.6	7.2	0.7	6.5	0.6	7.3	0.5	7.1	0.5	6.6	1.0
4Q	6.7	0.4	6.7	0.6	8.8	1.5	8.4	0.5	7.2	0.7	8.1	0.7	7.3	0.6	8.1	0.5	7.4	0.5	6.8	0.4

* 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
C= Control location, Background location

TABLE 2
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(pCi/m^3)
LOCATIONS
C= Control location, Background location

PERIOD ENDING	01	(+/-)	02	(+/-)	03	(+/-)	04	(+/-)	10	(+/-)	11	(+/-)	27	(+/-)	15C	(+/-)
01/12/16	0.012	0.002	0.013	0.002	0.012	0.002	0.012	0.002	0.012	0.002	0.013	0.002	0.011	0.002	0.011	0.002
01/26/16	0.010	0.002	0.011	0.002	0.010	0.002	0.010	0.002	0.010	0.002	0.011	0.002	0.011	0.002	0.010	0.002
02/10/16	0.013	0.002	0.011	0.002	0.013	0.002	0.013	0.002	0.013	0.002	0.014	0.002	0.012	0.002	0.017	0.003
02/23/16	0.014	0.002	0.015	0.002	0.011	0.002	0.013	0.002	0.013	0.002	0.012	0.002	0.014	0.002	0.013	0.002
03/08/16	0.012	0.002	0.011	0.002	0.012	0.002	0.012	0.002	0.012	0.002	0.011	0.002	0.012	0.002	0.013	0.002
03/22/16	0.010	0.002	0.012	0.002	0.010	0.002	0.010	0.002	0.010	0.002	0.012	0.002	0.012	0.002	0.011	0.002
04/05/16	0.011	0.002	0.012	0.002	0.012	0.002	0.011	0.002	0.011	0.002	0.013	0.002	0.012	0.002	0.012	0.002
04/19/16	0.014	0.002	0.013	0.002	0.013	0.002	0.014	0.002	0.014	0.002	0.012	0.002	0.016	0.002	0.015	0.002
05/03/16	0.012	0.002	0.012	0.002	0.013	0.002	0.011	0.002	0.011	0.002	0.012	0.002	0.012	0.002	0.012	0.002
05/17/16	0.006	0.002	0.007	0.002	0.007	0.002	0.006	0.002	0.006	0.002	0.006	0.002	0.007	0.002	0.007	0.002
05/31/16	0.015	0.002	0.014	0.002	0.015	0.002	0.014	0.002	0.014	0.002	0.013	0.002	0.013	0.002	0.012	0.002
06/14/16	0.009	0.002	0.009	0.002	0.008	0.002	0.008	0.002	0.008	0.002	0.009	0.002	0.010	0.002	0.009	0.002
06/28/16	0.012	0.002	0.012	0.002	0.010	0.002	0.008	0.002	0.008	0.002	0.011	0.002	0.011	0.002	0.012	0.002
07/12/16	0.009	0.002	0.011	0.002	0.010	0.002	0.010	0.002	0.010	0.002	0.012	0.002	0.011	0.002	0.014	0.002
07/26/16	0.014	0.002	0.011	0.002	0.014	0.002	0.013	0.002	0.013	0.002	0.014	0.002	0.015	0.002	0.015	0.002
08/09/16	0.015	0.002	0.014	0.002	0.016	0.002	0.014	0.002	0.014	0.002	0.015	0.002	0.015	0.002	0.017	0.002
08/23/16	0.012	0.002	0.013	0.002	0.014	0.002	0.011	0.002	0.011	0.002	0.013	0.002	0.013	0.002	0.013	0.002
09/06/16	0.016	0.002	0.013	0.002	0.016	0.002	0.016	0.002	0.016	0.002	0.018	0.002	0.014	0.002	0.014	0.002
09/20/16	0.013	0.002	0.015	0.002	0.015	0.002	0.013	0.002	0.013	0.002	0.014	0.002	0.011	0.002	0.014	0.002
10/04/16	0.015	0.002	0.011	0.002	0.012	0.002	0.012	0.002	0.012	0.002	0.011	0.002	0.012	0.002	0.012	0.002
10/18/16	0.014	0.002	0.013	0.002	0.017	0.002	0.013	0.002	0.013	0.002	0.015	0.002	0.013	0.002	0.015	0.002
11/01/16	0.017	0.002	0.014	0.002	0.013	0.002	0.012	0.002	0.012	0.002	0.013	0.002	0.011	0.002	0.013	0.002
11/15/16	0.009	0.002	0.011	0.002	0.014	0.002	0.015	0.002	0.015	0.002	0.015	0.002	0.014	0.002	0.015	0.002
11/29/16	0.011	0.002	0.009	0.002	0.013	0.002	0.011	0.002	0.011	0.002	0.009	0.002	0.010	0.002	0.011	0.002
12/13/16	0.011	0.002	0.010	0.002	0.013	0.002	0.011	0.002	0.011	0.002	0.012	0.002	0.012	0.002	0.011	0.002
12/27/16	0.017	0.002	0.017	0.002	0.018	0.002	0.017	0.002	0.017	0.002	0.018	0.002	0.018	0.002	0.017	0.002

TABLE 3
AIRBORNE IODINE (I-131)
(pCi/m³)
LOCATIONS
C= Control location, Background location

PERIOD ENDING	01	(+/-)	02	(+/-)	03	(+/-)	04	(+/-)	10	(+/-)	11	(+/-)	27	(+/-)	15C	(+/-)
01/12/16	-0.016	0.044	-0.016	0.044	-0.016	0.045	0.015	0.038	0.013	0.033	0.014	0.036	0.006	0.015	0.014	0.036
01/26/16	-0.011	0.026	-0.011	0.026	-0.012	0.027	-0.013	0.030	-0.012	0.026	-0.013	0.027	-0.013	0.028	-0.014	0.029
02/10/16	0.011	0.018	0.012	0.019	0.012	0.019	0.013	0.021	-0.006	0.019	-0.006	0.021	-0.006	0.020	-0.010	0.034
02/23/16	0.000	0.032	0.000	0.034	0.000	0.034	0.000	0.037	0.011	0.026	0.012	0.028	0.012	0.027	0.011	0.025
03/08/16	0.013	0.021	0.014	0.021	0.013	0.021	0.014	0.022	-0.018	0.029	-0.020	0.031	-0.019	0.030	-0.017	0.027
03/22/16	-0.010	0.011	-0.010	0.011	-0.010	0.011	-0.009	0.010	-0.004	0.010	-0.004	0.011	-0.004	0.011	-0.004	0.010
04/05/16	0.002	0.008	0.002	0.008	0.002	0.008	0.001	0.007	0.002	0.007	0.002	0.008	0.002	0.007	0.002	0.007
04/19/16	-0.023	0.025	-0.024	0.026	-0.024	0.026	-0.009	0.010	0.009	0.018	0.010	0.019	0.010	0.018	0.009	0.017
05/03/16	-0.007	0.023	-0.006	0.021	-0.007	0.023	-0.006	0.022	0.000	0.030	0.000	0.029	0.000	0.029	0.000	0.028
05/17/16	-0.007	0.021	-0.007	0.020	-0.007	0.022	-0.007	0.020	-0.017	0.022	-0.017	0.021	-0.017	0.022	-0.016	0.021
05/31/16	-0.014	0.031	-0.013	0.029	-0.014	0.032	-0.013	0.030	0.014	0.037	0.014	0.036	0.015	0.037	0.014	0.035
06/14/16	0.006	0.009	0.006	0.008	0.006	0.009	0.006	0.009	-0.006	0.012	-0.006	0.011	-0.007	0.014	-0.006	0.011
06/28/16	0.004	0.013	0.004	0.013	0.004	0.014	0.004	0.013	-0.010	0.015	-0.010	0.015	-0.010	0.016	-0.009	0.015
07/12/16	-0.002	0.010	-0.002	0.010	-0.002	0.011	-0.002	0.010	-0.002	0.008	-0.002	0.008	-0.002	0.008	-0.002	0.008
07/26/16	0.011	0.017	0.011	0.016	0.012	0.018	0.011	0.018	-0.013	0.017	-0.013	0.017	-0.014	0.018	-0.013	0.016
08/09/16	-0.001	0.029	-0.001	0.028	-0.002	0.031	-0.001	0.031	0.005	0.032	0.005	0.032	0.005	0.034	0.005	0.031
08/23/16	0.008	0.020	0.008	0.019	0.009	0.021	0.009	0.021	-0.003	0.024	-0.003	0.025	-0.003	0.026	-0.001	0.009
09/06/16	0.007	0.027	0.006	0.026	0.007	0.029	0.007	0.028	0.004	0.035	0.004	0.037	0.004	0.038	0.004	0.035
09/20/16	0.001	0.024	0.001	0.023	0.001	0.025	0.000	0.010	-0.004	0.025	-0.004	0.026	-0.004	0.026	-0.004	0.026
10/04/16	0.002	0.024	0.002	0.024	0.002	0.025	0.002	0.021	-0.008	0.019	-0.008	0.019	-0.008	0.019	-0.009	0.021
10/18/16	0.018	0.021	0.017	0.021	0.018	0.022	0.015	0.019	0.005	0.016	0.005	0.017	0.005	0.016	0.005	0.018
11/01/16	-0.010	0.025	-0.010	0.024	-0.011	0.026	-0.003	0.008	-0.009	0.022	0.000	0.022	0.000	0.022	0.000	0.024
11/15/16	-0.022	0.020	-0.021	0.019	-0.023	0.021	-0.018	0.017	-0.001	0.016	-0.001	0.017	-0.001	0.017	-0.001	0.018
11/29/16	-0.006	0.026	-0.006	0.025	-0.007	0.027	-0.005	0.022	0.009	0.019	0.009	0.020	0.009	0.020	0.010	0.022
12/13/16	-0.009	0.018	-0.008	0.017	-0.009	0.019	-0.007	0.015	-0.005	0.016	-0.006	0.016	-0.005	0.015	-0.006	0.017
12/27/16	0.000	0.020	0.000	0.020	0.000	0.022	0.000	0.017	0.003	0.013	0.003	0.013	0.002	0.011	0.003	0.013

TABLE 4
AIR PARTICULATES (pCi/m³)

C= Control location, Background location
Results in bold type are positive.

GAMMA SPECTRA - QTR 1 (12/29/15 - 04/05/16)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	**0.1080**	**0.0422**	0.0002	0.0012	-0.0005	0.0023	0.0000	0.0011	0.0012	0.0026	0.0001	0.0017	-0.0024	0.0038
02	**0.1161**	**0.0271**	-0.0008	0.0012	0.0003	0.0019	-0.0001	0.0011	0.0001	0.0025	-0.0011	0.0023	0.0021	0.0037
03	**0.1429**	**0.0428**	0.0003	0.0017	0.0010	0.0034	0.0007	0.0015	0.0019	0.0046	0.0032	0.0038	-0.0030	0.0066
04	**0.1327**	**0.0402**	0.0005	0.0011	-0.0006	0.0023	0.0007	0.0010	0.0044	0.0029	0.0003	0.0024	-0.0007	0.0045
10	**0.0933**	**0.0239**	-0.0001	0.0010	-0.0002	0.0020	-0.0002	0.0011	0.0016	0.0028	0.0006	0.0018	0.0032	0.0033
11	**0.0952**	**0.0438**	-0.0001	0.0016	-0.0008	0.0032	-0.0002	0.0014	0.0021	0.0035	0.0010	0.0032	-0.0049	0.0054
27	**0.1176**	**0.0337**	-0.0003	0.0010	-0.0012	0.0024	0.0002	0.0012	0.0018	0.0029	-0.0002	0.0022	0.0029	0.0036
15C	**0.1230**	**0.0317**	0.0002	0.0010	-0.0001	0.0019	0.0003	0.0010	0.0016	0.0027	0.0018	0.0020	0.0005	0.0036

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	-0.0020	0.0031	-0.0042	0.0103	0.0002	0.0011	0.0005	0.0009	-0.0862	0.2043	-0.0032	0.0050	-0.0007	0.0050
02	-0.0004	0.0033	0.0049	0.0105	0.0013	0.0010	-0.0003	0.0009	-0.1751	0.2405	-0.0027	0.0054	-0.0028	0.0058
03	-0.0047	0.0062	-0.0102	0.0168	0.0023	0.0020	0.0005	0.0016	0.3068	0.3377	-0.0035	0.0078	-0.0002	0.0071
04	0.0008	0.0036	-0.0017	0.0113	-0.0008	0.0011	0.0011	0.0012	0.1538	0.2645	-0.0014	0.0065	-0.0021	0.0059
10	-0.0013	0.0026	0.0044	0.0091	-0.0005	0.0010	0.0014	0.0009	0.0930	0.1754	0.0030	0.0049	-0.0008	0.0046
11	-0.0022	0.0047	0.0056	0.0155	0.0029	0.0019	-0.0001	0.0015	0.0599	0.3065	-0.0016	0.0087	-0.0018	0.0086
27	0.0013	0.0035	-0.0031	0.0105	0.0005	0.0011	0.0007	0.0010	0.0529	0.2046	-0.0011	0.0054	0.0002	0.0057
15C	-0.0037	0.0033	-0.0069	0.0088	0.0005	0.0009	-0.0010	0.0009	0.0494	0.1836	-0.0018	0.0054	0.0034	0.0052

GAMMA SPECTRA - QTR 2 (04/05/16 - 06/28/16)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	**0.1999**	**0.0440**	0.0011	0.0015	0.0007	0.0026	-0.0012	0.0015	0.0021	0.0034	0.0028	0.0023	-0.0022	0.0041
02	**0.1258**	**0.0472**	0.0002	0.0023	0.0004	0.0031	0.0014	0.0025	0.0039	0.0050	0.0003	0.0035	0.0029	0.0069
03	**0.1420**	**0.0389**	0.0003	0.0014	-0.0004	0.0026	0.0005	0.0012	-0.0008	0.0043	0.0007	0.0025	0.0025	0.0047
04	**0.1280**	**0.0450**	-0.0002	0.0014	-0.0022	0.0025	-0.0002	0.0013	-0.0001	0.0034	-0.0022	0.0027	0.0020	0.0048
10	**0.1838**	**0.0413**	0.0004	0.0012	-0.0034	0.0026	-0.0006	0.0017	-0.0006	0.0031	0.0007	0.0020	-0.0013	0.0037
11	**0.1364**	**0.0531**	0.0003	0.0021	-0.0009	0.0040	-0.0014	0.0027	0.0001	0.0057	-0.0016	0.0040	-0.0014	0.0073
27	**0.1480**	**0.0364**	0.0007	0.0016	0.0019	0.0024	-0.0006	0.0014	0.0032	0.0030	0.0005	0.0027	0.0028	0.0046
15C	**0.1049**	**0.0429**	0.0006	0.0015	0.0003	0.0022	0.0006	0.0011	0.0004	0.0029	0.0014	0.0023	-0.0029	0.0041

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	-0.0014	0.0031	-0.0066	0.0128	0.0014	0.0015	0.0009	0.0014	0.0279	0.2089	-0.0020	0.0063	0.0012	0.0065
02	0.0041	0.0052	-0.0009	0.0185	0.0009	0.0018	-0.0007	0.0017	-0.0938	0.2947	0.0009	0.0074	-0.0048	0.0078
03	-0.0035	0.0042	-0.0082	0.0119	-0.0001	0.0014	0.0006	0.0012	-0.0880	0.1949	-0.0047	0.0059	-0.0077	0.0061
04	-0.0221	0.0060	-0.0109	0.0145	0.0021	0.0014	0.0016	0.0013	0.1018	0.2394	-0.0015	0.0086	-0.0024	0.0094
10	0.0045	0.0037	-0.0008	0.0118	-0.0001	0.0012	0.0005	0.0011	0.1095	0.1732	-0.0085	0.0065	-0.0041	0.0073
11	0.0027	0.0058	-0.0008	0.0192	0.0003	0.0016	-0.0006	0.0020	-0.1177	0.3035	-0.0063	0.0075	-0.0017	0.0075
27	-0.0209	0.0063	-0.0006	0.0148	0.0005	0.0014	0.0005	0.0013	0.2150	0.2370	-0.0001	0.0095	0.0049	0.0104
15C	0.0012	0.0036	0.0038	0.0123	-0.0004	0.0011	0.0001	0.0011	0.0532	0.1655	0.0019	0.0054	-0.0013	0.0059

TABLE 4
AIR PARTICULATES (pCi/m^3)

C= Control location, Background location
Results in bold type are positive.

GAMMA SPECTRA - QTR 3 (06/28/16 - 10/04/16)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	**0.1088**	**0.0263**	-0.0003	0.0010	-0.0008	0.0016	0.0004	0.0008	0.0016	0.0024	-0.0003	0.0014	0.0007	0.0025
02	**0.1304**	**0.0312**	-0.0001	0.0012	0.0021	0.0020	-0.0001	0.0010	0.0026	0.0032	-0.0004	0.0024	-0.0001	0.0045
03	**0.1045**	**0.0362**	-0.0001	0.0014	-0.0004	0.0022	-0.0001	0.0014	0.0007	0.0025	0.0010	0.0023	-0.0025	0.0043
04	**0.1178**	**0.0423**	0.0003	0.0015	-0.0008	0.0018	0.0005	0.0016	0.0005	0.0037	-0.0022	0.0026	0.0016	0.0045
10	**0.1333**	**0.0338**	-0.0001	0.0012	0.0013	0.0022	0.0006	0.0011	0.0013	0.0029	-0.0005	0.0026	0.0024	0.0045
11	**0.1213**	**0.0364**	0.0008	0.0012	-0.0011	0.0019	0.0003	0.0012	0.0011	0.0025	0.0009	0.0020	-0.0024	0.0038
27	**0.1128**	**0.0531**	0.0009	0.0021	-0.0009	0.0033	-0.0001	0.0013	-0.0003	0.0047	-0.0030	0.0033	-0.0043	0.0057
15C	**0.1235**	**0.0293**	-0.0002	0.0013	-0.0011	0.0024	0.0003	0.0011	0.0010	0.0024	0.0010	0.0020	-0.0014	0.0044

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	-0.0003	0.0024	-0.0048	0.0087	0.0007	0.0011	0.0001	0.0008	0.1099	0.1548	-0.0020	0.0049	-0.0016	0.0048
02	0.0011	0.0034	-0.0012	0.0116	0.0011	0.0011	0.0013	0.0010	0.0675	0.2394	0.0025	0.0052	0.0002	0.0056
03	-0.0012	0.0030	0.0026	0.0119	0.0001	0.0013	0.0001	0.0012	-0.1006	0.1811	-0.0016	0.0058	-0.0018	0.0053
04	0.0019	0.0039	-0.0037	0.0093	-0.0014	0.0013	-0.0003	0.0012	-0.0385	0.2264	0.0004	0.0054	-0.0022	0.0053
10	-0.0141	0.0052	-0.0064	0.0123	0.0011	0.0011	-0.0001	0.0012	0.0948	0.2782	-0.0060	0.0076	0.0063	0.0074
11	0.0030	0.0036	0.0063	0.0105	0.0014	0.0010	0.0012	0.0010	-0.1279	0.2164	-0.0003	0.0063	-0.0023	0.0060
27	-0.0023	0.0053	-0.0014	0.0150	0.0028	0.0017	0.0015	0.0016	0.1816	0.3193	0.0002	0.0082	-0.0004	0.0090
15C	-0.0001	0.0035	-0.0037	0.0100	0.0001	0.0011	-0.0002	0.0010	-0.2382	0.2381	0.0001	0.0052	-0.0006	0.0053

GAMMA SPECTRA - QTR 4 (10/04/16 - 12/27/16)

LOCATION	Be-7	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)
01	**0.1116**	**0.0408**	0.0006	0.0019	0.0003	0.0030	0.0017	0.0015	-0.0001	0.0033	-0.0004	0.0025	0.0008	0.0043
02	**0.1087**	**0.0288**	-0.0004	0.0016	-0.0018	0.0020	-0.0002	0.0013	0.0024	0.0035	-0.0005	0.0019	-0.0001	0.0040
03	**0.1049**	**0.0260**	-0.0002	0.0014	-0.0006	0.0021	0.0007	0.0014	0.0018	0.0035	0.0024	0.0022	-0.0039	0.0042
04	**0.0776**	**0.0390**	-0.0010	0.0019	0.0005	0.0028	-0.0001	0.0016	0.0020	0.0046	-0.0006	0.0031	0.0024	0.0058
10	**0.1034**	**0.0306**	-0.0001	0.0013	0.0003	0.0018	0.0004	0.0010	0.0006	0.0028	0.0002	0.0018	0.0014	0.0034
11	**0.0955**	**0.0295**	0.0012	0.0015	0.0020	0.0017	0.0004	0.0012	-0.0012	0.0036	0.0004	0.0021	0.0011	0.0046
27	**0.1322**	**0.0410**	0.0001	0.0020	-0.0016	0.0031	-0.0001	0.0016	0.0027	0.0053	0.0003	0.0033	0.0017	0.0061
15C	**0.0796**	**0.0300**	-0.0003	0.0013	0.0010	0.0022	0.0002	0.0011	0.0011	0.0029	-0.0001	0.0021	0.0009	0.0037

LOCATION	Ru-103	(+/-)	Ru-106	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)
01	0.0030	0.0040	0.0020	0.0144	0.0011	0.0017	0.0013	0.0016	-0.1188	0.1425	-0.0049	0.0066	0.0026	0.0088
02	-0.0008	0.0025	-0.0002	0.0121	0.0010	0.0013	0.0003	0.0014	-0.0078	0.1018	0.0057	0.0044	-0.0026	0.0057
03	-0.0017	0.0031	0.0200	0.0133	0.0017	0.0013	-0.0003	0.0014	0.0308	0.1311	0.0002	0.0054	-0.0086	0.0071
04	-0.0022	0.0042	-0.0065	0.0162	0.0006	0.0015	0.0008	0.0018	-0.0694	0.1364	-0.0024	0.0050	-0.0048	0.0066
10	-0.0006	0.0026	0.0030	0.0091	0.0005	0.0012	-0.0001	0.0011	-0.0813	0.0950	-0.0001	0.0041	-0.0008	0.0057
11	-0.0010	0.0029	-0.0019	0.0131	0.0014	0.0016	0.0001	0.0012	-0.0489	0.1249	-0.0001	0.0052	-0.0048	0.0069
27	-0.0023	0.0046	-0.0033	0.0187	-0.0006	0.0025	0.0007	0.0015	-0.0624	0.1651	-0.0008	0.0073	-0.0078	0.0099
15C	-0.0010	0.0029	0.0055	0.0099	0.0006	0.0013	-0.0008	0.0009	0.0195	0.1002	-0.0023	0.0040	0.0025	0.0051

TABLE 5
SOIL
(pCi/g dry wt.)

C= Control location, Background location
Results in bold type are positive.

LOCATIONS

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
03	11/2/2016	0.259	0.416	**16.280**	**1.702**	0.027	0.402	-0.007	0.047	-0.009	0.043	-0.047	0.096
04	11/2/2016	-0.122	0.454	**12.300**	**1.373**	-0.344	0.500	-0.040	0.050	-0.045	0.049	0.030	0.084
14C	11/2/2016	0.403	0.482	**12.980**	**1.641**	-0.458	0.466	-0.003	0.057	0.027	0.061	-0.032	0.114

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
03	11/2/2016	-0.003	0.046	0.061	0.108	0.015	0.049	0.017	0.080	0.032	0.048	-0.280	0.378
04	11/2/2016	0.009	0.043	0.211	0.122	0.003	0.053	0.045	0.089	-0.057	0.063	-0.291	0.442
14C	11/2/2016	-0.053	0.053	0.023	0.115	0.044	0.069	-0.034	0.108	0.048	0.055	-0.029	0.486

LOCATION	COLLECTION DATE	Sb-125	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
03	11/2/2016	-0.020	0.122	-0.029	0.045	0.062	0.053	0.067	0.078	-0.257	0.313	**0.654**	**0.327**
04	11/2/2016	0.036	0.147	0.012	0.061	**0.387**	**0.087**	-0.040	0.098	0.137	0.386	**0.789**	**0.256**
14C	11/2/2016	-0.013	0.155	0.010	0.059	0.075	0.065	0.008	0.078	0.015	0.294	0.029	0.518

TABLE 6
MILK
(pCi/l)
Results in bold type are positive.

LOCATION	COLLECTION DATE	I-131	(+/-)	Sr-89	(+/-)	Sr-90	(+/-)	K-40	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)
22 Cow	01/19/16	-0.331	0.353					**1225**	**80.4**	-1.092	2.274	-0.441	2.123	0.799	10.74	-1.579	2.966
	02/11/16	-0.657	0.327					**1114**	**165**	0.437	4.220	-2.115	5.445	-5.514	22.40	0.842	7.028
	03/15/16	0.061	0.498	-0.7	3.4	0.2	0.2	**1392**	**166**	-0.757	4.511	0.344	3.929	14.71	17.21	1.805	5.193
	04/07/16	-0.087	0.353					**1350**	**212**	-9.237	6.440	-2.879	6.753	3.053	22.79	1.738	7.006
	05/11/16	0.162	0.363					**1259**	**211**	0.736	8.515	-4.298	8.446	-11.36	37.06	0.982	14.73
	05/25/16	-0.190	0.374					**1294**	**138**	2.408	3.702	0.720	4.140	-3.087	20.60	0.027	6.007
	06/07/16	0.081	0.490					**1203**	**144**	2.866	3.895	-2.963	3.883	1.693	20.93	-0.642	5.405
	06/20/16	0.334	0.522	0.01	3.5	0.9	0.8	**1129**	**194**	-4.271	5.163	-2.082	6.144	2.452	25.16	-1.764	10.05
	07/06/16	-0.046	0.250					**1283**	**200**	0.932	6.112	3.075	5.567	-2.256	24.73	2.155	5.881
	07/19/16	0.087	0.355					**1225**	**162**	-7.864	4.108	-5.358	4.177	-19.69	17.62	-5.412	4.871
	08/03/16	0.100	0.420					**1432**	**193**	3.628	4.308	2.988	5.687	2.950	23.67	4.931	4.856
	08/17/16	-0.046	0.227					**1236**	**183**	1.034	5.332	0.566	4.637	-3.188	16.16	-1.266	4.826
	09/07/16	0.230	0.343					**1309**	**134**	1.248	3.543	1.868	3.583	-7.416	13.15	0.339	4.365
	09/20/16	0.407	0.405	4.9	5.3	0.9	0.7	**1148**	**167**	3.740	4.881	-1.128	4.660	-12.35	23.58	-1.987	7.442
	10/04/16	0.007	0.257					**1319**	**122**	2.337	4.134	4.039	4.774	-11.07	24.32	-1.785	5.730
	10/18/16	0.091	0.388					**1204**	**123**	1.905	2.794	0.425	3.157	-6.577	13.05	-0.454	4.624
	11/23/16	-0.108	0.284					**1222**	**153**	0.724	4.965	0.230	5.337	-7.521	23.29	1.694	6.494
	12/12/16	-0.143	0.284	0.3	4.2	0.6	0.5	**1527**	**164**	3.841	6.540	-1.639	5.372	8.798	22.59	5.038	5.747
23 Goat	10/05/16	0.033	0.322					**2031**	**228**	-0.491	4.833	5.659	5.047	6.802	23.74	2.507	6.110
	11/02/16	0.162	0.367					**1892**	**224**	-0.879	5.403	-2.253	4.999	1.364	23.92	3.183	6.382
	12/07/16	0.251	0.388	1.4	3.7	0.3	0.5	**1687**	**229**	-6.117	6.577	-0.742	6.191	-2.652	25.79	-0.337	8.407

TABLE 7
WELL WATER
(pCi/l)

LOCATION	COLLECTION DATE	H-3	(+/-)	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
71	03/17/16	255	587	-7.88	45.1	12.4	82.7	15.3	44.0	0.44	5.06	-2.09	5.81	-1.55	11.4	0.63	5.41
	06/22/16	-109	618	19.8	29.2	-48.0	66.1	-1.87	30.6	-1.84	4.07	-0.38	3.93	-7.00	7.48	-1.01	3.25
	09/21/16	-236	542	9.65	38.6	-6.67	64.4	20.1	42.4	-0.22	4.37	-2.65	4.36	-5.97	9.11	1.53	4.43
	12/22/16	709	564	6.33	17.5	-11.6	27.1	3.05	19.1	-0.48	1.65	-0.18	1.80	-0.42	3.78	0.16	1.84
72	03/16/16	-181	534	27.6	41.4	14.2	79.2	-11.2	46.7	-4.84	4.47	-1.53	4.96	-4.47	9.33	1.65	5.16
	06/22/16	186	647	3.81	32.5	-9.75	53.7	-9.61	36.2	-3.32	3.24	1.35	3.60	-3.27	8.38	-0.34	3.33
	09/21/16	6	560	18.9	37.6	-24.8	68.6	15.9	41.9	-0.82	4.24	-0.39	4.90	-2.49	8.50	-0.89	4.04
	12/21/16	98	514	-7.19	14.0	15.3	28.3	3.45	15.5	0.18	1.51	-0.22	1.60	1.70	3.12	-0.17	1.63
76 Control (Background)	03/09/16	444	629	-11.9	39.2	23.5	80.9	-8.54	45.4	1.56	4.32	-0.65	3.63	2.58	8.06	1.60	4.47
	06/06/16	248	543	4.41	26.8	-0.08	46.7	6.75	29.3	-2.36	2.78	-2.43	2.81	4.02	6.00	-0.36	3.09
	09/14/16	-192	536	-3.50	27.6	15.5	61.6	-14.8	23.8	-0.79	2.93	-0.40	2.85	1.05	6.26	-1.57	3.16
	12/13/16	-64	500	8.35	30.2	-52.2	61.4	18.5	38.8	-0.98	3.76	0.22	4.55	1.88	8.12	-0.40	3.76
77	03/09/16	520	637	-17.1	36.6	4.31	95.1	17.9	37.2	-1.78	4.49	-1.71	3.59	-8.61	7.82	-3.93	3.96
	06/06/16	13	525	21.0	33.9	11.2	78.7	-26.1	41.2	-2.78	4.16	-1.19	4.10	-4.16	9.11	-1.85	4.66
	09/14/16	432	580	-32.0	29.7	47.2	74.2	-18.2	30.5	-1.77	3.24	-3.62	3.44	1.89	6.64	-3.11	2.95
	12/13/16	201	527	6.75	41.5	-61.3	67.4	-6.35	51.9	-1.16	5.28	-3.39	5.15	-15.7	10.4	0.72	5.98
78	03/09/16	618	643	21.8	36.2	1.02	56.2	-16.3	43.1	1.57	3.93	-1.47	4.42	0.55	7.64	-0.87	4.13
	06/06/16	549	567	6.26	28.3	-25.3	51.1	-2.05	31.9	0.39	3.22	-0.15	3.07	3.53	6.58	1.04	2.69
	09/14/16	6	555	39.3	43.2	82.8	71.3	-72.7	47.3	-5.12	4.24	-0.31	4.21	-2.39	7.00	-0.78	3.81
	12/13/16	114	528	-10.4	38.9	-2.57	56.0	-9.15	38.7	-2.38	4.52	-3.20	4.24	2.11	7.92	-0.95	5.42
79	03/16/16	-158	556	-2.32	36.0	51.6	60.9	-32.3	38.5	-1.99	4.42	-2.27	3.95	5.42	8.25	-1.28	3.65
	06/22/16	530	671	-17.4	29.3	10.4	68.2	18.1	34.3	-0.61	2.51	-0.64	3.46	1.02	7.05	3.05	3.24
	09/21/16	683	610	-26.8	34.7	70.8	69.9	36.6	45.9	0.71	3.54	-0.40	4.22	1.20	7.73	0.34	3.06
	12/21/16	475	545	3.88	18.0	42.4	53.1	1.35	19.8	-1.23	2.31	0.04	2.18	0.90	4.87	0.77	2.16
81	03/16/16	495	596	29.4	36.0	17.2	78.4	21.3	39.4	1.14	4.20	1.20	4.33	1.37	9.12	2.64	3.93
	06/22/16	858	690	-23.6	27.8	-12.0	55.4	-32.8	30.1	2.72	3.04	-0.75	3.22	-1.53	7.98	1.29	3.35
	09/21/16	232	582	7.16	40.9	57.1	84.3	2.17	46.6	-2.20	4.21	1.26	4.70	-1.89	9.23	-1.58	4.39
	12/22/16	800	566	-15.8	16.6	-1.17	27.3	-7.48	18.3	0.25	1.83	-1.46	1.84	0.07	3.76	0.22	1.81
82	03/16/16	294	591	-23.7	48.6	-15.4	58.3	-6.77	49.0	-2.24	5.27	-4.70	5.38	0.14	9.15	3.03	5.14
	06/22/16	-96	626	-13.2	36.0	65.0	67.2	-8.52	39.8	-2.17	3.87	-0.13	3.99	4.92	7.36	-0.52	3.86
	09/21/16	96	569	5.37	40.2	-32.3	61.7	-2.77	43.5	-0.92	3.79	-1.48	4.64	0.73	8.89	2.00	4.55
	12/22/16	534	545	-7.13	25.3	-9.5	43.3	-12.5	27.8	-2.84	2.67	-3.01	2.62	0.51	5.49	-0.81	2.51
83	03/16/16	-71	581	-2.17	39.9	72.4	88.9	2.68	44.6	1.08	4.45	0.07	4.48	3.11	9.10	-2.02	3.51
	06/22/16	184	640	-26.5	36.1	59.5	121	9.04	38.5	1.57	4.90	-1.86	4.17	-11.6	9.68	1.39	3.12
	09/21/16	83	565	1.74	39.4	34.5	78.6	7.92	45.4	-0.86	4.04	-4.48	4.25	-3.95	7.39	0.39	4.61
	12/20/16	383	537	8.79	17.5	40.5	42.4	-2.02	19.9	-0.46	2.01	-0.05	2.09	3.38	4.17	-0.50	2.11

TABLE 7
WELL WATER
(pCi/l)

LOCATION	COLLECTION DATE	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)
71	03/17/16	-21.7	15.6	1.40	5.78	1.38	10.3	2.94	5.58	9.23	41.0	10.0	14.9	3.26	6.96	3.66	5.68
	06/22/16	-4.95	6.24	-3.72	4.61	-0.84	6.05	1.50	4.43	-3.04	34.3	0.14	9.09	0.93	6.07	2.71	3.45
	09/21/16	4.02	9.09	10.3	5.47	-1.87	7.60	0.41	4.27	15.0	41.3	12.9	12.0	-0.24	7.84	-2.13	4.78
	12/22/16	1.23	3.90	1.38	2.12	-0.45	3.52	-2.50	2.15	-2.88	17.0	2.88	5.37	-1.64	3.63	0.83	2.14
72	03/16/16	3.69	10.4	3.25	5.46	-2.84	8.36	-5.71	5.30	19.7	39.9	-5.90	14.1	4.04	7.46	-5.45	5.45
	06/22/16	-0.72	6.52	3.62	3.84	0.23	6.23	3.15	4.24	12.5	33.8	5.67	9.79	1.62	7.59	-1.36	3.79
	09/21/16	4.06	9.19	0.52	5.07	5.89	8.29	-1.35	4.17	24.2	38.7	6.08	11.7	5.18	8.18	-2.26	4.85
	12/21/16	-1.79	3.96	0.59	1.62	0.13	2.79	0.44	1.73	-3.36	14.9	5.91	4.31	2.16	3.44	-0.54	1.76
76	03/09/16	6.47	9.09	-3.32	4.68	-2.69	7.86	-3.82	6.22	-7.32	37.9	18.6	12.9	-1.47	8.42	0.03	4.72
	06/06/16	-10.2	6.83	0.99	2.76	-0.98	4.74	-2.72	3.28	3.25	23.3	-1.49	8.37	0.26	6.86	-6.79	3.50
	09/14/16	3.39	6.65	-2.12	3.33	-2.61	4.71	0.55	3.18	-9.28	26.5	2.85	8.48	1.01	4.63	0.88	3.27
	12/13/16	-11.0	9.05	0.98	4.65	-3.37	8.65	0.17	3.82	-35.3	40.8	3.93	12.4	2.14	5.91	0.19	3.42
77	03/09/16	-2.11	9.71	3.62	5.10	-2.31	5.91	-0.87	4.07	3.91	35.1	-6.14	12.8	-4.94	6.23	-3.87	4.39
	06/06/16	-22.9	12.2	3.13	4.38	4.26	6.78	1.94	4.75	-11.1	37.0	3.79	11.6	-8.25	9.48	-2.33	3.76
	09/14/16	-3.84	8.30	3.72	3.95	-0.67	5.47	-1.52	3.59	25.3	30.9	9.81	9.49	-4.70	5.03	1.49	3.47
	12/13/16	8.35	9.16	9.24	6.76	-3.37	8.66	-0.48	5.41	-11.8	41.5	-8.51	16.3	-1.27	6.94	0.66	5.28
78	03/09/16	-0.33	8.96	5.22	4.56	3.61	6.77	0.00	4.72	-3.18	38.3	5.49	12.3	3.23	7.43	2.14	4.19
	06/06/16	-3.35	6.50	-1.08	3.69	-0.34	5.28	-1.85	3.68	3.03	26.7	1.28	8.69	-1.39	7.89	0.84	3.71
	09/14/16	9.79	9.77	3.78	4.54	0.68	7.71	-0.19	5.51	-31.3	44.9	2.93	13.2	5.29	8.98	18.3	6.68
	12/13/16	-2.18	11.3	0.57	4.46	0.48	6.81	-0.75	4.73	-8.48	41.5	-2.34	13.9	-0.27	5.79	1.83	4.72
79	03/16/16	-10.6	9.70	5.52	4.37	-2.59	7.54	1.80	4.31	29.1	33.5	-0.90	11.1	0.89	6.00	-2.11	4.51
	06/22/16	-0.28	7.30	3.29	3.30	0.07	6.21	1.20	3.54	4.19	26.4	-3.00	8.58	0.06	6.95	-0.93	3.70
	09/21/16	5.21	9.37	1.47	4.54	0.07	7.00	-1.22	4.60	-22.4	39.3	-1.70	12.2	-6.98	9.37	10.4	5.91
	12/21/16	-0.21	4.83	0.62	2.25	0.00	3.76	-1.17	2.22	7.22	21.5	-2.64	6.04	1.90	4.26	0.39	2.23
81	03/16/16	-0.92	10.6	8.79	5.48	1.08	6.95	1.73	4.51	-12.4	40.3	7.94	13.4	1.44	6.44	7.40	5.39
	06/22/16	2.72	6.47	2.22	3.66	-2.40	6.06	-2.58	3.91	-1.09	29.5	-2.62	8.76	-0.30	7.10	2.07	3.23
	09/21/16	-0.38	7.84	1.57	4.78	-3.22	8.88	-2.78	4.80	11.4	40.6	5.24	13.7	2.26	8.49	1.96	4.68
	12/22/16	-1.01	4.51	2.05	2.24	-2.08	3.27	-0.97	2.00	-13.4	15.0	-0.78	4.99	1.76	3.67	-0.26	1.97
82	03/16/16	-3.61	11.2	22.6	6.78	1.99	8.27	-2.39	5.58	-34.8	43.0	-0.51	16.1	2.86	8.29	1.91	5.35
	06/22/16	-1.38	8.44	7.54	5.20	-0.87	6.70	-2.99	4.16	-4.25	34.0	-3.68	11.0	4.84	8.24	-1.52	4.48
	09/21/16	-3.37	10.6	3.26	5.28	-0.20	7.52	-2.19	4.63	-11.7	39.6	-4.19	12.4	-5.92	8.64	-2.34	4.92
	12/22/16	0.27	6.04	10.4	3.37	-1.95	4.26	-3.23	3.03	10.4	21.6	-1.14	7.89	3.02	5.61	1.51	2.90
83	03/16/16	-23.2	12.9	4.76	5.04	1.76	7.89	2.11	4.65	-11.9	42.0	2.28	13.0	1.50	7.42	-3.16	5.33
	06/22/16	-1.70	6.67	-4.45	5.61	4.51	7.94	-2.32	4.16	3.44	42.3	0.48	10.5	3.31	8.37	1.70	3.72
	09/21/16	-5.28	9.45	3.15	4.59	0.10	6.37	1.24	4.63	3.66	41.6	-4.60	12.0	1.17	8.37	-3.44	5.15
	12/20/16	0.80	4.64	3.52	2.37	2.02	3.60	-1.25	2.24	-9.46	17.6	-3.19	5.51	-0.95	4.37	1.58	2.71

TABLE 7
WELL WATER
(pCi/l)

LOCATION	COLLECTION DATE	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ac-228	(+/-)
71	03/17/16	5.15	5.49	-8.14	21.8	-2.12	7.72	2.14	19.0
	06/22/16	1.66	3.78	20.5	20.5	-4.71	6.99	-13.5	13.4
	09/21/16	-1.84	5.06	-19.7	24.6	-2.12	8.63	-4.61	17.4
	12/22/16	-1.13	2.00	3.44	10.3	-2.45	3.01	2.93	7.06
72	03/16/16	0.80	5.66	-8.94	22.1	0.25	6.51	5.51	17.0
	06/22/16	-3.07	3.80	-18.8	20.6	-0.07	6.95	-0.71	14.0
	09/21/16	3.52	4.17	3.19	22.9	-1.86	8.11	0.03	16.7
	12/21/16	-0.32	1.83	0.91	8.56	-2.06	2.54	-1.30	6.69
76	03/09/16	-0.66	4.27	-16.1	20.5	1.15	6.54	12.7	14.9
	06/06/16	0.93	2.51	3.24	17.9	-3.82	4.85	-7.61	10.8
	09/14/16	1.79	3.20	-0.53	12.8	-0.61	3.74	1.13	12.5
	12/13/16	-2.13	4.97	5.59	14.6	0.17	6.12	2.57	13.1
77	03/09/16	-5.78	4.63	14.5	18.4	-0.14	5.87	-7.57	16.0
	06/06/16	0.41	4.33	-10.5	22.6	-6.18	6.87	5.15	14.9
	09/14/16	1.62	3.88	3.75	15.4	6.68	4.70	-5.43	12.6
	12/13/16	-2.60	5.99	5.32	21.9	-4.34	5.69	-4.85	18.4
78	03/09/16	1.05	4.41	-0.87	19.8	1.33	5.50	19.6	16.8
	06/06/16	-2.37	3.21	-6.49	17.0	-2.22	4.81	-3.48	12.2
	09/14/16	1.27	4.65	8.54	21.2	0.90	5.99	-0.98	16.8
	12/13/16	-1.16	4.92	-4.97	16.9	-0.04	5.60	-3.02	16.6
79	03/16/16	0.96	3.90	-13.0	18.7	4.87	6.26	-6.92	15.2
	06/22/16	0.91	3.45	1.93	16.8	2.85	5.80	-9.10	11.7
	09/21/16	0.61	4.36	-2.66	23.1	-4.71	5.30	-9.39	14.1
	12/21/16	1.29	2.33	-1.60	11.5	-5.00	3.75	0.98	9.08
81	03/16/16	2.11	4.55	-12.2	18.0	3.83	5.07	-8.36	15.5
	06/22/16	0.02	3.25	-14.7	20.8	0.72	5.57	10.8	22.4
	09/21/16	-0.61	4.30	-1.08	23.4	0.78	7.41	-3.19	15.9
	12/22/16	-0.74	1.90	-2.61	10.1	0.47	3.35	-2.76	6.63
82	03/16/16	-2.48	5.74	23.6	23.7	-4.88	7.45	13.2	20.0
	06/22/16	-2.02	3.77	-3.38	21.2	-0.59	7.97	2.61	14.5
	09/21/16	-11.4	5.48	-41.2	23.5	1.52	7.06	-5.01	17.6
	12/22/16	1.07	3.02	-1.50	15.0	-2.83	5.03	-9.83	10.4
83	03/16/16	-1.41	4.63	-7.80	20.2	1.96	6.32	-12.4	15.7
	06/22/16	0.17	4.39	-10.6	23.5	-2.05	6.44	-22.9	17.7
	09/21/16	-3.89	4.52	8.24	20.8	-3.96	7.33	-5.00	13.6
	12/20/16	1.07	2.06	5.45	11.6	0.09	3.78	1.69	7.89

TABLE 8
FRUITS & VEGETABLES
(pCi/g wet wt.)

LOCATION 25 fruit are extra samples not required by the REMODCM)
results in bold type are positive.

COLLECTION DATE	Type	Be-7		K-40		Cr-51		Mn-54		Co-58		Fe-59		Co-60	
			(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
07/18/16	Lettuce	0.044	0.076	**1.890**	**0.291**	-0.052	0.084	-0.006	0.009	0.002	0.009	0.010	0.019	-0.004	0.009
07/18/16	Blueberries	0.054	0.108	**0.867**	**0.282**	0.033	0.118	0.006	0.012	-0.003	0.014	-0.015	0.024	0.002	0.012
10/10/16	Squash	0.049	0.130	**2.111**	**0.522**	0.010	0.137	0.002	0.021	-0.006	0.017	-0.004	0.037	-0.006	0.015
10/10/16	Apples	-0.026	0.122	**0.802**	**0.276**	-0.027	0.109	0.002	0.015	-0.014	0.014	-0.012	0.026	0.002	0.016

COLLECTION DATE	Type	Zn-65		Nb-95		Zr-95		Ru-103		Ru-106		Sb-125		I-131	
			(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
07/18/16	Lettuce	-0.017	0.024	-0.007	0.008	0.004	0.015	-0.008	0.008	-0.069	0.091	-0.012	0.026	-0.004	0.017
07/18/16	Blueberries	-0.008	0.023	-0.004	0.014	0.005	0.020	0.005	0.012	-0.012	0.111	-0.018	0.035	0.005	0.022
10/10/16	Squash	0.010	0.046	0.001	0.019	0.006	0.036	0.002	0.016	-0.102	0.154	-0.018	0.043	-0.007	0.019
10/10/16	Apples	0.026	0.029	0.006	0.016	0.006	0.024	0.006	0.013	-0.024	0.132	0.012	0.043	0.002	0.015

COLLECTION DATE	Type	Cs-134		Cs-137		Ba-140		La-140		Ce-141		Ce-144		Ac-228	
			(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
07/18/16	Lettuce	-0.001	0.010	0.002	0.009	0.007	0.043	-0.003	0.011	0.001	0.014	0.007	0.060	0.015	0.033
07/18/16	Blueberries	-0.012	0.014	0.002	0.014	0.039	0.057	0.006	0.018	-0.002	0.020	-0.021	0.079	-0.032	0.050
10/10/16	Squash	-0.005	0.021	-0.009	0.018	0.060	0.064	-0.003	0.020	0.017	0.021	0.015	0.087	-0.050	0.065
10/10/16	Apples	-0.002	0.017	-0.005	0.016	0.017	0.065	-0.015	0.017	-0.009	0.019	-0.014	0.089	0.059	0.061

TABLE 8
FRUITS & VEGETABLES
(pCi/g wet wt.)

LOCATION 26C (fruit are extra samples not required by the REMODCM
results in bold type are positive

COLLECTION DATE	Type	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/18/16	Lettuce	0.110	0.130	**1.771**	**0.452**	-0.072	0.140	0.015	0.016	-0.012	0.016	0.025	0.037	-0.009	0.017
07/18/16	Blueberries	0.060	0.077	**0.802**	**0.218**	-0.029	0.083	-0.009	0.009	-0.007	0.009	-0.004	0.021	0.005	0.009
10/10/16	Squash	-0.117	0.134	**1.793**	**0.433**	-0.001	0.130	0.008	0.017	-0.004	0.016	0.012	0.030	0.009	0.017
10/10/16	Apples	-0.090	0.124	**0.770**	**0.295**	0.077	0.108	0.011	0.013	-0.003	0.013	0.020	0.031	-0.001	0.011

COLLECTION DATE	Type	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/18/16	Lettuce	0.000	0.039	0.012	0.013	0.029	0.026	0.005	0.016	-0.098	0.138	-0.037	0.044	0.001	0.027
07/18/16	Blueberries	-0.014	0.023	0.010	0.008	0.012	0.014	-0.007	0.009	-0.019	0.079	0.009	0.025	0.004	0.016
10/10/16	Squash	-0.045	0.034	-0.007	0.016	0.016	0.027	0.002	0.016	0.027	0.155	-0.007	0.041	0.000	0.018
10/10/16	Apples	0.013	0.037	0.003	0.015	0.004	0.023	-0.002	0.013	0.022	0.129	-0.028	0.041	0.011	0.014

COLLECTION DATE	Type	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/18/16	Lettuce	-0.046	0.020	-0.001	0.015	0.091	0.079	-0.005	0.025	0.011	0.024	0.010	0.088	-0.047	0.058
07/18/16	Blueberries	-0.003	0.011	-0.002	0.009	0.007	0.042	0.005	0.014	-0.006	0.016	-0.020	0.059	-0.001	0.035
10/10/16	Squash	-0.001	0.020	-0.006	0.016	-0.016	0.063	-0.005	0.019	0.004	0.021	-0.017	0.084	0.054	0.063
10/10/16	Apples	0.008	0.012	0.007	0.014	0.012	0.048	0.003	0.013	0.014	0.019	0.024	0.085	0.034	0.068

TABLE 9
BROADLEAF VEGETATION
(pCi/g wet wt.)
Results in bold type are positive.

LOCATION 1

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/26/16	**0.814**	**0.259**	**4.441**	**0.602**	-0.205	0.200	-0.003	0.021	-0.009	0.019	-0.009	0.047	0.007	0.021
10/04/16	**1.629**	**0.349**	**4.642**	**0.751**	0.048	0.182	0.003	0.020	-0.018	0.018	0.011	0.039	0.003	0.020

COLLECTION DATE	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/26/16	0.003	0.065	0.014	0.023	-0.020	0.041	-0.007	0.022	-0.031	0.196	0.011	0.056	-0.017	0.036
10/04/16	-0.021	0.051	0.001	0.019	-0.004	0.032	0.002	0.018	0.035	0.150	0.004	0.057	0.010	0.031

COLLECTION DATE	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/26/16	-0.012	0.026	0.011	0.020	-0.060	0.106	0.015	0.030	-0.001	0.035	-0.045	0.130	0.014	0.148
10/04/16	0.001	0.022	-0.004	0.019	-0.022	0.083	-0.003	0.020	-0.017	0.031	0.017	0.126	0.097	0.085

LOCATION 10

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/26/16	**0.623**	**0.215**	**4.946**	**0.656**	-0.109	0.198	-0.010	0.019	-0.009	0.020	-0.016	0.047	0.010	0.024
10/04/16	**0.698**	**0.269**	**4.142**	**0.725**	-0.137	0.219	0.003	0.018	-0.013	0.019	0.025	0.047	0.021	0.021

COLLECTION DATE	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/26/16	0.051	0.057	-0.002	0.022	0.015	0.036	-0.003	0.022	-0.047	0.172	0.001	0.056	-0.014	0.036
10/04/16	0.015	0.046	0.011	0.021	0.018	0.035	0.003	0.024	-0.126	0.190	0.017	0.058	-0.013	0.036

COLLECTION DATE	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/26/16	-0.009	0.026	0.006	0.024	-0.012	0.110	0.003	0.030	-0.021	0.036	-0.063	0.139	0.097	0.071
10/04/16	-0.015	0.025	-0.001	0.025	-0.024	0.106	0.021	0.026	-0.036	0.036	0.208	0.147	0.081	0.088

TABLE 9
BROADLEAF VEGETATION
(pCi/g wet wt.)
Results in bold type are positive.

LOCATION 17

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/26/16	**0.620**	**0.255**	**4.187**	**0.649**	-0.012	0.176	-0.003	0.019	-0.004	0.017	-0.003	0.041	-0.013	0.021
10/04/16	**1.056**	**0.226**	**4.106**	**0.479**	-0.007	0.115	0.004	0.014	-0.008	0.015	-0.017	0.031	0.008	0.015

COLLECTION DATE	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/26/16	-0.011	0.040	0.017	0.017	-0.025	0.031	-0.004	0.019	0.140	0.159	0.023	0.051	0.020	0.029
10/04/16	-0.017	0.030	0.006	0.016	-0.015	0.025	0.008	0.013	0.062	0.129	0.002	0.037	0.009	0.020

COLLECTION DATE	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/26/16	-0.028	0.020	0.006	0.019	-0.032	0.093	0.002	0.021	0.008	0.029	0.021	0.100	0.132	0.081
10/04/16	0.000	0.013	-0.008	0.013	-0.030	0.065	-0.013	0.018	0.004	0.020	0.005	0.090	0.040	0.061

LOCATION 26C C= Control location, Background location

COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)	Co-60	(+/-)
07/26/16	**0.649**	**0.318**	**4.019**	**0.730**	-0.075	0.199	-0.003	0.021	0.001	0.019	0.013	0.043	0.009	0.020
10/04/16	**0.743**	**0.313**	**4.117**	**0.713**	-0.037	0.188	0.002	0.020	-0.005	0.019	-0.015	0.037	0.008	0.021

COLLECTION DATE	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)	I-131	(+/-)
07/26/16	0.013	0.056	-0.001	0.018	0.035	0.035	-0.011	0.022	0.066	0.196	0.038	0.052	0.012	0.034
10/04/16	0.008	0.045	0.001	0.020	0.001	0.035	0.007	0.019	0.065	0.181	0.007	0.062	0.005	0.032

COLLECTION DATE	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ce-141	(+/-)	Ce-144	(+/-)	Ac-228	(+/-)
07/26/16	0.003	0.021	-0.009	0.022	-0.003	0.105	0.001	0.024	-0.005	0.036	-0.042	0.142	0.106	0.084
10/04/16	0.011	0.021	-0.013	0.022	-0.036	0.095	0.003	0.020	-0.007	0.037	0.126	0.142	-0.036	0.082

TABLE 10
SEA WATER (pCi/l)
Results in bold type are positive.

LOCATION 32

COLLECTION DATE	H-3	(+/-)	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
01/26/16	-55	163	3.51	47.2	**498**	**110**	-21.1	50.7	-1.18	5.03	-0.04	5.39	10.4	11.5
02/23/16	**477**	**133**	12.0	31.4	**247**	**117**	-3.31	36.1	2.25	4.48	2.74	4.27	-3.02	9.24
03/29/16	**789**	**151**	31.7	35.9	**363**	**87**	-68.9	40.4	-5.27	4.11	-0.73	3.72	0.48	8.11
04/26/16	**3660**	**431**	-2.03	8.39	**333**	**30**	-5.20	9.11	0.19	0.92	0.01	0.99	-0.71	2.08
05/31/16	**2660**	**350**	-0.53	12.9	**307**	**37**	5.40	16.6	0.45	1.25	-0.53	1.39	2.80	3.32
06/28/16	**1040**	**252**	-42.8	36.6	**151**	**118**	-13.0	42.2	6.62	5.11	0.86	4.12	3.58	7.36
07/26/16	255	181	37.8	40.0	**347**	**125**	19.1	46.0	-3.02	4.26	-5.49	4.68	-5.13	9.69
08/30/16	**348**	**192**	3.11	47.7	**272**	**110**	-11.4	48.7	1.03	4.74	-1.14	4.65	4.33	10.2
09/27/16	**313**	**121**	14.5	30.5	**236**	**91**	-1.96	29.4	1.09	4.17	0.19	3.86	0.60	7.92
10/25/16	**257**	**180**	-14.0	37.2	**315**	**105**	24.2	36.5	0.36	4.27	-0.34	4.07	-8.20	9.28
11/29/16	**302**	**186**	-30.3	38.1	**373**	**106**	-24.0	39.8	0.22	4.47	-0.81	3.89	1.41	9.84
12/27/16	**308**	**171**	-3.21	30.8	**243**	**97**	-4.66	32.5	0.46	3.64	0.21	2.81	-2.85	6.75

COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)
01/26/16	2.81	5.94	11.6	11.8	0.72	5.07	0.02	9.55	1.11	6.30	-9.44	49.1	-4.66	14.2
02/23/16	-0.19	4.05	-0.30	8.40	1.49	4.39	-1.91	5.97	-2.15	3.83	4.06	37.1	-3.30	11.3
03/29/16	-0.03	3.63	7.83	8.51	-0.57	3.87	1.86	6.79	1.82	3.86	11.3	33.8	-4.83	9.77
04/26/16	-0.19	0.97	1.52	2.30	0.49	1.03	-1.20	1.74	-0.25	1.17	-3.57	8.39	0.36	2.54
05/31/16	0.66	1.34	-0.72	3.04	0.23	1.46	1.91	2.60	-1.13	1.82	6.69	11.7	-0.76	3.60
06/28/16	1.36	4.41	0.30	10.2	-0.36	4.40	-0.08	6.91	-1.96	4.72	16.0	38.3	-7.25	10.2
07/26/16	2.92	4.35	-6.77	11.3	0.00	5.37	-3.38	9.15	-0.39	4.91	40.1	44.5	7.13	13.3
08/30/16	1.00	4.05	-0.24	11.8	5.39	5.05	5.59	7.79	0.17	5.00	-6.80	38.2	8.57	14.7
09/27/16	2.68	4.30	5.49	8.26	1.07	4.33	-2.06	5.74	-1.83	3.74	3.01	34.3	6.37	10.7
10/25/16	-2.02	4.83	-11.2	9.93	-3.19	5.11	-3.86	8.27	1.98	4.96	7.93	41.2	-2.68	12.2
11/29/16	2.20	4.01	-2.40	10.8	6.50	4.50	-2.63	7.15	0.01	4.69	7.93	41.1	6.05	11.1
12/27/16	-2.36	3.40	-8.03	8.09	-0.15	4.24	6.68	5.90	-0.36	3.88	-2.56	33.7	-11.7	9.13

COLLECTION DATE	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ac-228	(+/-)
01/26/16	-2.46	9.09	-7.81	7.06	2.38	5.53	0.23	24.9	-6.86	8.67	5.19	21.0
02/23/16	-0.10	6.61	-2.09	3.34	2.86	3.56	0.20	17.0	2.30	8.72	-18.0	20.0
03/29/16	-1.11	7.56	-2.40	4.32	1.31	3.71	-3.66	20.8	-1.54	7.21	-10.6	15.8
04/26/16	-0.80	1.99	0.00	1.01	0.33	1.01	-0.24	5.12	-1.27	1.83	0.56	5.66
05/31/16	3.55	6.27	-1.46	1.49	-1.47	1.30	0.80	11.6	-1.58	3.78	4.78	7.36
06/28/16	1.65	7.18	-1.44	4.64	-1.70	4.68	-8.27	19.3	-2.96	7.20	-18.4	17.4
07/26/16	10.3	7.68	-3.49	5.72	0.93	4.63	-12.9	20.1	-3.66	7.04	5.88	17.4
08/30/16	-6.64	9.58	-1.46	5.37	1.94	5.14	-6.97	26.9	-6.72	8.90	0.40	17.0
09/27/16	-0.52	4.33	-1.46	4.35	1.31	4.02	-2.32	13.8	-0.29	4.37	-1.90	15.6
10/25/16	2.21	8.74	-2.61	4.18	1.51	4.52	3.27	25.6	-0.97	6.76	15.2	17.9
11/29/16	4.62	7.02	-0.76	5.32	2.16	4.68	-2.32	20.7	0.27	7.18	-3.41	16.0
12/27/16	0.03	5.06	-2.85	4.18	-1.14	4.07	-12.1	16.1	3.80	4.89	-2.13	11.8

TABLE 10
SEA WATER (pCi/l)
Results in bold type are positive.

LOCATION 37C C= Control location, Background location

COLLECTION DATE	H-3	(+/-)	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
03/22/16	-32	105	3.14	41.6	**203**	**115**	-38.5	49.7	1.64	5.35	-5.35	5.02	-1.97	11.4
06/14/16	-19	107	-11.2	37.5	**240**	**120**	7.33	42.4	2.10	4.78	2.06	4.59	6.75	12.0
09/13/16	52	187	-17.3	26.0	**379**	**85**	1.79	27.3	1.34	3.18	-0.48	3.01	-0.02	6.32
12/13/16	44	151	0.16	45.6	**334**	**116**	18.6	41.3	2.86	5.35	2.33	4.86	-1.19	10.2

COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)	Sb-125	(+/-)
03/22/16	-2.79	5.64	0.96	10.8	1.12	5.12	-0.34	8.07	3.82	5.47	-31.1	50.4	6.09	12.0
06/14/16	-1.58	4.24	-8.24	10.8	-1.57	4.62	-1.88	7.57	-2.52	5.28	-3.82	46.2	9.40	12.7
09/13/16	-0.17	2.97	-1.17	8.22	0.52	3.18	-2.14	5.44	-1.02	3.54	-18.8	29.1	8.45	8.78
12/13/16	-2.47	5.72	-9.65	14.0	3.12	5.00	6.71	8.81	0.53	5.60	17.6	48.0	1.75	14.6

COLLECTION DATE	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ba-140	(+/-)	La-140	(+/-)	Ac-228	(+/-)
03/22/16	0.79	8.61	-4.60	5.87	3.31	5.63	-7.62	23.8	-6.40	5.66	-5.87	16.2
06/14/16	-7.27	7.25	-9.17	5.32	4.13	4.85	-5.70	24.5	1.15	7.21	-2.42	19.3
09/13/16	3.12	5.03	-0.10	3.44	1.18	3.16	7.88	14.2	-3.33	4.57	-2.64	13.6
12/13/16	-1.29	6.70	-1.54	5.70	1.82	5.79	18.43	21.9	-7.08	8.06	1.29	21.3

TABLE 11
BOTTOM SEDIMENT (pCi/g dry wt.)

C= Control location, Background location. Results in bold type are positive.

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
31	02/02/16	-0.151	0.502	**15.40**	**1.592**	-0.235	0.523	0.038	0.062	-0.050	0.053	0.020	0.099
31	12/08/16	0.075	0.241	**17.94**	**1.286**	0.110	0.279	-0.015	0.032	0.016	0.030	-0.006	0.071
32	06/13/16	0.043	0.483	**13.10**	**2.022**	-0.378	0.513	-0.006	0.059	-0.039	0.068	0.022	0.142
32	12/01/16	0.079	0.251	**14.46**	**1.140**	0.188	0.264	0.007	0.034	-0.021	0.030	0.001	0.062
33	04/15/16	-0.098	0.298	**15.24**	**1.514**	-0.041	0.316	0.006	0.034	-0.002	0.033	-0.026	0.069
33	12/09/16	0.036	0.269	**16.72**	**1.526**	-0.105	0.272	0.017	0.034	0.002	0.035	0.028	0.092
34	03/16/16	0.021	0.093	**10.77**	**1.222**	-0.113	0.096	-0.008	0.011	-0.006	0.011	0.003	0.024
34	12/09/16	0.041	0.204	**18.39**	**1.398**	-0.230	0.213	-0.005	0.024	0.010	0.021	0.011	0.070
37C	04/28/16	0.082	0.362	**14.85**	**1.574**	0.036	0.414	-0.007	0.039	0.019	0.039	-0.030	0.119
37C	12/09/16	0.088	0.235	**14.61**	**1.211**	-0.143	0.253	0.024	0.029	-0.011	0.028	-0.043	0.067

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
31	02/02/16	-0.026	0.047	-0.089	0.140	0.012	0.059	0.091	0.100	0.053	0.059	-0.460	0.527
31	12/08/16	0.011	0.032	-0.141	0.069	0.019	0.031	0.050	0.054	0.028	0.032	-0.120	0.242
32	06/13/16	-0.055	0.061	-0.082	0.178	0.049	0.066	0.105	0.119	-0.013	0.057	0.307	0.527
32	12/01/16	-0.021	0.033	-0.160	0.085	0.023	0.033	0.013	0.057	0.024	0.031	0.110	0.274
33	04/15/16	0.014	0.041	-0.109	0.095	0.017	0.038	0.035	0.065	-0.011	0.033	-0.059	0.281
33	12/09/16	0.002	0.033	-0.028	0.084	0.016	0.034	0.008	0.055	0.000	0.031	0.026	0.241
34	03/16/16	-0.004	0.012	-0.015	0.029	0.016	0.011	-0.010	0.018	0.006	0.011	0.068	0.102
34	12/09/16	0.020	0.032	-0.108	0.076	0.000	0.026	-0.033	0.048	0.002	0.027	0.125	0.206
37C	04/28/16	0.000	0.041	0.051	0.101	0.032	0.039	0.041	0.070	-0.014	0.039	-0.062	0.391
37C	12/09/16	-0.005	0.025	-0.072	0.081	-0.002	0.030	-0.006	0.050	-0.008	0.031	-0.019	0.235

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
31	02/02/16	0.052	0.061	0.004	0.152	-0.007	0.094	0.000	0.000	-0.028	0.067	3.611	0.554
31	12/08/16	-0.015	0.029	0.061	0.072	0.013	0.066	0.022	0.029	0.006	0.032	0.109	0.280
32	06/13/16	-0.023	0.052	0.028	0.141	0.026	0.100	0.007	0.058	-0.024	0.061	0.068	0.565
32	12/01/16	-0.006	0.030	0.056	0.082	0.011	0.048	0.039	0.039	0.010	0.034	0.016	0.302
33	04/15/16	0.013	0.031	-0.029	0.090	-0.034	0.076	-0.002	0.034	0.000	0.032	0.118	0.301
33	12/09/16	0.009	0.028	-0.042	0.076	0.023	0.072	0.006	0.033	0.009	0.030	0.191	0.172
34	03/16/16	-0.004	0.011	0.001	0.030	-0.015	0.017	-0.012	0.014	-0.004	0.012	0.054	0.045
34	12/09/16	-0.013	0.021	0.038	0.051	-0.008	0.055	0.003	0.025	0.009	0.023	0.171	0.203
37C	04/28/16	0.016	0.038	0.027	0.103	0.065	0.123	0.033	0.040	0.011	0.041	0.040	0.222
37C	12/09/16	-0.001	0.026	0.000	0.074	0.025	0.059	0.012	0.026	0.009	0.030	0.400	0.164

TABLE 12
AQUATIC FLORA - FUCUS (pCi/g wet wt.)
Results in bold type are positive.

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
29	02/02/16	0.0643	0.1217	**8.0050**	**0.7618**	0.1296	0.1308	-0.0023	0.0143	0.0028	0.0158	0.0068	0.0372
29	04/14/16	0.1918	0.1284	**5.3080**	**0.5245**	-0.0334	0.1498	-0.0017	0.0124	-0.0038	0.0144	0.0207	0.0328
29	07/11/16	0.1168	0.0977	**8.3060**	**0.6090**	0.0116	0.0990	0.0055	0.0115	-0.0024	0.0111	0.0035	0.0280
29	11/07/16	**0.3494**	**0.2016**	**7.9740**	**0.6646**	0.1237	0.1201	-0.0092	0.0131	-0.0057	0.0134	-0.0059	0.0303
32	02/02/16	-0.0545	0.1433	**8.0810**	**0.7828**	0.0700	0.1307	0.0018	0.0163	-0.0091	0.0164	-0.0177	0.0333
32	04/14/16	0.0101	0.0942	**7.2180**	**0.4570**	0.0265	0.0991	0.0030	0.0107	-0.0078	0.0108	-0.0113	0.0270
32	07/11/16	-0.0293	0.1344	**7.9330**	**0.6780**	-0.0933	0.1428	0.0070	0.0154	-0.0133	0.0179	-0.0188	0.0353
32	11/07/16	**0.1949**	**0.1258**	**7.8000**	**0.5413**	0.0251	0.0994	-0.0034	0.0118	0.0045	0.0127	-0.0152	0.0261
35	02/02/16	0.0687	0.1355	**6.9900**	**0.6336**	-0.1126	0.1365	-0.0041	0.0171	0.0143	0.0144	-0.0128	0.0396
35	04/14/16	0.2963	0.2541	**6.8400**	**0.5712**	-0.1062	0.1447	0.0112	0.0124	-0.0035	0.0135	0.0156	0.0325
35	07/11/16	-0.0104	0.1705	**8.4830**	**0.8544**	0.0141	0.1586	0.0070	0.0181	0.0079	0.0185	0.0066	0.0386
35	11/07/16	0.1998	0.1592	**7.9970**	**0.7359**	-0.0449	0.1155	0.0008	0.0137	-0.0020	0.0120	-0.0158	0.0298
36	03/18/16	**0.2551**	**0.1374**	**5.4760**	**0.4995**	-0.0327	0.1141	-0.0021	0.0108	0.0031	0.0103	-0.0090	0.0238
36	04/28/16	0.1308	0.0778	**6.5340**	**0.4455**	-0.0725	0.0811	-0.0015	0.0096	-0.0024	0.0095	-0.0011	0.0199
36	07/12/16	0.0261	0.1244	**6.9210**	**0.6898**	0.0340	0.1298	-0.0024	0.0153	-0.0030	0.0166	0.0002	0.0439
36	11/08/16	0.1689	0.1581	**6.5740**	**0.7265**	0.0725	0.1383	-0.0034	0.0188	-0.0129	0.0188	-0.0365	0.0409
90	03/16/16	0.2550	0.1795	**18.660**	**1.0750**	-0.1243	0.1765	-0.0127	0.0211	-0.0109	0.0209	0.0105	0.0477
90	04/15/16	**1.3300**	**0.3413**	**7.7910**	**0.6714**	0.0114	0.1337	0.0011	0.0139	-0.0024	0.0146	-0.0081	0.0353
90	07/12/16	0.1765	0.1521	**7.6020**	**0.6607**	0.0239	0.1131	0.0090	0.0119	0.0008	0.0120	0.0056	0.0287
90	11/08/16	**0.3298**	**0.1535**	**7.3040**	**0.7325**	0.0688	0.1455	-0.0081	0.0142	0.0074	0.0170	-0.0111	0.0408

TABLE 12
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
29	02/02/16	-0.0143	0.0165	-0.0170	0.0361	-0.0126	0.0153	0.0334	0.0309	-0.0057	0.0151	0.0192	0.1311
29	04/14/16	0.0056	0.0145	0.0012	0.0355	0.0121	0.0162	0.0014	0.0198	-0.0067	0.0162	0.0048	0.1089
29	07/11/16	-0.0068	0.0138	-0.0180	0.0318	-0.0004	0.0108	0.0122	0.0196	0.0019	0.0113	0.0410	0.1033
29	11/07/16	-0.0066	0.0152	-0.0152	0.0408	0.0078	0.0136	0.0039	0.0253	-0.0044	0.0145	0.0529	0.1281
32	02/02/16	-0.0174	0.0168	0.0408	0.0421	0.0033	0.0137	-0.0069	0.0286	-0.0044	0.0164	0.0555	0.1359
32	04/14/16	0.0232	0.0141	-0.0478	0.0288	0.0131	0.0108	-0.0079	0.0176	-0.0014	0.0116	0.0870	0.0936
32	07/11/16	0.0057	0.0160	-0.0322	0.0415	-0.0051	0.0174	-0.0150	0.0312	-0.0010	0.0165	-0.0819	0.1500
32	11/07/16	-0.0032	0.0112	0.0009	0.0321	0.0032	0.0126	-0.0037	0.0222	0.0019	0.0116	0.0622	0.1076
35	02/02/16	-0.0111	0.0145	-0.0252	0.0389	0.0069	0.0155	0.0179	0.0270	-0.0003	0.0157	0.0174	0.1298
35	04/14/16	-0.0032	0.0147	0.0061	0.0356	0.0149	0.0134	0.0170	0.0224	0.0056	0.0135	0.0354	0.1098
35	07/11/16	0.0097	0.0203	0.0150	0.0393	-0.0266	0.0213	-0.0151	0.0337	-0.0047	0.0169	0.1653	0.1413
35	11/07/16	-0.0009	0.0156	-0.0487	0.0365	-0.0084	0.0152	0.0113	0.0223	0.0042	0.0147	-0.0515	0.1312
36	03/18/16	0.0011	0.0100	-0.0217	0.0255	0.0025	0.0098	0.0013	0.0182	0.0011	0.0125	0.0454	0.1101
36	04/28/16	0.0013	0.0101	0.0016	0.0248	-0.0046	0.0093	0.0008	0.0147	0.0060	0.0080	-0.0318	0.0856
36	07/12/16	0.0040	0.0143	0.0051	0.0398	-0.0004	0.0150	0.0015	0.0230	-0.0074	0.0153	-0.0238	0.1461
36	11/08/16	-0.0047	0.0185	-0.0389	0.0499	0.0176	0.0212	0.0093	0.0322	-0.0135	0.0172	0.0186	0.1557
90	03/16/16	0.0005	0.0194	-0.0057	0.0553	-0.0059	0.0227	0.0095	0.0394	0.0041	0.0215	-0.1557	0.1851
90	04/15/16	0.0108	0.0145	-0.0288	0.0325	-0.0040	0.0146	0.0051	0.0258	-0.0040	0.0184	0.0142	0.1275
90	07/12/16	-0.0006	0.0159	-0.0278	0.0365	0.0109	0.0140	0.0069	0.0226	0.0072	0.0129	-0.1072	0.1089
90	11/08/16	-0.0090	0.0155	0.0133	0.0444	0.0063	0.0171	-0.0329	0.0283	0.0066	0.0165	-0.0972	0.1481

TABLE 12
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
29	02/02/16	0.0002	0.0145	-0.0225	0.0365	0.0089	0.0217	0.0029	0.0145	0.0039	0.0148	0.0523	0.0652
29	04/14/16	-0.0044	0.0124	-0.0025	0.0353	0.0049	0.0338	0.0163	0.0138	-0.0025	0.0138	0.1236	0.0990
29	07/11/16	-0.0006	0.0106	0.0019	0.0320	0.0006	0.0199	-0.0041	0.0124	-0.0013	0.0112	0.0395	0.0915
29	11/07/16	-0.0004	0.0131	0.0237	0.0374	0.0079	0.0232	0.0020	0.0155	-0.0028	0.0137	0.0991	0.0954
32	02/02/16	0.0079	0.0148	0.0048	0.0435	-0.0039	0.0257	-0.0137	0.0191	0.0000	0.0156	0.0835	0.0716
32	04/14/16	0.0045	0.0102	-0.0065	0.0272	-0.0063	0.0243	-0.0211	0.0110	-0.0073	0.0111	0.0270	0.0401
32	07/11/16	0.0011	0.0142	-0.0012	0.0410	0.0132	0.0298	0.0096	0.0168	0.0090	0.0148	0.0580	0.0727
32	11/07/16	-0.0102	0.0105	0.0082	0.0313	0.0082	0.0195	0.0077	0.0128	-0.0009	0.0117	0.0246	0.0511
35	02/02/16	0.0008	0.0136	0.0176	0.0410	-0.0070	0.0237	-0.0120	0.0153	0.0023	0.0154	0.1130	0.0691
35	04/14/16	-0.0046	0.0123	0.0168	0.0321	0.0174	0.0335	-0.0097	0.0155	-0.0079	0.0144	0.0778	0.0701
35	07/11/16	-0.0105	0.0159	-0.0061	0.0435	-0.0251	0.0291	-0.0074	0.0169	-0.0047	0.0179	0.0687	0.0668
35	11/07/16	-0.0036	0.0114	-0.0178	0.0357	0.0005	0.0237	-0.0085	0.0149	0.0122	0.0118	0.1406	0.0662
36	03/18/16	0.0014	0.0101	0.0150	0.0260	0.0389	0.0231	-0.0113	0.0114	-0.0062	0.0122	0.0948	0.0741
36	04/28/16	0.0022	0.0088	0.0257	0.0231	0.0206	0.0128	-0.0019	0.0100	0.0011	0.0096	0.0005	0.0381
36	07/12/16	0.0111	0.0140	-0.0270	0.0399	0.0227	0.0226	-0.0065	0.0148	-0.0132	0.0155	0.0520	0.0671
36	11/08/16	0.0091	0.0169	-0.0223	0.0440	0.0162	0.0240	0.0029	0.0202	0.0088	0.0193	0.0794	0.0731
90	03/16/16	-0.0108	0.0199	0.0192	0.0540	0.0290	0.0312	0.0062	0.0216	-0.0042	0.0214	0.1755	0.0880
90	04/15/16	0.0015	0.0136	-0.0283	0.0374	0.0350	0.0326	-0.0004	0.0131	0.0028	0.0155	0.0776	0.1056
90	07/12/16	0.0042	0.0127	-0.0221	0.0323	0.0000	0.0222	0.0086	0.0147	0.0024	0.0145	0.0884	0.0844
90	11/08/16	0.0051	0.0153	0.0083	0.0454	0.0032	0.0255	0.0127	0.0175	0.0030	0.0173	0.0385	0.0635

TABLE 13

FISH (pCi/wet wt.)

Results in bold type are positive.

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
29	08/10/16	0.039	0.167	**3.834**	**0.563**	-0.072	0.192	-0.007	0.018	-0.004	0.018	0.004	0.045
32	01/11/16	0.157	0.215	**4.280**	**0.795**	0.151	0.239	-0.013	0.027	0.038	0.029	-0.017	0.056
32	04/25/16	0.006	0.248	**3.547**	**0.845**	-0.189	0.256	0.026	0.028	0.001	0.029	0.033	0.054
35	01/15/16	0.017	0.095	**3.293**	**0.355**	0.015	0.105	0.003	0.012	-0.004	0.011	-0.001	0.025
35	05/04/16	0.160	0.210	**3.344**	**0.823**	-0.132	0.215	0.005	0.023	0.013	0.027	-0.018	0.060
35	07/11/16	-0.143	0.212	**3.677**	**0.738**	0.179	0.248	0.006	0.022	-0.003	0.022	-0.008	0.054

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
29	08/10/16	0.006	0.022	-0.019	0.046	0.003	0.020	-0.015	0.032	0.000	0.021	-0.155	0.170
32	01/11/16	-0.035	0.025	-0.049	0.069	0.008	0.026	0.014	0.051	-0.005	0.030	-0.052	0.267
32	04/25/16	-0.001	0.036	-0.112	0.071	-0.005	0.031	-0.048	0.050	0.025	0.033	-0.302	0.239
35	01/15/16	-0.002	0.012	-0.005	0.026	0.005	0.012	0.021	0.020	0.004	0.012	-0.022	0.102
35	05/04/16	0.016	0.031	-0.045	0.067	0.025	0.029	0.001	0.048	0.008	0.030	0.140	0.239
35	07/11/16	0.010	0.026	-0.042	0.059	0.014	0.025	-0.021	0.041	-0.014	0.028	-0.125	0.227

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
29	08/10/16	0.014	0.021	0.003	0.050	-0.010	0.051	-0.005	0.023	-0.007	0.021	-0.025	0.066
32	01/11/16	-0.032	0.026	0.016	0.069	0.031	0.046	-0.004	0.029	0.010	0.028	-0.004	0.111
32	04/25/16	-0.003	0.028	0.026	0.077	0.008	0.046	0.003	0.030	0.005	0.029	0.001	0.115
35	01/15/16	-0.006	0.011	0.001	0.029	0.015	0.026	-0.009	0.014	0.000	0.011	0.037	0.070
35	05/04/16	0.005	0.025	-0.045	0.072	-0.006	0.040	0.011	0.033	-0.009	0.029	-0.069	0.106
35	07/11/16	0.007	0.025	-0.011	0.065	-0.016	0.055	-0.014	0.029	0.005	0.028	-0.027	0.097

TABLE 14
OYSTERS
(pCi/g wet wt.)
Results in bold type are positive.

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
31	03/02/16	0.644	0.584	**1.502**	**1.240**	-0.333	0.560	-0.066	0.067	-0.002	0.074	0.018	0.104
31	05/18/16	-0.032	0.164	**2.522**	**0.556**	-0.102	0.165	0.004	0.018	-0.026	0.018	-0.018	0.035
31	08/10/16	-0.103	0.297	**1.101**	**0.817**	0.143	0.306	-0.017	0.042	-0.023	0.036	0.000	0.080
32	03/09/16	0.047	0.344	**2.127**	**1.205**	-0.215	0.344	0.032	0.043	-0.001	0.048	0.019	0.091
32	06/23/16	-0.124	0.241	**1.911**	**0.831**	0.028	0.368	-0.004	0.016	0.025	0.025	0.027	0.056
32	09/26/16	0.170	0.274	**1.472**	**0.852**	-0.022	0.303	0.016	0.029	-0.020	0.033	0.042	0.058
37C	01/15/16	0.095	0.215	**1.025**	**0.656**	-0.020	0.222	0.025	0.026	-0.017	0.026	-0.020	0.053
37C	03/17/16	-0.093	0.435	**3.014**	**0.952**	-0.126	0.446	0.021	0.038	-0.008	0.047	-0.047	0.131
37C	06/17/16	0.034	0.299	**2.446**	**0.929**	0.224	0.360	0.026	0.037	0.016	0.035	0.043	0.083
37C	08/10/16	-0.171	0.371	**1.718**	**1.004**	-0.011	0.368	-0.031	0.060	0.018	0.054	0.018	0.102
88	03/10/16	0.788	0.466	**2.295**	**0.990**	0.249	0.402	0.040	0.050	-0.048	0.060	-0.054	0.095
88	05/23/16	0.231	0.266	**2.780**	**0.791**	0.180	0.323	0.011	0.034	0.001	0.029	-0.048	0.066
88	08/10/16	0.159	0.279	**2.242**	**0.838**	-0.107	0.268	0.000	0.030	-0.008	0.035	-0.039	0.054
89	11/30/16	0.049	0.233	**3.206**	**0.642**	-0.071	0.239	0.004	0.028	0.005	0.033	0.008	0.046

C= Control location, Background location.

TABLE 14
OYSTERS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
31	03/02/16	-0.017	0.056	-0.051	0.154	-0.015	0.070	-0.054	0.133	-0.022	0.064	-0.094	0.623
31	05/18/16	0.004	0.017	-0.046	0.044	0.011	0.020	0.018	0.034	-0.011	0.020	0.039	0.183
31	08/10/16	-0.008	0.032	-0.024	0.085	0.011	0.038	-0.063	0.062	-0.007	0.037	0.045	0.319
32	03/09/16	0.004	0.038	-0.051	0.079	0.018	0.052	0.045	0.077	0.018	0.041	-0.144	0.380
32	06/23/16	-0.009	0.035	-0.039	0.059	0.013	0.032	-0.003	0.046	-0.005	0.035	0.042	0.207
32	09/26/16	0.001	0.030	-0.035	0.074	0.000	0.031	-0.022	0.056	0.015	0.032	-0.107	0.296
37C	01/15/16	-0.006	0.024	-0.062	0.059	0.035	0.024	0.007	0.045	0.004	0.027	0.195	0.231
37C	03/17/16	-0.009	0.053	0.073	0.120	0.006	0.040	-0.017	0.069	0.020	0.052	-0.185	0.437
37C	06/17/16	0.022	0.050	-0.018	0.070	0.030	0.046	0.042	0.073	-0.005	0.042	0.057	0.390
37C	08/10/16	-0.032	0.053	0.002	0.095	-0.036	0.049	-0.067	0.090	0.016	0.040	0.708	0.487
88	03/10/16	0.032	0.051	-0.056	0.130	-0.025	0.058	0.081	0.109	0.009	0.054	0.253	0.484
88	05/23/16	-0.011	0.030	-0.060	0.082	0.010	0.031	0.057	0.060	-0.006	0.030	-0.020	0.300
88	08/10/16	0.007	0.021	0.009	0.084	0.010	0.035	0.006	0.052	-0.008	0.032	0.019	0.292
89	11/30/16	0.014	0.028	-0.015	0.071	-0.012	0.029	-0.024	0.053	-0.001	0.027	0.185	0.249

C= Control location, Background location

TABLE 14
OYSTERS
(pCi/g wet wt.)

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
31	03/02/16	0.023	0.061	0.110	0.159	-0.025	0.097	-0.078	0.073	0.014	0.070	0.124	0.242
31	05/18/16	0.001	0.019	-0.035	0.052	-0.002	0.030	-0.045	0.025	0.003	0.020	-0.026	0.075
31	08/10/16	0.005	0.032	-0.149	0.109	0.029	0.039	-0.029	0.051	0.018	0.039	0.066	0.146
32	03/09/16	0.010	0.042	0.004	0.112	0.002	0.066	-0.093	0.049	-0.045	0.049	-0.062	0.158
32	06/23/16	0.043	0.039	0.011	0.085	0.005	0.082	0.020	0.029	0.031	0.030	-0.067	0.129
32	09/26/16	-0.003	0.032	0.017	0.094	0.005	0.044	0.027	0.038	-0.016	0.033	0.077	0.109
37C	01/15/16	-0.028	0.025	0.055	0.064	0.007	0.053	0.008	0.028	0.015	0.025	-0.026	0.108
37C	03/17/16	-0.006	0.044	0.003	0.115	0.081	0.111	-0.059	0.049	-0.014	0.050	-0.067	0.191
37C	06/17/16	0.019	0.042	-0.004	0.112	-0.033	0.064	-0.034	0.044	-0.024	0.040	0.131	0.172
37C	08/10/16	-0.022	0.047	0.048	0.129	-0.006	0.046	-0.033	0.062	0.071	0.051	-0.032	0.200
88	03/10/16	0.015	0.054	-0.035	0.150	0.010	0.078	-0.093	0.057	0.024	0.056	0.160	0.217
88	05/23/16	0.002	0.027	-0.032	0.089	0.027	0.068	-0.010	0.035	0.037	0.030	0.074	0.116
88	08/10/16	0.001	0.030	0.083	0.091	0.037	0.042	0.024	0.032	0.010	0.037	-0.015	0.118
89	11/30/16	0.002	0.0289	0.051	0.0824	0.009	0.0439	-0.01	0.0299	-0.01	0.0307	0.065	0.0949

C= Control location, Background location

TABLE 15
CLAMS (pCi/g wet wt.)
(Results in bold type are positive.

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
29	02/04/16	-0.079	0.326	**1.762**	**0.804**	-0.167	0.394	0.012	0.032	-0.014	0.035	0.026	0.079
29	05/03/16	-0.331	0.427	**2.723**	**1.210**	0.183	0.485	0.004	0.048	0.074	0.060	-0.083	0.116
29	08/11/16	-0.001	0.136	**2.229**	**0.495**	-0.038	0.161	0.016	0.019	-0.008	0.016	-0.018	0.032
31	11/09/16	0.053	0.228	**2.254**	**0.552**	-0.246	0.264	0.001	0.024	-0.016	0.028	0.011	0.054
38	05/12/16	0.147	0.219	**2.124**	**0.660**	0.075	0.251	-0.009	0.025	0.016	0.027	0.016	0.055
38	09/23/16	0.180	0.249	**2.212**	**0.761**	-0.025	0.311	0.014	0.032	-0.001	0.034	0.017	0.055

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
29	02/04/16	0.020	0.032	-0.062	0.092	-0.002	0.038	0.042	0.068	0.004	0.040	0.045	0.311
29	05/03/16	-0.027	0.048	0.041	0.147	-0.006	0.048	0.024	0.089	-0.030	0.053	-0.218	0.467
29	08/11/16	-0.002	0.018	0.034	0.040	-0.012	0.017	-0.011	0.028	0.017	0.017	0.117	0.149
31	11/09/16	-0.004	0.024	-0.018	0.068	-0.021	0.029	-0.005	0.048	-0.021	0.030	-0.102	0.208
38	05/12/16	0.034	0.028	-0.002	0.062	0.018	0.031	-0.003	0.054	0.006	0.027	0.034	0.220
38	09/23/16	-0.026	0.030	-0.012	0.071	0.030	0.031	-0.015	0.051	0.022	0.033	-0.341	0.273

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
29	02/04/16	-0.009	0.031	-0.041	0.095	-0.078	0.102	0.034	0.035	0.001	0.036	0.048	0.122
29	05/03/16	-0.015	0.049	-0.078	0.139	-0.047	0.094	-0.091	0.060	-0.012	0.055	-0.019	0.186
29	08/11/16	-0.007	0.015	0.021	0.040	-0.005	0.043	-0.003	0.019	-0.016	0.016	-0.033	0.063
31	11/09/16	-0.004	0.022	0.000	0.063	-0.017	0.066	0.005	0.027	0.004	0.023	-0.093	0.102
38	05/12/16	0.010	0.025	-0.040	0.068	0.041	0.065	-0.023	0.030	-0.007	0.027	0.034	0.108
38	09/23/16	0.000	0.027	0.051	0.089	-0.011	0.050	0.004	0.040	-0.002	0.036	0.034	0.144

TABLE 16
LOBSTERS (pCi/g wet wt.)
Results in bold type are poistive.

LOCATION	COLLECTION DATE	Be-7	(+/-)	K-40	(+/-)	Cr-51	(+/-)	Mn-54	(+/-)	Co-58	(+/-)	Fe-59	(+/-)
35	02/09/16	-0.176	0.280	**2.104**	**0.670**	0.074	0.303	0.011	0.029	-0.029	0.032	-0.012	0.057
35	05/10/16	-0.245	0.253	**2.102**	**0.753**	-0.117	0.287	0.019	0.030	-0.012	0.038	-0.036	0.061
35	07/18/16	-0.048	0.301	**2.762**	**0.792**	-0.069	0.323	0.007	0.039	-0.020	0.035	0.026	0.086
89C	03/11/16	0.002	0.198	**1.465**	**0.728**	0.091	0.304	-0.022	0.025	0.017	0.028	-0.014	0.064
89C	06/07/16	0.148	0.427	**2.314**	**1.084**	-0.073	0.392	-0.014	0.045	-0.022	0.056	0.014	0.111
89C	07/06/16	0.000	0.409	**3.453**	**1.379**	-0.027	0.454	0.001	0.057	0.016	0.047	-0.076	0.093

LOCATION	COLLECTION DATE	Co-60	(+/-)	Zn-65	(+/-)	Nb-95	(+/-)	Zr-95	(+/-)	Ru-103	(+/-)	Ru-106	(+/-)
35	02/09/16	-0.005	0.027	-0.100	0.075	0.014	0.028	0.023	0.055	0.012	0.033	-0.025	0.271
35	05/10/16	-0.012	0.031	0.014	0.072	0.013	0.033	-0.028	0.062	-0.011	0.035	0.012	0.264
35	07/18/16	0.000	0.036	-0.009	0.083	0.031	0.037	0.003	0.061	-0.004	0.038	-0.092	0.326
89C	03/11/16	0.005	0.029	0.003	0.058	0.022	0.029	0.006	0.041	-0.014	0.035	0.034	0.258
89C	06/07/16	-0.017	0.031	-0.033	0.103	-0.038	0.050	-0.033	0.086	-0.010	0.043	0.277	0.415
89C	07/06/16	-0.025	0.051	-0.149	0.116	0.032	0.056	0.063	0.097	-0.026	0.054	-0.198	0.416

LOCATION	COLLECTION DATE	Ag-110M	(+/-)	Sb-125	(+/-)	I-131	(+/-)	Cs-134	(+/-)	Cs-137	(+/-)	Ac-228	(+/-)
35	02/09/16	0.024	0.028	-0.051	0.076	-0.041	0.063	-0.061	0.035	-0.008	0.032	-0.064	0.120
35	05/10/16	-0.003	0.033	-0.030	0.091	-0.010	0.062	0.016	0.040	-0.006	0.039	0.036	0.145
35	07/18/16	-0.025	0.031	0.010	0.097	0.036	0.065	-0.014	0.039	0.003	0.035	0.064	0.138
89C	03/11/16	-0.032	0.030	-0.052	0.078	0.027	0.078	0.018	0.026	-0.001	0.028	0.050	0.118
89C	06/07/16	-0.010	0.045	0.111	0.114	0.047	0.079	-0.051	0.051	0.023	0.048	-0.015	0.181
89C	07/06/16	0.026	0.052	-0.060	0.140	-0.006	0.081	0.018	0.058	-0.065	0.064	-0.136	0.195

C= Control Location, Background location

4. DISCUSSION OF RESULTS

This section summarizes the results of the analyses on the REMP samples. The only case where station related radioactivity was detected was tritium (H-3) in seawater collected at the quarry discharge point. This was within the station boundary. The naturally occurring nuclides of Be-7, K-40, and Ac-228 were detected in some samples. Be-7 is from cosmic radiation. It was observed in air and broadleaf vegetation and in some fucus samples. K-40 and Ac-228 are two common terrestrial isotopes. K-40 was not seen in air or well water samples but was observed in almost every other type of sample. Ac-228 was observed in one sediment and two soil samples. Cs-137 and Sr-90 from atmospheric nuclear weapons testing in the 1960's have been observed in the past. A study by the Connecticut Department of Energy and Environmental Protection in 2006 affirmed that radioactivity from nuclear weapons testing has decreased to almost non-detectable levels (Reference 19). Since 2006 detection of Cs-137 and Sr-90 in environmental samples has been rare. During 2016, Cs-137 was detected in one soil sample and Sr-90 was not detected.

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. Readings are recorded as uR/hr. The unit uR stands for 'micro-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. For gamma exposure a micro-roentgen is equivalent to a micro-rem, a measure of dose to man.

The dosimeters are strategically placed at a number of onsite locations, as well as at inner and outer offsite 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 2006, three in 2007, three in 2009, three in 2010 and seven in 2015. None were loaded in 2008, from 2011 to 2014 and in 2016. 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: 9.5 uR/hour at Location 73, 7.5 uR/hour at Location 74 and 6.9 uR/hour at Location 75). At Location 73 the readings have been lower since the fourth quarter of 2012, averaging 7.7 uR/hour.

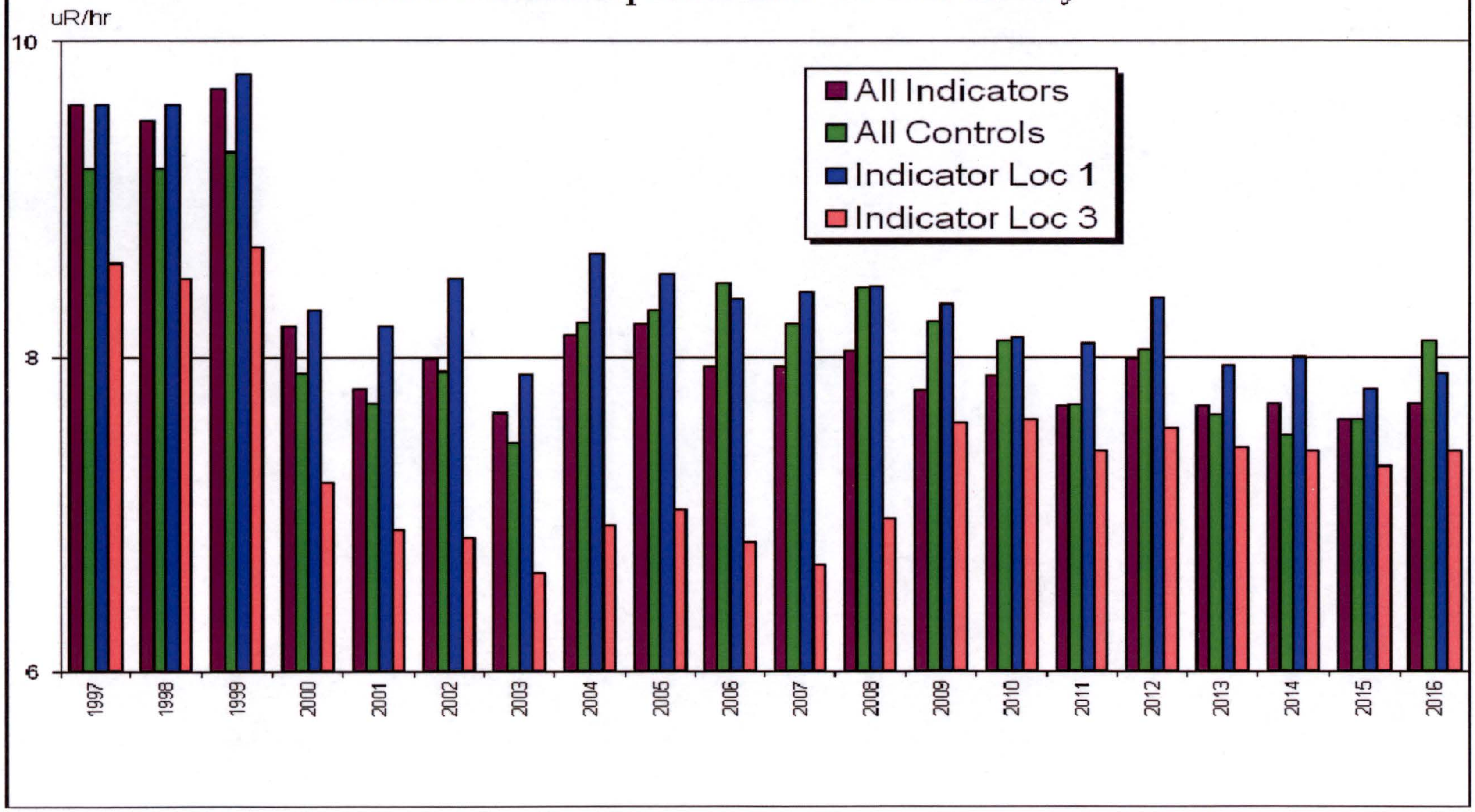
Table 1 in Section 3.2 lists the exposure rate measurements for all 43 monitored locations. These measurements demonstrate the general variations in background radiation between the various onsite and offsite locations and include gamma exposure from all sources of radioactivity. For example, the Weather Shack (Location 2), Quarry East (Location 5), Environmental Laboratory (Location 8), Bay Point Beach (Location 9), Goshen Fire Dept (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).

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. The average indicator and control readings were both 7.8 uR/hour. This is equivalent to an annual dose of about 68 mrem.

The averages of all indicator locations for the period when Millstone Unit 1 was still in operation (1996 to 1999) exhibit the effects of N-16 BWR turbine building skyshine to immediate areas onsite. Skyshine increased exposure rates as high as 6 uR/hr at onsite monitoring stations. The elevated exposure rates from skyshine decreased rapidly with distance to levels indistinguishable from normal background measurements at 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.

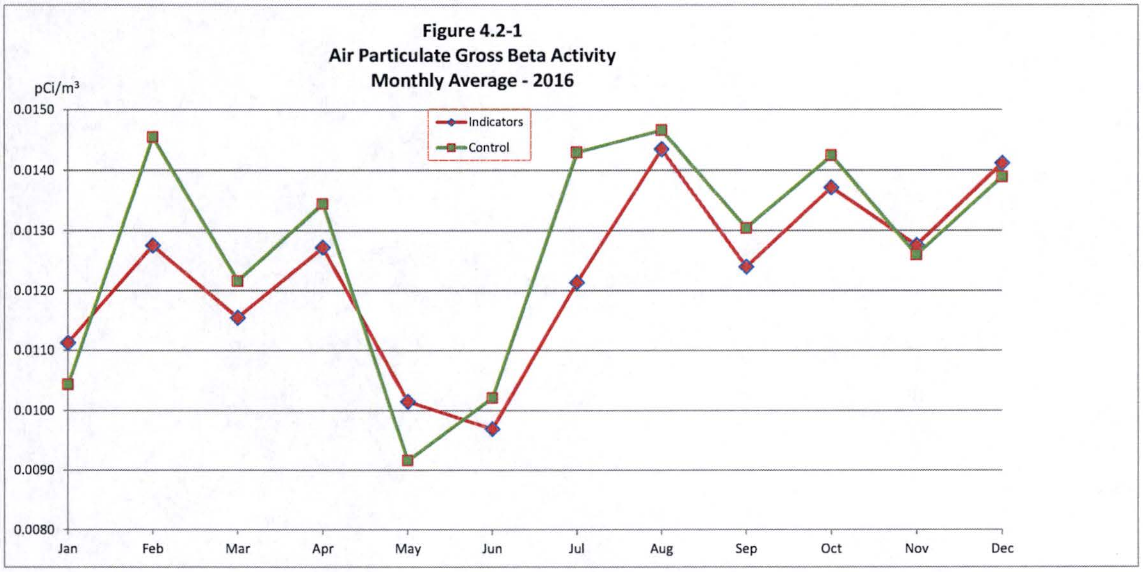
Figure 4.1-1 also relates the difference in indicator locations 1 and 3 and the annual average of all indicator TLDs to the annual average of the control TLDs collected and measured during coincident periods throughout the year. Locations 1 and 3 are important because they are onsite and located between the plant and nearby populated areas. 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 that the annual average at indicator Locations 1 and 3 are lower in gamma exposure rate than the average control gamma exposure rate. 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 2016 data for Location 3 shows an increase likely attributable to the being closer to granite at the new location.

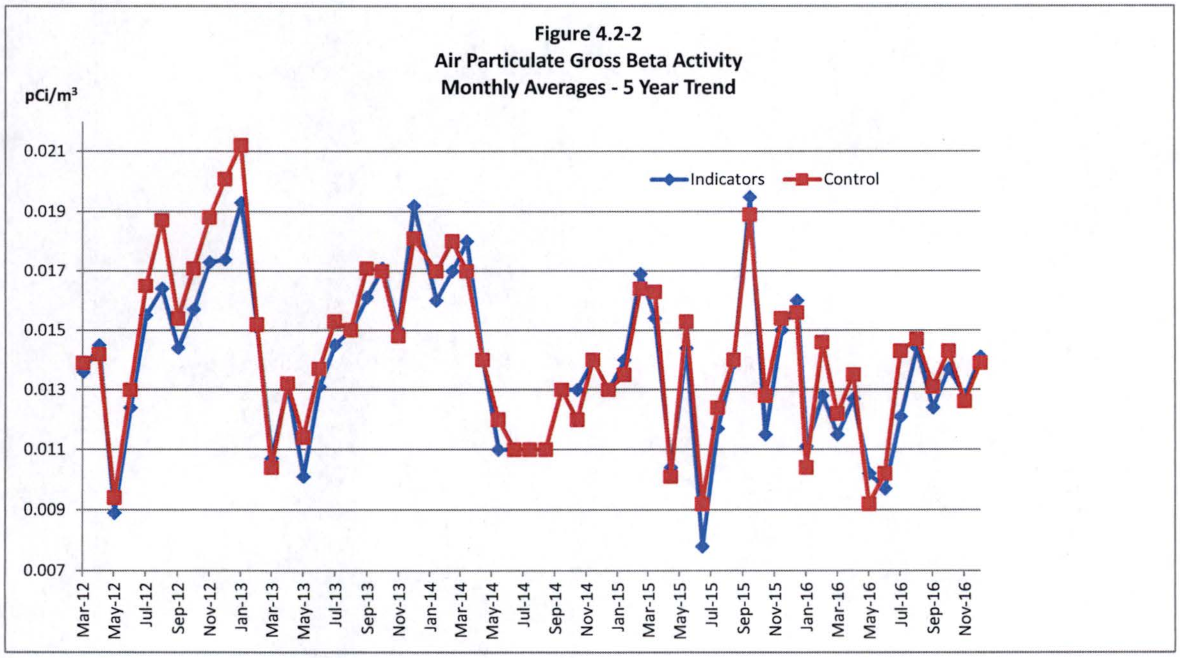
Figure 4.1-1
Annual Gamma Exposure Rate - 20 Year History



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 every two weeks 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.





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 every two weeks. No detectable levels of I-131 were seen in the 2016 charcoal samples.

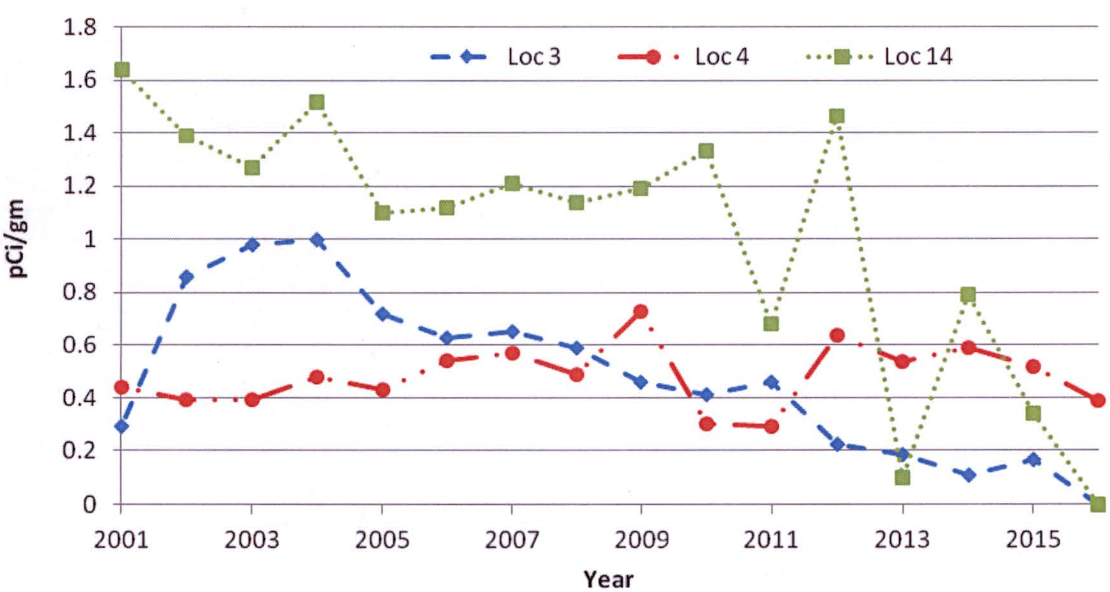
4.4 Air Particulate Gamma (Table 4)

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 any station radioactivity.

4.5 Soil (Table 5)

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. Since 2001 no station detectable activity has been seen in these samples. Naturally occurring K-40 and Ac-228 is detected in soil. Cs-137 from nuclear weapons testing was detected in one soil sample. 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.

Figure 4.6-1
Cs-137 in Soil



4.6 Milk (Table 6)

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 and one goat location, both between ten and twelve miles from the station, were sampled as extra, non-required samples and results are shown in Table 6. 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 2016 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.

4.7 Well Water (Table 7)

There were no station related radioactivity 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 2016.

4.8 Fruits and Vegetables (Table 8)

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

4.9 Broad Leaf Vegetation (Table 9)

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 have indicated 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.

4.10 Seawater (Table 10)

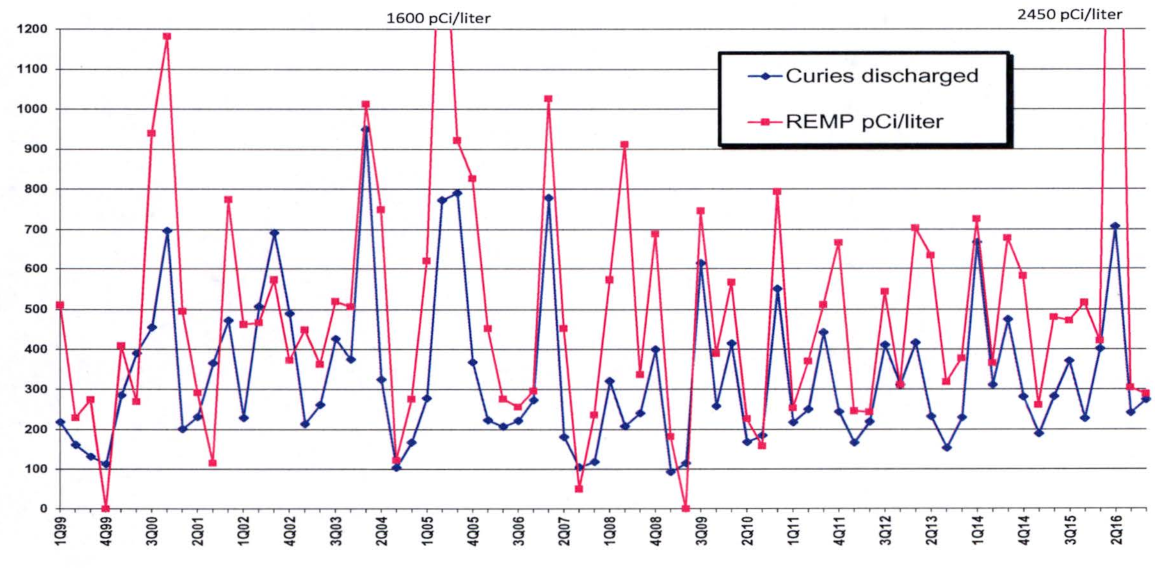
The guidance in Reference 15 specifies one sample upstream (control – beyond significant influence of the discharge) and one sample downstream (indicator – beyond but near the mixing zone) for surface water samples. Historically the downstream sample for Millstone has been located in the vicinity of discharge (Location 32) 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 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 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.

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. The high REMP sample results during the second quarter of 2016 occurred during the Unit 3 outage when circulating water pumps were turned off. Tritium concentrations in the Millstone Quarry was elevated because of less dilution flow during that period.

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



4.11 Bottom Sediment (Table 11)

There was no station related radioactivity detected in bottom sediment samples in 2016. Naturally occurring K-40 is seen in all samples and naturally occurring Ac-228 in some samples. Bottom sediment is not a significant dose pathway to man, especially at areas not typically used by the public.

4.12 Aquatic Flora (Table 12)

Because aquatic flora is a sensitive indicator of radioactivity in the environment it was added as a required sample at four locations starting with the fourth quarter of 2016. 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 2016.

4.13 Fish (Table 13)

The activity in fish is the same as that seen in the past. No activity was observed except for the naturally occurring K-40.

4.14 Oysters (Table 14)

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. The near-field dilution factor for liquid discharges from the Millstone Quarry discharge is a factor of 3. Because of the difficulty of obtaining suitable sample sizes, oyster sampling was discontinued starting with the fourth quarter of 2016.

Naturally occurring K-40 is seen in all samples. Millstone related Ag-110m and Zn-65 in oysters collected at Location #32 have been seen in the past. 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. However, in 2016 no plant related radioactivity was detected in oysters.

4.15 Clams (Table 15)

Occasionally this media indicates the presence of station related radioactivity. In 2016 no activity was observed except for the naturally occurring K-40.

4.16 Lobsters (Table 16)

In 2016 no activity was observed except for the naturally occurring K-40.

5. REFERENCES

1) United States of America, Code of Federal Regulations, Title 10, Part 50, Appendix A Criteria 64.

2) Donald T. Oakley, "Natural Radiation Exposure in the United States," U. S. Environmental Protection Agency, ORP/SID 72-1, June 1972.

3) National Council on Radiation Protection and Measurements, Report No. 160, "Ionizing Radiation Exposures of the Population of the United States," March 2009.

4) National Council on Radiation Protection and Measurements, Report No. 94, "Exposure of the Population of the United States and Canada from Natural Background Radiation," December 1987.

5) United States Nuclear Regulatory Commission, Regulatory Guide 8.29, "Instructions Concerning Risks from Occupational Radiation Exposure," Revision 0, July 1981.

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, 2016 and Revision 28, October 1, 2016.

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.

12) United States Nuclear Regulatory Commission, Regulatory Guide 4.1, "Program for Monitoring Radioactivity in the Environs of Nuclear Power Plants," Rev. 1, April 1975.

13) ICN/TracerLab, "Millstone Nuclear Power Station Pre-operational Environmental Radiation Survey Program, Quarterly Reports," April 1967 to June 1970.

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.

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APPENDIX A

LAND USE CENSUS FOR 2016

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 licensing website at https://www.elicense.ct.gov/Lookup/GenerateRoster.aspx. 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 2016 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 resident within each directional sector identified by a drive-by survey is assumed to have a garden. If a garden closer than the nearest resident in a sector is identified, that garden is listed as the closest garden in that sector. Goat locations are more difficult to determine, but best efforts are made to consult goat association records including the American Goat Owners Association (http://adga.org/), contact previous owners or perform drive-bys, if necessary. A search of food sources other than milk and local gardens was conducted using the search route on "Local Food Guide to Connecticut" at http://www.farmfresh.org/. Results of the land use census are given in Tables A-1 through A-5. No new dairy animals within 10 miles of the Millstone were located during the census.

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 - 2016

Direction	Distance		
	Miles	Meters	Location
WNW	10.3	16573	Lyme
NW	10.5	16895	Old Lyme
NE	14.1	22687	Stonington
NNE	15.3	24618	Preston
NE	17.0	27353	North Stonington
NNE	17.7	28479	Preston
NNE	17.8	28640	Preston
ENE	17.9	28801	North Stonington
N	18.5	29767	North Franklin
N	18.9	30410	Lebanon
NE	18.9	30410	North Stonington
NE	19.3	31054	North Stonington
N	19.4	31215	North Franklin
NNW	19.5	31376	Lebanon
N	19.5	31376	North Franklin

TABLE A-2

Dairy Goats Within 20 Miles of Millstone Point - 2016

Direction	Distance		Location
	Miles	Meters	
N	2.1	3379	Waterford
W	6.1	9815	Old Lyme
N	11.2	18021	Oakdale
NNW	11.9	19147	Salem
ENE	12.0	19308	Mystic
NNW	13.0	20917	Salem
NW	14.4	23170	East Haddam
N	15.7	25261	Salem
NNE	16.0	25744	Preston
NNE	17.1	27514	Preston
ENE	17.2	27675	Pawcatuck
NNW	17.7	28479	Colchester
WNW	18.4	29606	Haddam
ENE	18.5	29767	Westerly, RI
NNW	19.9	32019	Colchester

TABLE A-3

2016 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	854	0.53	854
NE	0.47	763	0.47	763
ENE	0.97	1554	0.97	1554
E	0.92	1475	0.92	1475
ESE	1.06	1701	1.06	1701
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	2.28	3670	2.28	3670
WSW	2.01	3232	2.01	3232
W	1.73	2788	1.73	2788
WNW	1.51	2423	1.51	2423
NW	1.35	2179	1.35	2179
NNW	0.51	816	0.51	816

N/A - not applicable (over water sectors)

Table A-4

Poultry Dealers and Egg Processors - 2016

Miles	BUSINESS	CITY	
11.3	TRACTOR SUPPLY COMPANY # 1769	OLD SAYBROOK	Poultry
12.0	HOLDRIDGE FARM NURSERY	LEDYARD	Poultry
14.7	FLEMINGS FEED AND HARDWARE	STONINGTON	Poultry
14.9	YANKEE CHICKS	NORWICH	Poultry
14.9	WYCHWOOD FARM	STONINGTON	Poultry
16.9	NORWICH AGWAY	NORWICH	Poultry
17.7	TRACTOR SUPPLY COMPANY #1485	PAWCATUCK	Poultry
17.8	SHAGBARK LUMBER & FARM SUPPLIES	EAST HADDAM	Poultry
17.9	FLEMINGS FEED	PRESTON	Poultry
17.9	KOFKOFF EGG FARMS - BOZRAH	BOZRAH	Eggs
18.4	CHARLES RIVER	NORTH FRANKLIN	Poultry
18.9	TRACTOR SUPPLY COMPANY #1731	COLCHESTER	Poultry

Table A-5

Other Foods within 20 miles of Millstone - 2016

Sector	Miles	Business	Location	Comments
NNW	1.9	Smith's Acres	Niantic	Fruits and vegetables
ENE	3.0	Secchiaroli Farms	Waterford	Has pigs but feed sources not local
WNW	4.9	Four Mile River Farm	Old Lyme	Eggs, beef, pork
NW	5.2	Scott's Yankee Farmer	East Lyme	Fruits and vegetables, cider
NNW	5.4	White Gate Farm	East Lyme	Vegetables, eggs, chicken, turkey
ENE	5.5	Groton Family Farm	Groton	Vegetables, maple syrup, eggs
NNE	6.3	Millaras Piggery	Quaker Hill	Pork; may get goats later
N	7.3	F.R.E.S.H. Farm	Waterford	Watermelon, vegetables
NNW	7.5	Hunts Brook Farm	Quaker Hill	Garlic, honey
NE	8.5	Red Fence Farm	Groton	Fruits, eggs, chicken, fowl, turkey
NNW	8.5	Cranbery Meadow Farm	East Lyme	Beef
N	9.3	Valchris Farm	Oakdale	Fruit
	9.4	Noank Aquaculture Cooperative	Noank	Clams, oysters
ENE	10.2	Willow Spring Farm	Mystic	Apples, pumpkins
NW	10.5	Beaver Brook Farm	Old Lyme	Cheese (cow&sheep), ice cream, milk (cow&sheep), yougurt (cow&sheep), lamb
NNE	10.9	Holmberg Orchards and Winery	Gales Ferry	Fruits and vegetables, cider, wine
	11.5	Bomster Scallops	Stonington	Scallops, shrimp
NE	11.7	Hidden Brook Gardens	Ledyard	Fruits and vegetables, apple butter and sauce
NNW	11.9	Soeltl Farm	Salem	Eggs, beef, chicken, fowl, pork, turkey, veal
NE	12.1	Allyn's Red Barn	Ledyard	Apples, cidar
W	12.1	Hay House	Old Saybrook	Fruits and vegetables, honey, eggs, feed
WNW	12.3	Three Sisters Farm	Essex	Grapes, honey
NE	12.5	Cedar Meadows Farm	Ledyard	Eggs, chicken, lamb, pork, turkey
NW	12.6	Provider Farm	Salem	Vegetables, beef, veal
ENE	12.6	Starry Night Farm	Stonington	Vegetables, eggs
NE	12.7	Maugle Sierra Vineyards	Ledyard	Wine
ENE	12.9	Footsteps Farm	Stonington	Eggs, chicken, pork, turkey
NE	13.1	Town Farm LLC	Ledyard	Vegetables
NE	13.6	Aiki Farm	Ledyard	Vegetables
ENE	13.9	JW Beef, LLC	Stonington	Beef
ENE	14.3	Stonington Beef	Stonington	Beef
ENE	14.4	Terra Firma Farm	Stonington	Vegetables, eggs, beef, chicken, lamb, pork, turkey
ENE	14.5	Saltwater Farm Vineyard	Stonington	Grapes, wine
NE	14.8	Wychwood Turkey Farm	Stonington	Turkey
ENE	15.2	Stonington Vineyards	Stonington	Wine
NE	15.5	Roseledge Country Inn and Farm Shoppe	Preston	Honey, maple syrup
ENE	15.8	Tar Barrel Hill Farm	Stonington	Eggs, chicken
NNW	16.0	Tri Gable Lea Farm	Colchester	Fruits, vegetables, herbs, dairy, eggs
ENE	16.8	Davis Farm	Pawcatuck, RI	Vegetables, corn meal, feed
NE	16.9	LoPresti Farm	Preston	Vegetables
NNW	17.0	Common Ground GSA	Colchester	Fruits and vegetables, eggs, feed
NW	17.0	Staehly Farms	East Haddam	Fruits and vegetables, eggs
ENE	17.1	Hubbard's Honey	North Stonington	Honey
NW	17.3	Smith Farm/AVP	Haddam	Vegetables
ENE	17.3	GYOCT	Pawcatuck,CT	Vegetables, strawberries, herbs
ENE	17.4	Weil Farm	North Stonington	Honey, maple syrup
NW	17.5	Cameron Family Farm	East Haddam	Dairy, eggs, meat
N	17.7	C&C Farm	Franklin	Vegetables, herbs, dairy, eggs
E	17.8	Watch Hill Farms	Watch Hill, RI	Vegetables, honey, eggs
N	18.0	Brush Hill Dairy	Bozrah	Eggs
	18.0	Watch Hill Oysters	Watch Hill, RI	Oysters, quahogs, scallops
NE	18.2	Jonathan Edwards Winery	North Stonington	Wine
ENE	18.5	Keena Farm	Westerly, RI	Vegetables, herbs, eggs, ducks, goats
N	18.7	Full Bloom Apiary	North Franklin	Honey
N	18.9	M&K Dairy Ladies of Lebanon	Lebanon	Cheese
NNE	19.2	Roseledge Country Inn and Farm Shoppe	Preston	Fennel, herbs, honey, maple syrup
N	19.3	Blue Slope Farm	Franklin	Meat (chevon), maple syrup
NE	19.3	Maple Lane Farms	Preston	Fruits and vegetables
N	19.3	Deva & Harry Childs	Franklin	Vegetables
NE	19.4	Morning Star Meadows Farm	North Stonington	Vegetables, eggs, lamb, mutton
NNW	19.5	Beltane Farm	Lebanon	Cheese (cow&goat), milk (cow), yougurt (goat)
NNW	19.6	Four Winds Farm	Lebanon	Beef
N	19.9	Red and White Orchard	Franklin	Apples, turkey

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 is 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 (7 nuclides) twice per year
- water for tritium analyses twice per year
- air filter for gamma (9 nuclides) analyses once per quarter
- air filter for gross beta analysis once per year
- charcoal filter for I-131 once per quarter
- soil for gamma (9 nuclides) analyses once per year
- vegetation for gamma (6 nuclides) 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, 123 out of 126 analyses performed met the specified acceptance criteria. Three analyses did not meet the specified acceptance criteria. The reasons and corrective actions are discussed below:

1) (NCR 16-26) Analysis of a first quarter cross check sample of milk for Sr-90 did not meet the acceptance ratio range. The technician did not rinse the filtering appratus properly. This resulted in cross contamination from one of the internal laboratory spike samples. Corrective actions included additional training for the technician and addition of clarifying language in the procedure.
2) (NCR 16-35) Analysis of a fourth quarter cross check sample of milk for Sr-90 did not meet the acceptance ratio range. The technician used the wrong aliquot volume when calculating the results of analysis. Corrective action is to have the laboratory manager specify aliquot volumes to avoid confusion.
3) (NCR 16-34) Analysis of a fourth quarter cross check sample of water for tritium did not meet the acceptance limits. This was caused by error in data entry. Corrective action is to have additional reviews performed prior to data entry.

DATA

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
First & Second Quarters

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2016	E11476	Milk	Sr-89	pCi/L	97	86.7	1.12	A
			Sr-90	pCi/L	15	11.4	1.32	N (NCR 16-26)
	E11477	Milk	I-131	pCi/L	85.9	82.2	1.05	A
			Ce-141	pCi/L	106	98.4	1.08	A
			Cr-51	pCi/L	255	243	1.05	A
			Cs-134	pCi/L	134	130	1.03	A
			Cs-137	pCi/L	174	161	1.08	A
			Co-58	pCi/L	123	117	1.05	A
			Mn-54	pCi/L	141	117	1.21	W
			Fe-59	pCi/L	152	131	1.16	A
			Zn-65	pCi/L	193	179	1.08	A
			Co-60	pCi/L	259	244	1.06	A
	E11184	AP	Ce-141	pCi	69	81.1	0.85	A
			Cr-51	pCi	242	201	1.20	W
			Cs-134	pCi	98.1	107.0	0.92	A
			Cs-137	pCi	136	133	1.02	A
			Co-58	pCi	91.9	97	0.95	A
			Mn-54	pCi	98.6	96.2	1.02	A
			Fe-59	pCi	98.8	108	0.91	A
			Zn-65	pCi	131	147	0.89	A
			Co-60	pCi	209	201	1.04	A
	E11478	Charcoal	I-131	pCi	85.3	88.3	0.97	A
June 2016	E11537	Milk	Sr-89	pCi/L	94.4	94.4	1.00	A
			Sr-90	pCi/L	13.4	15.4	0.87	A
	E11538	Milk	I-131	pCi/L	96.8	94.5	1.02	A
			Ce-141	pCi/L	129	139.0	0.93	A
			Cr-51	pCi/L	240	276	0.87	A
			Cs-134	pCi/L	157	174	0.90	A
			Cs-137	pCi/L	117.0	120	0.98	A
			Co-58	pCi/L	131.0	142	0.92	A
			Mn-54	pCi/L	128	125	1.02	A
			Fe-59	pCi/L	132	122	1.08	A
			Zn-65	pCi/L	235	235	1.00	A
			Co-60	pCi/L	169	173	0.98	A
	E11539	Charcoal	I-131	pCi	86.1	89.4	0.96	A
	E11540	AP	Ce-141	pCi	105.0	99.8	1.05	A
			Cr-51	pCi	216	198	1.09	A
			Cs-134	pCi	113	125	0.90	A
			Cs-137	pCi	94.5	87	1.09	A
			Co-58	pCi	101.0	102.0	0.99	A
			Mn-54	pCi	88.8	90.2	0.98	A
			Fe-59	pCi	82	88	0.94	A
			Zn-65	pCi	174	169	1.03	A
			Co-60	pCi	143	124	1.15	A

(a) Teledyne Brown Engineering reported result.
(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.
(c) Ratio of Teledyne Brown Engineering to Analytics results.
(d) Analytics evaluation based on TBE internal QC limits: A= Acceptable, reported result falls within ratio limits of 0.80-1.20. W-Acceptable with warning, reported result falls within 0.70-0.80 or 1.20-1.30. N = Not Acceptable, reported result falls outside the ratio limits of < 0.70 and > 1.30.

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
Third & Fourth Quarters

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
September 2016	E11609	Milk	Sr-89	pCi/L	90	90.9	0.99	A
			Sr-90	pCi/L	13.3	13.7	0.97	A
	E11610	Milk	I-131	pCi/L	80.4	71.9	1.12	A
			Ce-141	pCi/L	81.3	93	0.87	A
			Cr-51	pCi/L	198	236	0.84	A
			Cs-134	pCi/L	122	136	0.90	A
			Cs-137	pCi/L	119	119	1.00	A
			Co-58	pCi/L	92	97.4	0.95	A
			Mn-54	pCi/L	156	152	1.03	A
			Fe-59	pCi/L	98	90.6	1.08	A
			Zn-65	pCi/L	189	179	1.06	A
			Co-60	pCi/L	131	135	0.97	A
	E11611	Charcoal	I-131	pCi	52.4	59.9	0.87	A
	E11612	AP	Ce-141	pCi	67.5	63.6	1.06	A
			Cr-51	pCi	192	161	1.19	A
			Cs-134	pCi	91	93	0.99	A
			Cs-137	pCi	93.9	80.8	1.16	A
			Co-58	pCi	66.0	66.4	0.99	A
			Mn-54	pCi	104.0	104.0	1.00	A
			Fe-59	pCi	60.5	61.8	0.98	A
			Zn-65	pCi	140	122	1.15	A
			Co-60	pCi	119	91.9	1.29	W
	E11614	Soil	Ce-141	pCi/kg	0.153	0.175	0.87	A
			Cr-51	pCi/kg	0.482	0.441	1.09	A
			Cs-134	pCi/kg	0.270	0.254	1.06	A
			Cs-137	pCi/kg	0.313	0.299	1.05	A
			Co-58	pCi/kg	0.177	0.182	0.97	A
			Mn-54	pCi/kg	0.340	0.285	1.19	A
			Fe-59	pCi/kg	0.206	0.170	1.21	W
			Zn-65	pCi/kg	0.388	0.335	1.16	A
			Co-60	pCi/kg	0.284	0.252	1.13	A
December 2016	E11699	Milk	Sr-89	pCi/L	95	74.2	1.28	W
			Sr-90	pCi/L	14.7	10.0	1.47	N (NCR 16-35)
	E11700	Milk	I-131	pCi/L	97.5	97.4	1.00	A
			Ce-141	pCi/L	136	143	0.95	A
			Cr-51	pCi/L	247	280	0.88	A
			Cs-134	pCi/L	164	178	0.92	A
			Cs-137	pCi/L	120	126	0.95	A
			Co-58	pCi/L	139	146	0.95	A
			Mn-54	pCi/L	126	129	0.98	A
			Fe-59	pCi/L	114	125	0.91	A
			Zn-65	pCi/L	237	244	0.97	A
			Co-60	pCi/L	168	178	0.94	A
	E11701	Charcoal	I-131	pCi	95.6	98	0.98	A
	E11702	AP	Ce-141	pCi	91.7	97.7	0.94	A
			Cr-51	pCi	210	192	1.09	A
			Cs-134	pCi	122	122	1.00	A
			Cs-137	pCi	93.9	86.4	1.09	A
			Co-58	pCi	92.0	100.0	0.92	A
			Mn-54	pCi	93.7	88.5	1.06	A
			Fe-59	pCi	84.9	84.5	1.00	A
			Zn-65	pCi	176	167	1.05	A
			Co-60	pCi	151	122	1.24	W

(a) Teledyne Brown Engineering reported result.

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

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

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

DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Media	Nuclide*	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2016	16-GrF34	AP	Gr-B	Bq/sample	0.8060	0.79	0.40 - 1.19	A
	16-RdV34	Vegetation	Cs-134	Bq/sample	10.10	10.62	7.74 - 13.81	A
			Cs-137	Bq/sample	6.0	5.62	3.93 - 7.31	A
			Co-57	Bq/sample	13.3000	11.8	8.3 - 15.3	A
			Co-60	Bq/sample	0.013		(1)	A
			Mn-54	Bq/sample	0.0150		(1)	A
			Zn-65	Bq/sample	10.500	9.6	6.7 - 12.5	A
September 2016	16-RdV35	Vegetation	Cs-134	Bq/sample	-0.103		(1)	A
			Cs-137	Bq/sample	5.64	5.54	3.88 - 7.20	A
			Co-57	Bq/sample	7.38	6.81	4.77 - 8.85	A
			Co-60	Bq/sample	4.81	4.86	3.40 - 6.32	A
			Mn-54	Bq/sample	7.4	7.27	5.09 - 9.45	A
			Zn-65	Bq/sample	5.46	5.4	3.78 - 7.02	A

ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Limits	Evaluation (c)
May 2016	RAD-105	Water	Ba-133	pCi/L	53.1	58.8	63.9 - 90.8	A
			Cs-134	pCi/L	40.9	43.3	61.8 - 83.3	A
			Cs-137	pCi/L	85	78	170 - 210	A
			Co-60	pCi/L	108.0	102.0	76.0 - 95.3	A
			Zn-65	pCi/L	226	214	183 - 238	A
			I-131	pCi/L	24.1	26.6	19.7 - 28.3	A
			U-Nat	pCi/L	4.68	4.64	4.99 - 7.83	A
			H-3	pCi/L	7720	7840	2770 - 3620	A
November 2016	RAD-107	Water	Ba-133	pCi/L	47.8	54.9	45.4 - 60.7	A
			Cs-134	pCi/L	72.9	81.8	67.0 - 90.0	A
			Cs-137	pCi/L	189	210	189 - 233	A
			Co-60	pCi/L	68.4	64.5	58.0 - 73.4	A
			Zn-65	pCi/L	243	245	220 - 287	A
			I-131	pCi/L	23.5	26.3	21.9 - 31.0	A
			U-Nat	pCi/L	49.2	51.2	41.6 -56.9	A
			H-3	pCi/L	918	9820	8540 - 10800	N (NCR 16-34)

(a) Teledyne Brown Engineering reported result.

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

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

(1) False positive test