Annual Environmental Monitoring Report for 2011 covering the Pilgrim, Vermont Yankee, and Seabrook Nuclear Power Station Emergency Planning Zones

Massachusetts Department of Public Health
Bureau of Environmental Health

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I. Introduction

The Massachusetts Department of Public Health (MDPH) Bureau of Environmental Health (BEH) conducts routine environmental monitoring in the 18 communities that are located within the three Emergency Planning Zones (EPZs) in the Commonwealth. The EPZs include communities located within a 10 mile radius of Pilgrim Nuclear Power Station (PNPS) in Plymouth, MA, Seabrook Nuclear Power Station (Seabrook) in Seabrook, NH, and the Vermont Yankee Nuclear Power Station (VY), in Vernon, VT. Communities outside of the EPZs serve as background locations. This report provides results from all routine monitoring conducted during calendar year 2011. The report is organized by presenting sample location and analysis information for each of the three EPZs and provides a brief discussion of the analyses conducted on the samples, and finally, includes a discussion of results for each EPZ which are also summarized in tables.

BEH has a broad mission of protecting public health from a variety of environmental exposures. The Radiation Control Program (RCP) and Environmental Toxicology Program (ETP) within BEH collaborate in conducting routine environmental monitoring in EPZs in Massachusetts. Environmental media samples typically include food crops, milk, surface water, sediment, fish, and air. Samples are analyzed for radiation by the Massachusetts Environmental Radiation Laboratory (MERL) within RCP. MERL maintains its standard of excellence in analytical capability through participation with a variety of federal agencies in inter-laboratory quality assurance activities. In addition, real-time air radiation monitoring is conducted by MDPH within the communities in the PNPS EPZ, which is monitored via desktop computers by BEH staff. In communities within the Seabrook EPZ, the C-l 0 Research & Education Foundation, Inc., a non-profit under contract with MDPH conducts the air monitoring. The PNPS and Seabrook EPZs have had Massachusetts environmental monitoring programs in place since the 1980s. For Massachusetts communities within the EPZ for VY, the environmental monitoring program was initiated in 2011.

II. Summary

Overall, in 2011, radiation monitoring results for Massachusetts have been either non-detect, naturally occurring (i.e. potassium-40, beryllium-7, and lead-214), at levels expected to be present in the environment from background fallout due to bomb testing in the 1950s and 1960s (i.e. cesium-137), or attributable to a known source or event (i.e. iodine-131 in air samples following Fukushima). No radiation indicators or radionuclides were detected at a level of health concern.

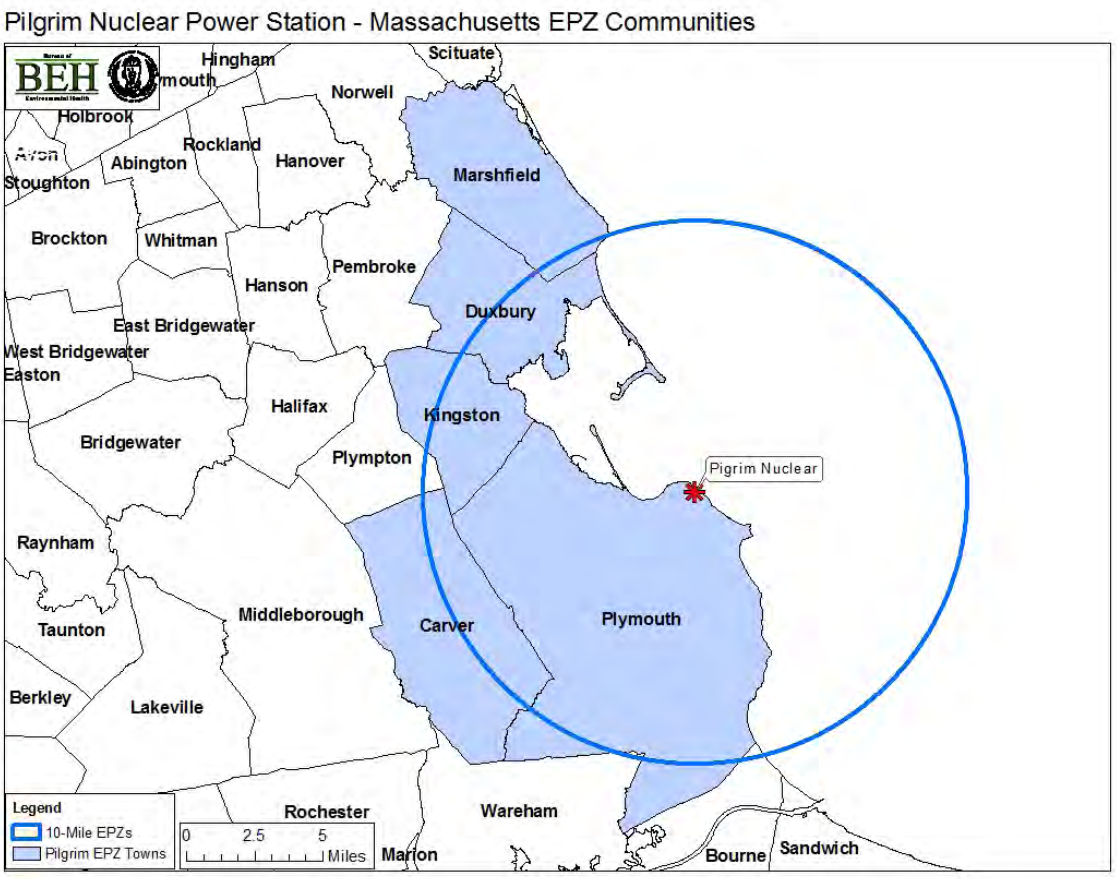
III. Environmental Monitoring Conducted Within Each EPZ

This section provides descriptions of the three nuclear power plant EPZs in Massachusetts along with a summary of environmental samples collected and analyzed in 2011.

A. Pilgrim Nuclear Power Station

The Pilgrim Nuclear Power Station (PNPS) is located in Plymouth, Massachusetts. There are five Massachusetts communities that are located within the 10-mile EPZ of PNPS: Carver, Duxbury, Kingston, Marshfield, and Plymouth (see Figure 1).

Figure 1. Communities within the Pilgrim EPZ



Routine radiation monitoring conducted within and outside the PNPS EPZ includes: air, surface water, seafood (fish, lobsters, and mussels), sediment, Irish moss, crops, and milk. These are described in detail below. (Note: a focused investigation of tritium in groundwater at PNPS is ongoing and not part of this report. Rather, regular updates on this monitoring effort are posted on the MDPH website).

AIR
MDPH collects air particulate filters weekly at PNPS that are co-located with Entergy's air sampler. Filters are analyzed for gross beta and gross alpha. A filter composite sample is also analyzed quarterly by gamma spectroscopy. Charcoal air cartridges are also collected weekly at PNPS and are analyzed for iodine-131. An air particulate filter and charcoal air cartridge are also located at a background location in Boston, and are analyzed on the same schedule using the same methods.

MDPH also has a network of 14 monitoring stations that detect gamma radiation in real-time. A server with enhanced software purchased in 2010 provides remote access to real-time results for multiple MDPH staff including the BEH Radiation Control and Environmental Toxicology Programs. Emergency pager alerts are sent to senior MDPH officials in the event that radiation is detected above background levels. Starting in 2012 and continuing through 2013, MDPH is moving forward with plans to relocate three of the real-time monitors to areas that better represent the area's coastal and more densely populated areas.

Finally, MDPH has 39 thermoluminescent dosimeters (TLDs) placed at multiple locations throughout the PNPS EPZ area. These TLDs are collected by MDPH on a quarterly basis and provide measurement of total ambient gamma radiation in millirem (mrem). TLD results are compared with a background TLD located in Boston, MA.

SURFACE WATER
Seawater is collected monthly from the PNPS discharge canal by Entergy and split surface water samples are analyzed by MERL using gamma spectroscopy. A quarterly composite of these surface water samples is analyzed for tritium. Seawater is also collected monthly from a background location outside the 10-mile EPZ at Powder Point Bridge in Duxbury. Entergy and MERL analyze split samples using gamma spectroscopy. A quarterly composite of the Powder Point Bridge surface water samples is also analyzed for tritium.

FISH, LOBSTERS, MUSSELS
Fish, lobsters, and mussels are collected twice per year from the PNPS discharge canal by Entergy and split samples are analyzed by MERL using gamma spectroscopy. Entergy collects fish, lobsters, and mussels one to two times per year from Cape Cod Bay (considered a background location), and MERL also analyzes spilt samples using gamma spectroscopy. Mussels are collected twice per year from Green Harbor in Marshfield by Entergy, considered a background location, and MERL analyzes split samples using gamma spectroscopy.

SEDIMENT
Sediment is collected from the PNPS discharge canal twice per year by Entergy and split samples are analyzed by MERL using gamma spectroscopy. Sediment is also collected twice per year by Entergy from a background location outside the 10-mile EPZ at Green Harbor in Marshfield and MERL analyzes split samples using gamma spectroscopy.

IRISH MOSS

Irish moss (chondrus) readily absorbs iodine and is a good indicator of any potential iodine-131 release in the environment. Samples of Irish moss are collected from the PNPS discharge canal twice per year by Entergy and split samples are analyzed by MERL using gamma spectroscopy. Irish moss is also collected twice per year by Entergy from a background location outside the 10-mile EPZ at Grant Rock in Marshfield and MERL also analyzes split samples by gamma spectroscopy.

CROPS

Crops including corn, apples, gourds, gourd leaves, pumpkins, squash, and/or hay forage are collected by Entergy from a Plymouth County farm located within the PNPS 10-mile EPZ once per year and split samples are analyzed by MERL using gamma spectroscopy. Samples of vegetables and wild vegetation are also collected once per year from several commercial gardens located in Plymouth by Entergy and MERL analyzes split samples by gamma spectroscopy. Crops, including cabbage and strawberries, are collected from two background locations outside the PNPS EPZ by Entergy on an annual basis from farms located in Bridgewater and Duxbury, and hay forage samples are collected by Entergy from another background location in Whitman. All crops from background locations are collected once per year by Entergy and MERL analyzes split samples using gamma spectroscopy. Finally, cranberries are collected from cranberry bogs located within the PNPS EPZ in Plymouth and in Kingston once per year by Entergy and are MERL analyzes split samples using gamma spectroscopy.

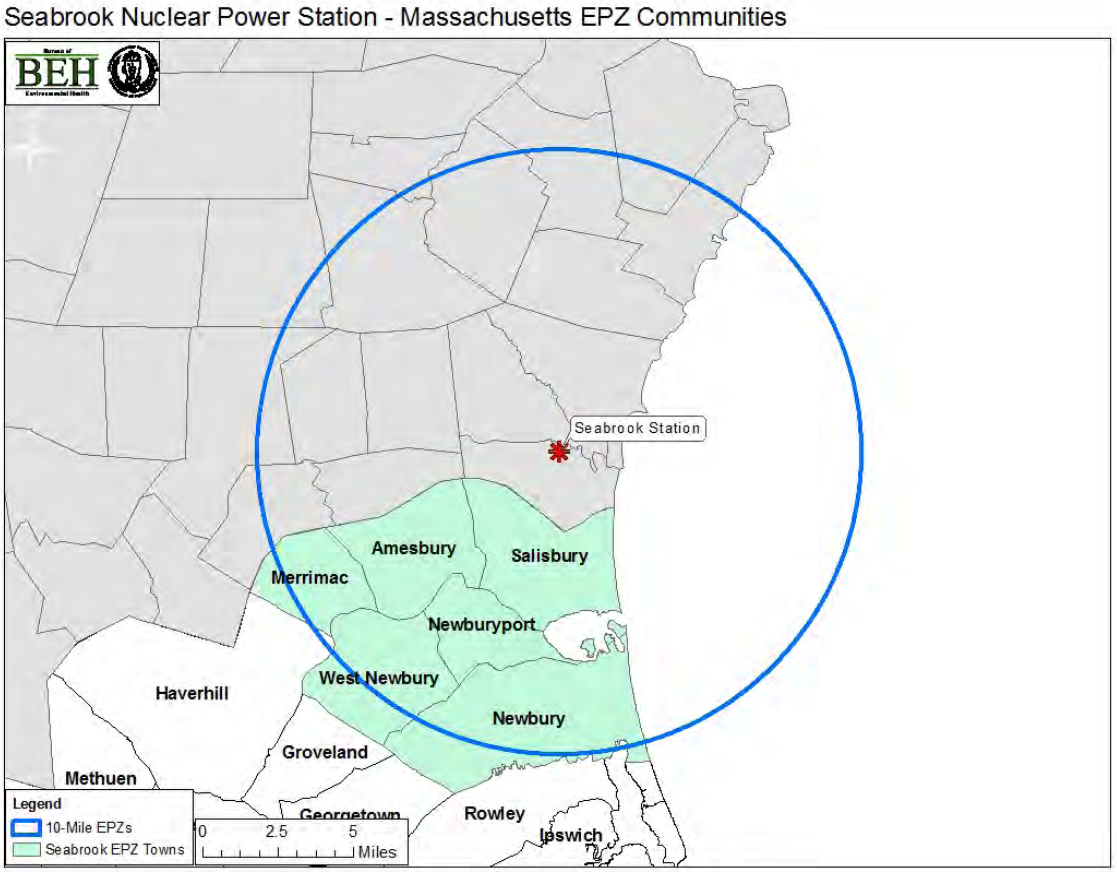
MILK

Samples of cow's milk are collected monthly from a farm located in Duxbury by MDPH and are analyzed at MERL using gamma spectroscopy and for iodine-131. Although this farm is located just outside the EPZ (i.e. 11 miles from PNPS), it is currently the closest dairy farm to PNPS where milk samples are available.

B. Seabrook Nuclear Power Station

Seabrook Nuclear Power Station (Seabrook) is located in Seabrook, New Hampshire, approximately two miles north of the Massachusetts border. There are six Massachusetts communities that have populations located within the 10-mile EPZ of Seabrook: Amesbury, Merrimac, Newbury, Newburyport, Salisbury, and West Newbury (see Figure 2).

Figure 2. Communities within the Seabrook EPZ



Routine radiation monitoring conducted within and outside the Seabrook EPZ includes the following environmental media: air, surface water, seafood (fish, lobster, and mussels), sediment, Irish moss, crops, and milk. MDPH receives split samples from Nextera (the utility that owns Seabrook) for all media except milk and air, and many of the Nextera sample locations in Massachusetts are considered background locations by the utility (i.e. most of Nextera's indicator samples are collected in New Hampshire).

AIR

MDPH collects air particulate filters weekly at the Salisbury Fire Station and filters are analyzed by MERL for gross beta and gross alpha. A filter composite is also analyzed quarterly by gamma spectroscopy. Charcoal air cartridges are also collected weekly at

the Salisbury Fire station and are analyzed by MERL for iodine-131. The same analyses are done for air particulate filters and charcoal cartridges at the background location in Boston, MA.

MDPH has 36 TLDs located throughout the Seabrook EPZ in Massachusetts that are collected quarterly and measure total ambient gamma radiation in mrem. TLD results are compared to a background TLD located in Boston, MA.

It should be noted that due to budget impacts resulting in the temporary closure of MERL in 2009, analysis of the MDPH TLD and air filter/cartridge monitors for Seabrook was suspended. This air filter/cartridge monitor came back into full operation in late 2011 and the TLDs were placed in early 2012.

As previously mentioned, in 2011, MDPH provided funding to the C-l 0 Research & Education Foundation, Inc. to conduct airborne radiation monitoring in Massachusetts communities located in the Seabrook EPZ. The C-10 system consists of a network of 16 radiation sensors and weather probes. Beta, gamma, and weather data are collected and recorded on a continuous basis at 16 sites located in Massachusetts within a ten-mile radius of Seabrook Station, and then uploaded every 15 minutes to a secure web-based central repository. Additionally, the data are compiled and graphed monthly, with reports submitted electronically to MDPH. All 16 monitoring sites are located in private homes, schools and businesses. MDPH and MEMA officials receive pager alerts from C-10 if levels go above three times background readings.

SURFACE WATER

Seawater samples are collected monthly by Nextera from a background location outside the 10-mile EPZ at Ipswich Bay, in Ipswich, Massachusetts and split samples are analyzed by MERL using gamma spectroscopy for gamma-emitting radionuclides. A quarterly composite of these monthly surface water samples is also analyzed for tritium by MERL.

FISH, LOBSTER, AND MUSSELS

Samples of fish, lobster, and shellfish including modiolus (Atlantic mussels), and mytilus (blue mussels), are collected twice per year by Nextera from Ipswich Bay, located outside the Seabrook EPZ, which is considered a background location. Split samples are also analyzed by MERL using gamma spectroscopy.

SEDIMENT

Sediment samples are collected from Ipswich Bay, a background location, by Nextera twice per year and analyzed by MERL using gamma spectroscopy. Sediment is also collected by Nextera from tidal flats on Plum Island, which is also considered a background location, twice per year and split samples are analyzed by MERL using gamma spectroscopy.

IRISH MOSS
As noted above, Irish moss (chondrus) readily absorbs iodine and is a good indicator of any potential iodine-131 release in the environment. Nextera collects samples of Irish moss (chondrus) twice per year from Ipswich Bay, considered a background location and split samples are analyzed by MERL using gamma spectroscopy.

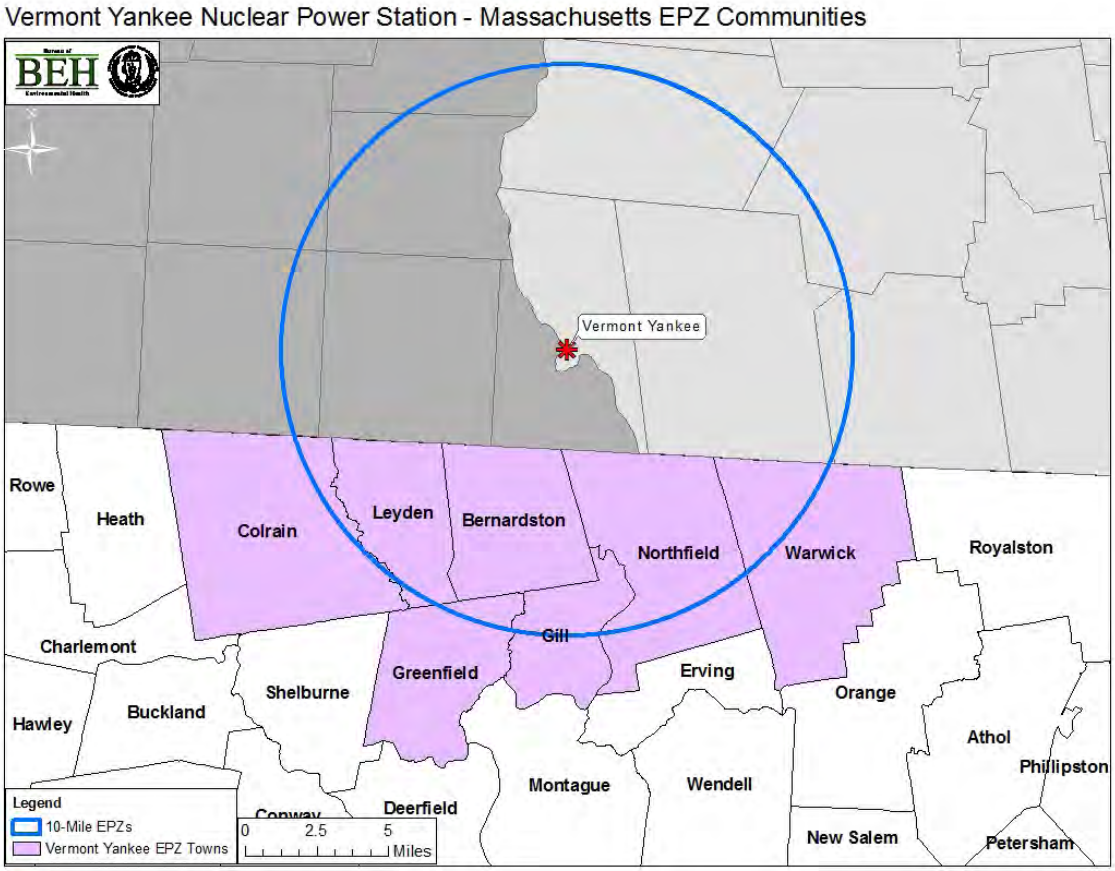
CROPS
Crops including strawberries and tomatoes are collected by Nextera from a farm located within the Seabrook EPZ in Salisbury, Massachusetts three times per year and split samples are analyzed by MERL using gamma spectroscopy. In addition, crops including strawberries, tomatoes, and squash are collected by Nextera three times per year from a background location, a farm in Ipswich, Massachusetts, and split samples are analyzed by MERL using gamma spectroscopy.

MILK
Samples of cow's milk are collected monthly by MDPH from a farm located in Rowley, Massachusetts and analyzed by MERL using gamma spectroscopy and are also analyzed for iodine-131. This farm is located outside the Seabrook EPZ and considered a background location.

C. Vermont Yankee Nuclear Power Station

VY is located in Vernon, Vermont, approximately four miles north of the Massachusetts border. There are seven Massachusetts communities that have populations located within the 10-mile EPZ of VY: Bernardston, Colrain, Gill, Greenfield, Leyden, Northfield, and Warwick (see Figure 3).

Figure 3. Communities within the Vermont Yankee EPZ



Beginning in spring 2011, a routine environmental monitoring program was initiated in Massachusetts communities located within the Vermont Yankee Nuclear Power Station EPZ. Routine radiation monitoring conducted within and outside the VY EPZ in Massachusetts includes the following environmental media: air, surface water, fish, sediment, grass, crops, and milk.

AIR

In 2011 and 2012, MDPH established air cartridge/filter and TLD monitoring within the Vermont Yankee EPZ. Collection and analysis of air cartridge/filter and TLD samples commenced in 2012 and results will be presented in the 2012 annual report.

SURFACE WATER
MDPH collects surface water samples on a quarterly basis from the Connecticut River at two locations within the VY EPZ in Northfield and Gill, Massachusetts. Surface water samples are analyzed by MERL using gamma spectroscopy and samples are also analyzed for tritium. In 2012, surface water samples were also collected quarterly from a location outside the VY 10-mile EPZ at the Millers River in Athol. Background surface water samples are also analyzed by gamma spectroscopy and for tritium.

FISH
MDPH collects fish samples twice per year from the Connecticut River at two locations within the VY EPZ in Northfield and Gill, Massachusetts. Fish samples are analyzed by MERL using gamma spectroscopy. In late 2011, a background location for fish sampling was established at the Millers River in Athol. Fish samples were collected in 2012 and gamma spectroscopy results will be presented in the 2012 environmental monitoring report.

SEDIMENT
Sediment samples are collected twice per year from the Connecticut River at two locations within the VY EPZ in Northfield and Gill, Massachusetts. Sediment samples are analyzed by MERL using gamma spectroscopy. Sediment samples are also collected twice per year from a background location at the Millers River in Athol and analyzed by MERL using gamma spectroscopy.

GRASS
MDPH collects grass samples twice per year from locations within the VY EPZ near the Connecticut River in Northfield and Gill, Massachusetts. Grass samples are analyzed by MERL using gamma spectroscopy. In 2012, samples of grass were also collected from a background location near the Millers River in Athol and analyzed by gamma spectroscopy.

CROPS
Crops including apples, pumpkins, and corn forage are collected from several farms located within the VY EPZ in Bernardston and Northfield, Massachusetts once per year by MDPH and are analyzed by MERL using gamma spectroscopy. Apples are also collected from a background location at an orchard located in Colrain by MDPH once per year and are analyzed by MERL using gamma spectroscopy.

MILK
Samples of cow's milk are collected monthly from a farm located within the VY EPZ in Bernardston, MA by MDPH. Milk samples are analyzed by MERL using gamma spectroscopy and are also analyzed for iodine-131.

IV. Sample Analysis Methods

The majority of environmental media samples are analyzed by MERL using gamma spectroscopy. Radionuclides detectable with the gamma spectroscopy instrument include cesium-137 and iodine-131. These radionuclides are good indicators for radiation associated with operations at a nuclear power plant. Gamma spectroscopy is also capable of detecting many naturally occurring radionuclides. It should be noted that potassium-40 is a naturally occurring radioactive form of potassium, an essential nutrient. About one in 40 atoms of potassium are in the form of potassium-40, including potassium that occurs naturally in the human body. Beryllium-7 is a naturally occurring radioactive element that is produced when cosmic energy collides with our atmosphere. Lead-214 is a naturally occurring radioactive form of lead that is a product of the decay of naturally occurring radioactive radon gas. Gamma spectroscopy results for environmental media samples are compared to typical background levels. In the event that radionuclides detected with a gamma spectroscopy screen are found that cannot be attributed to background or typical levels, a hard-to-detects analysis may be warranted. However, such analyses would be sought on an as needed basis as few laboratories in the country have the capability to analyze for hard-to-detects, such as strontium-90.

Air filters collected from each of the three EPZs are analyzed weekly for gross alpha and gross beta. Alpha and beta particles are easily trapped by the air filters, since most alpha and beta emitting particles can be stopped by clothing and skin. Gross alpha and beta analysis can detect alpha and gamma emitting particles, but not individual radionuclides. Thus, air filters are also analyzed quarterly for individual gamma radionuclides (e.g., cesium-137) using gamma spectroscopy. Results are compared to results for a background monitor located in Boston and provide a useful tool to monitor any differences between alpha and beta levels within the three EPZs as compared to background. All three radiation types (i.e. alpha, beta, and gamma) are analyzed to provide a complete picture of radiation types within the EPZ as compared to the background location. The air cartridges are specifically designed to be analyzed weekly for iodine-131, which is usually the first radionuclide detected in any potential accidental release. Iodine-131 results from air monitors within EPZs are also compared to iodine-131 analysis from the cartridge at the background location in Boston.

In addition to gamma spectroscopy, surface water samples are analyzed for tritium. Tritium is more water soluble than other radionuclides and therefore provides a good indicator to evaluate potential radioactive impacts to water bodies in the vicinity of the power stations.

V. MDPH Environmental Monitoring Results

In 2011, radiation monitoring results for Massachusetts have been either non-detect, naturally occurring (i.e. potassium-40, beryllium-7, and lead-214), at levels expected to be present in the environment from background fallout due to bomb testing in the 1950s and 1960s (i.e. cesium-137), or attributable to a known source or event (i.e., cesium-137 and iodine-131). No detectible levels of radionuclides were at levels of health concern or were indicative of an unintentional release of radiation at PNPS, Seabrook, or VY. Results of environmental monitoring conducted by MDPH in the Massachusetts communities in the vicinity of each of the three nuclear power stations are discussed below and presented in Tables 1 – 8.

A. Pilgrim Nuclear Power Station Results

Naturally occurring potassium-40, beryllium-7, and lead-214 were detected in nearly all samples of environmental media for which they were analyzed from both within and outside of the PNPS EPZ (for specific values see tables 1, 2 and 3 below). Potassium-40, beryllium-7, and lead-214 occur naturally in the environment in varying amounts depending on the make-up of local air, water bodies, soils, and sediments.

Although cesium-137 was detected at 6.9 picocuries per kilogram (pCi/kg) in blue fish from the PNPS discharge canal, this detection is consistent with levels published in the scientific literature, such as Burger et. al. 2007 and Amund et.al. 1996, attributable to historical fallout from bomb testing in the 1950s and 1960s. This level was also right at MERL's lower limit of detection, which was 6.9 pCi/kg for this sample. Importantly the levels detected do not present health concerns. Cs-137 was below detection limits in other fish samples from the discharge canal (See Table 2).

Although iodine-131 and cesium-137 have not typically been detected in routine air monitoring results, these slight detections of the isotopes were found in air samples at levels well below health concern following the Fukushima accident in Japan in March, 2011. Specifically, iodine-131 was detected for three consecutive weeks following the Fukushima accident at the charcoal air filter at PNPS at levels ranging from 0.0281 to 0.0552 pCi/m^3. Cesium-137 was also present just at the limit of detection of 0.001 pCi/m^3 in a filter sample from early April 2011.

In 2011, real-time monitoring for the PNPS EPZ did not show radiation levels above typical background levels which range between 0.0080 and 0.0100 mrem per hour with the exception of brief upticks that are expected to occur due to rainfall washout from naturally occurring radionuclides (beryllium-7, potassium-40, and lead-214), which can reach up to 0.0160 mrem per hour. For reference, Figure 4 below puts these doses into context. The average U.S. resident is exposed to about 300 mrem per year from natural radiation sources in the soil, rocks, and air.

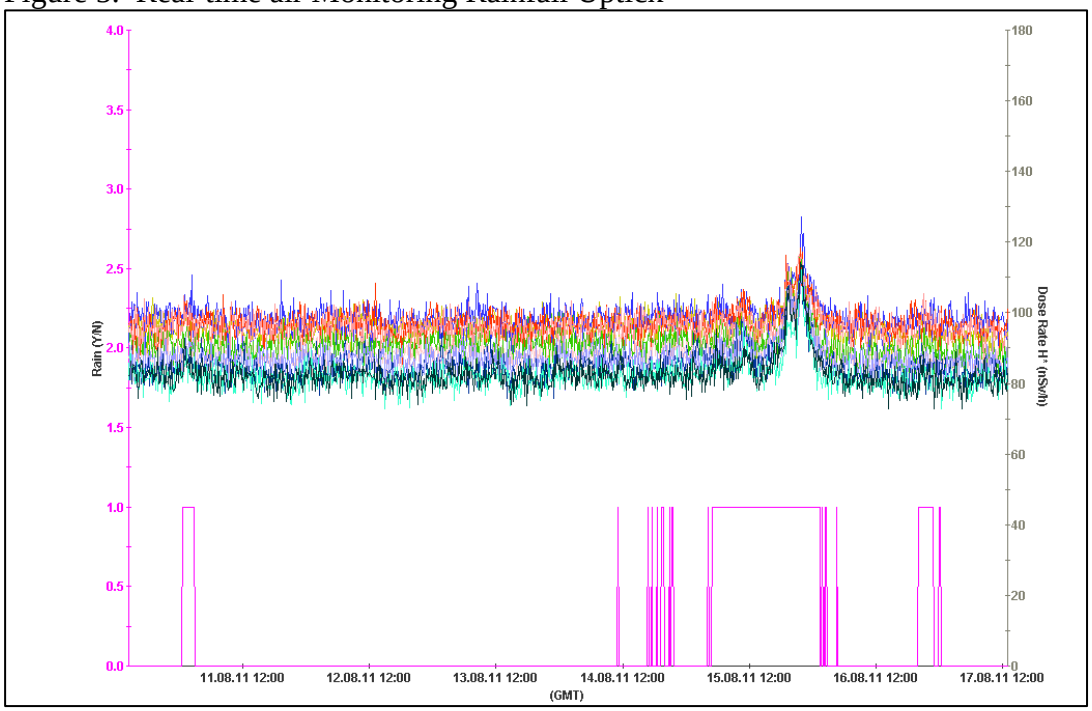
In 2011, TLDs in the PNPS EPZ range between 10.76 and 20.4 mrem per quarter off of the Pilgrim property and within the PNPS EPZ, which compares to an average of 13.22

mrem per quarter for the background location in Boston. TLD readings can vary naturally with their surroundings, due to objects with naturally occurring radiation such as bricks and granite. It should be noted that TLDs for the PNPS EPZ were collected and placed the first half of the year by an MDPH contractor, and for the second half of the year by MERL staff, who restored TLD collection capabilities when the lab reopened and ramped up their capabilities after temporary closure in 2009. It should also be noted TLDs for the Seabrook EPZ were restored for 2012, and a TLD program was established for the first time in 2012 for VY EPZ.

Figure 4. Background Dose Information for the United States

Dose	Millirems	Source
Typical US Resident Annual Dose	360	NRC, ISU, DOE
Natural Background Annual Dose	310	NRC
Mammogram	138 per image	DOE
Chest X-Ray	7	ISU
Natural Background Hourly Doses	0.005-0.020	ISU, EPA

Figure 5. Real-time air Monitoring Rainfall Uptick



* Results are reported in nanosieverts per hour by the computer system (1 nanosievert per hour = 0.0001 mrem per hour)

B. Seabrook Nuclear Power Station Results

Naturally occurring potassium-40, beryllium-7, and lead-214 were detected in nearly all samples of environmental media for which they were analyzed from both within and outside of the Seabrook EPZ (for specific values see tables 4, 5 and 6 below). As mentioned, potassium-40, beryllium-7, and lead-214 occur naturally in varying amounts depending on the make-up of local air, water bodies, soils and sediments.

Although not detected at levels of health concern, the MERL split sample for the Irish moss background location for the Seabrook EPZ located approximately 20 miles from the plant had a detection of iodine-131 at 17.9 pCi/kg on November 16, 2011. It should be noted that the indicator location for Irish moss located at the Seabrook facility right at the discharge in the Atlantic ocean has historically been non-detect for iodine-131 according to Nextera. Given that this detection occurred at the background location, MDPH believes it is unlikely attributable to Seabrook. According to Larsen et al. 2001, in Oak Ridge, TN, iodine-131 can be detected up to 50,000,000 pCi/L in sewage effluent in the sewer lines immediately downstream of a hospital treating someone for thyroid cancer. Once the raw sewage effluent gets to the sewage treatment plant it can still be about 30,000 pCi/L. MDPH determined that there are sewage discharges near this background location and iodine-131 will concentrate in Irish moss because it takes up iodine. Importantly, these levels detected in Irish moss would not be of health concern if consumed.

In 2011, real-time monitoring for the Seabrook EPZ did not show radiation levels above typical background levels which range between 0.0070 and 0.0190 mrem per hour with the exception of brief upticks that are expected to occur due to rainfall washout from naturally occurring radionuclides (beryllium-7, potassium-40, and lead-214), which can reach up to 0.020 mrem per hour.

C. Vermont Yankee Nuclear Power Station Results

Naturally occurring potassium-40, beryllium-7, and lead-214 were detected in nearly all samples of environmental media for which they were analyzed from both within and outside of the VY EPZ (for specific values see tables 7 and 8 below). Potassium-40, beryllium-7, and lead-214 occur naturally in varying amounts depending on the make-up of local air, water bodies, soils and sediments.

Background soil and sediment in the U.S. typically has between 10 and 1000 pCi/kg of cesium-137 from atmospheric bomb testing conducted mainly in the 1950s and 1960s. Cesium-137 most likely attributable to bomb testing from the 1950s and 1960s was detected in sediment from the Connecticut River in the Vermont Yankee EPZ between 24.2 and 59.8 pCi/kg. The MDPH sample collected as background at the Millers River in Athol, 10 miles outside the Vermont Yankee EPZ was 311 pCi/kg. Cesium-137 was also detected in grasses along the Connecticut River in the Vermont Yankee EPZ between 26.7 pCi/kg and 53.2 pCi/kg. The grass along the Connecticut River contained cesium-

137 due to being recently inundated and covered with sediment containing similar concentration of cesium-137 during tropical storm Irene in late August 2011.

VI. Tables

Table 1. Pilgrim Nuclear Power Station 2011 Environmental Monitoring Data - Liquid Constituents

Sample Type	Location	Date	K-40* (pCi/L)	Mn-54* (pCi/L)	Fe-59* (pCi/L)	Co-60* (pCi/L)	Zn-65* (pCi/L)	1-131* (pCi/L)	Cs-134* (pCi/L)	Cs-137* (pCi/L)	Ba-140* (pCi/L)	H-3* (pCi/L)
Surface Water	Powder Point Bridge (Background)	1/31/2011	267	ND(5.0)	ND(12.2)	ND(5.5)	ND(15.7)	ND(16.3)	-	ND(5.1)	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)	2/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Powder Point Bridge (Background)	3/1/2011	263	ND(4.7)	ND(12.1)	ND(5.2)	ND(13.2)	ND(17.2)	-	ND(5.2)	-	-
Surface Water	Powder Point Bridge (Background)	3/29/2011	274	ND(5.4)	ND(13.6)	ND(5.9)	ND(14.8)	ND(15.7)	-	ND(5.8)	-	-
Surface Water	Powder Point Bridge (Background)	4/27/2011	295	ND(5.3)	ND(14.1)	ND(6.0)	ND(15.2)	ND(20.4)	-	ND(5.8)	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)	5/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Powder Point Bridge (Background)	5/31/2011	301	ND(5.1)	ND(15.1)	ND(5.2)	ND(13.7)	ND(69.2)	-	ND(5.1)	-	-
Surface Water	Powder Point Bridge (Background)	6/28/2011	286	ND(5.0)	ND(10.9)	ND(5.1)	ND(13.0)	ND(11.1)	-	ND(5.1)	-	-
Surface Water	Powder Point Bridge (Background)	8/2/2011	285	ND(5.3)	ND(10.8)	ND(5.2)	ND(14.7)	ND(9.8)	-	ND(5.5)	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)	8/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Powder Point Bridge (Background)	8/30/2011	ND(216)	ND(7.7)	ND(17.0)	ND(7.7)	ND(19.6)	ND(12.4)	-	ND(7.9)	-	-
Surface Water	Powder Point Bridge (Background)	9/27/2011	ND(265)	ND(9.9)	ND(20.1)	ND(9.9)	ND(25.4)	ND(12.5)	-	ND(10.5)	-	-
Surface Water	Powder Point Bridge (Background)	11/1/2011	301	ND(4.9)	ND(10.1)	ND(5.2)	ND(13.0)	ND(5.9)	-	ND(5.2)	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)	11/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Powder Point Bridge (Background)	11/29/2011	411	ND(7.3)	ND(15.9)	ND(8.0)	ND(20.9)	ND(8.4)	-	ND(8.5)	-	-
Surface Water	Powder Point Bridge (Background)	1/3/2012	ND(266)	ND(10.0)	ND(21.9)	ND(10.6)	ND(27.2)	ND(18.2)	-	ND(10.6)	-	-
Surface Water	PNPS Discharge Canal	1/31/2011	241	ND(5.2)	ND(13.7)	ND(6.0)	ND(16.3)	ND(16.4)	-	ND(5.8)	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	2/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	PNPS Discharge Canal	3/1/2011	1600	ND(8.0)	ND(20.5)	ND(8.5)	ND(19.6)	ND(30.9)	-	ND(8.9)	-	-
Surface Water	PNPS Discharge Canal	3/29/2011	1540	ND(8.4)	ND(21.0)	ND(7.8)	ND(20.2)	ND(37.2)	-	ND(9.0)	-	-
Surface Water	PNPS Discharge Canal	4/27/2011	1500	ND(8.4)	ND(22.2)	ND(8.6)	ND(20.9)	ND(34.1)	-	ND(8.5)	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	5/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	PNPS Discharge Canal	5/31/2011	296	ND(5.1)	ND(17.7)	ND(5.1)	ND(13.9)	ND(107)	-	ND(4.9)	-	-
Surface Water	PNPS Discharge Canal	6/28/2011	1640	ND(8.2)	ND(18.5)	ND(8.7)	ND(19.2)	ND(16.5)	-	ND(8.6)	-	-
Surface Water	PNPS Discharge Canal	8/2/2011	1550	ND(8.2)	ND(18.9)	ND(8.2)	ND(21.1)	ND(1.7)	-	ND(9.0)	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	8/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	PNPS Discharge Canal	8/30/2011	266	ND(4.9)	ND(9.8)	ND(5.5)	ND(13.9)	ND(6.4)	-	ND(5.1)	-	-
Surface Water	PNPS Discharge Canal	9/27/2011	235	ND(7.5)	ND(15.3)	ND(7.9)	ND(19.1)	ND(9.0)	-	ND(8.1)	-	-
Surface Water	PNPS Discharge Canal	11/1/2011	263	ND(10.8)	ND(20.9)	ND(10.6)	ND(26.2)	ND(10.7)	-	ND(11.4)	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	11/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	PNPS Discharge Canal	11/29/2011	307	ND(4.8)	ND(10.1)	ND(5.1)	ND(13.1)	ND(5.7)	-	ND(5.3)_	-	-
Surface Water	PNPS Discharge Canal	1/3/2012	167	ND(10.4)	ND(22.1)	ND(9.9)	ND(28.1)	ND(16.6)	-	ND(10.6)	-	-
Milk	Duxbury	4/27/2011	1440	-	-	-	-	ND(1.1)	ND(5.5)	ND(6.3)	ND(20.1)	-
Milk	Duxbury	5/31/2011	1250	-	-	-	-	ND(0.9)	ND(5.5)	ND(6.1)	ND(19.1)	-
Milk	Duxbury	6/14/2011	1330	-	-	-	-	ND(1.8)	ND(5.7)	ND(6.3)	ND(20.4)	-
Milk	Duxbury	7/19/2011	1260	-	-	-	-	ND(1.1)	ND(5.9)	ND(6.1)	ND(19.8)	-
Milk	Duxbury	8/16/2011	1350	-	-	-	-	ND(1.1)	ND(5.6)	ND(6.0)	ND(13.4)	-

Sample Type	Location	Date	K-40* (pCi/L)	Mn-54* (pCi/L)	Fe-59* (pCi/L)	Co-60* (pCi/L)	Zn-65* (pCi/L)	1-131* (pCi/L)	Cs-134* (pCi/L)	Cs-137* (pCi/L)	Ba-140* (pCi/L)	H-3* (pCi/L)
Milk	Duxbury	9/27/2011	1290	-	-	-	-	ND(1.7)	ND(7.3)	ND(8.6)	ND(26.7)	-
Milk	Duxbury	10/18/2011	1250	-	-	-	-	ND(1.8)	ND(10.0)	ND(35.8)	ND	-
Milk	Duxbury	11/15/2011	1270	-	-	-	-	ND(2.3)	ND(10.1)	ND(10.6)	ND(36.2)	-
Milk	Duxbury	12/20/2011	1220	-	-	-	-	ND(1.8)	ND(10.3)	ND(11.5)	ND(36.3)	-

"-" = not analyzed
"ND" = not detected

* K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65, I-131 = idodine-131, Cs-134 = cesium-134, Cs-137 = cesium-137, Ba-140 = barium-140, H-3 = tritium

Table 2. Pilgrim Nuclear Power Station 2011 Environmental Monitoring Data - Solid Constituents

Sample Type	Location	Date	Be-7* (pCi/kg)	K-40* (pCi/kg)	Mn-54* (pCi/kg)	Fe-59* (pCi/kg)	Co-60* (pCi/kg)	Zn-65* (pCi/kg)	1-131* (pCi/kg)	Cs-137* (pCi/kg)	Pb-214* (pCi/kg)	H-3* (pCi/kg)
Chondrus	Brant Rock Marshfield (Background)	4/19/2011	129	5290	ND(11.9)	ND(34.9)	ND(12.8)	ND(37.9)	ND(61.4)	ND(11.5)	-	-
Chondrus	PNPS – Discharge Canal	4/21/2011	225	5870	ND(9.1)	ND(27.5)	ND(10.3)	ND(28.3)	ND(45.0)	ND(9.5)	-	-
Mussels	Green Harbor Marshfield (Background)	4/19/2011	ND(221)	1640	ND(9.6)	ND(86.3)	ND(8.9)	ND(27.2)	-	ND(8.1)	ND(17.1)	-
Clams	Plymouth Harbor	4/20/2011	ND(310)	3190	ND(11.9)	ND(102.0)	ND(10.8)	ND(33.3)	-	ND(10.9)	ND(22.0)	-
Clams	Duxbury Bay (Background)	4/20/2011	ND(242)	2630	ND(10.2)	ND(81.4)	ND(8.9)	ND(31.6)	-	ND(8.0)	79.6	-
Mussels	PNPS – Discharge Canal	6/1/2011	ND(251)	1470	ND(10.1)	ND(85.9)	ND(10.2)	ND(30.9)	-	ND(8.5)	48.7	-
Winter Flounder	PNPS Discharge Canal	5/2/2011	ND(320)	5490	ND(14.6)	ND(114)	ND(13.5)	ND(40.9)	-	ND(13.4)	95.1	-
Winter Flounder	Cape Cod Bay (Background)	5/3/2011	ND(240)	4950	ND(12.9)	ND(95)	ND(11.6)	ND(38.5)	-	ND(10.7)	50.3	-
Cod	Cape Cod Bay (Background)	5/3/2011	ND(358)	4010	ND(13.0)	ND(153)	ND(11.9)	ND(42.8)	-	NDA(8.8)	48.1	-
Tautog	PNPS – Discharge Canal	7/11/2011	ND(866)	4160	ND(50.0)	ND(246)	ND(43.1)	ND(139.0)	-	ND(45.2)	204	-
Bluefish	PNPS – Discharge Canal	7/11/2011	ND(137)	3910	ND(8.4)	ND(53)	ND(8.2)	ND(26.0)	-	6.9	31.3	-
Bluefish	Buzzards Bay (Background)	8/23/2011	ND(2570)	4310	ND(61.1)	ND(998)	ND(44.0)	ND(181)	-	ND(45.7)	316	-
Striped Bass	PNPS Discharge Canal	9/12/2011	ND(345)	4150	ND(10.5)	ND(153)	ND(9.8)	ND(35.4)	-	ND(7.7)	68.3	-
Striped Bass	Buzzards Bay (Background)	9/24/2011	ND(1350)	3310	ND(43.3)	ND(509)	ND(42.1)	ND(141.0)	-	ND(38.9)	121	-
Cod	PNPS Discharge Canal	9/15/2011	ND(537)	3490	ND(17.2)	ND(247)	ND(15.7)	ND(61.2)	-	ND(10.3)	129	-
Lobster	PNPS Discharge Canal	6/20/2011	ND(250)	2130	ND(12.6)	ND(97.4)	ND(11.6)	ND(41.3)	-	ND(11.7)	77.6	-
Lobster	Cape Cod Bay (Background)	9/26/2011	ND(302)	1850	ND(10.1)	ND(113.0)	ND(8.8)	ND(31.0)	-	ND(7.7)	56.6	-
Sediment	Green Harbor (Background)	4/19/2011	-	8410	-	-	ND(25.7)	-	-	ND(24.7)	159.0	-
Sediment	PNPS Discharge Canal	4/21/2011	-	21800	-	-	ND(13.4)	-	-	ND(11.5)	379.0	-
Strawberries	Duxbury (Background)	7/5/2011	ND(43.2)	1480	ND(5.4)	ND(11.6)	ND(6.4)	ND(15.2)	-	ND(5.8)	ND(12.5)	-
Tomatoes	Manomet	8/23/2011	ND(65.8)	2110	ND(8.4)	ND(19.6)	ND(9.2)	ND(23.0)	-	ND(9.8)	ND(19.6)	-
Tomatoes	Bridgewater (Background)	8/24/2011	ND(44.5)	2320	ND(5.7)	ND(12.7)	ND(6.5)	ND(16.5)	-	ND(5.8)	ND(13.8)	-
Small Cucumbers	Plymouth	9/2/2011	ND(70.6)	1640	ND(7.8)	ND(20.0)	ND(8.6)	ND(23.0)	-	ND(8.9)	ND(19.0)	-
Large Cucumbers	Plymouth	9/2/2011	ND(47.8)	1680	ND(5.3)	ND(13.4)	ND(5.9)	ND(14.6)	-	ND(5.5)	ND(12.8)	-

Sample Type	Location	Date	Be-7* (pCi/kg)	K-40* (pCi/kg)	Mn-54* (pCi/kg)	Fe-59* (pCi/kg)	Co-60* (pCi/kg)	Zn-65* (pCi/kg)	1-131* (pCi/kg)	Cs-137* (pCi/kg)	Pb-214* (pCi/kg)	H-3* (pCi/kg)
Squash	Plymouth	9/2/2011	ND(72.6)	2610	ND(8.4)	ND(21.7)	ND(9.3)	ND(24.0)	-	ND(8.7)	ND(18.8)	-
Cranberries	Plymouth	9/26/2011	ND(57.2)	732	ND(7.0)	ND(16.5)	ND(7.6)	ND(19.3)	-	ND(8.5)	ND(17.0)	-
Vegetation	Plymouth	9/30/2011	3340	5360	ND(29.4)	ND(82.4)	ND(30.1)	ND(81.0)	-	ND(25.7)	ND(68.7)	-
Cranberries	Kingston (Background)	10/5/2011	35.2	1130	ND(10.0)	ND(23.9)	ND(9.8)	ND(26.4)	-	ND(10.6)	ND(23.3)	-
Cranberries	Plymouth	10/6/2011	192	670	ND(6.7)	ND(17.6)	ND(7.4)	ND(17.9)	-	ND(7.3)	ND(17.4)	-
Pasture Grass/Silage	Duxbury (Background)	10/18/2011	8870	7380	ND(99)	ND(219)	ND(99)	ND(268)	-	ND(106)	ND(239)	-
Pasture Grass/Silage	Plymouth	10/18/2011	1640	2810	ND(142)	ND(314)	ND(137)	ND(367)	-	ND(146)	683	-

"-" = not analyzed
"ND" = not detected

* Be-7 = beryllium 7, K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65, I-131 = iodine-131, Cs-137 = cesium-137, Pb-214 – lead-214, H-3 = tritium

Table 3. Pilgrim Nuclear Power Station 2011 Environmental Monitoring Data - Gaseous Constituents

Sample Type	Location	Date	1-131* (pCi/m3)	Be-7* (pCi/m3)	K-40* (pCi/m3)	Mn-54* (pCi/m3)	Fe-59* (pCi/m3)	Co-60* (pCi/m3)	Zn-65* (pCi/m3)	Cs-134* (pCi/m3)	Cs-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Pilgrim Station	1/4/2011	ND(0.0520)	-	-	-	-	-	-	-	-	-	0.01350	0.0117
Air	Pilgrim Station	1/11/2011	ND(0.0484)	-	-	-	-	-	-	-	-	-	0.00724	0.0062
Air	Pilgrim Station	1/18/2011	ND(0.0525)	-	-	-	-	-	-	-	-	-	0.00639	0.0071
Air	Pilgrim Station	1/25/2011	ND(0.0487)	-	-	-	-	-	-	-	-	-	0.00335	0.0042
Air	Pilgrim Station	2/1/2011	ND(0.0545)	-	-	-	-	-	-	-	-	-	0.00572	0.0083
Air	Pilgrim Station	2/8/2011	ND(0.0468)	-	-	-	-	-	-	-	-	-	0.00038	-0.0003
Air	Pilgrim Station	2/15/2011	ND(0.0485)	-	-	-	-	-	-	-	-	-	0.00872	0.0086
Air	Pilgrim Station Quarterly Filter Composite	2/15/2011	-	ND(0.621)	ND(0.021)	ND(0.002)	ND(0.359)	ND(0.001)	ND(0.007)	ND(0.002)	ND(0.001)	0.008	-	-
Air	Pilgrim Station	2/22/2011	ND(0.0520)	-	-	-	-	-	-	-	-	-	0.00510	0.0040
Air	Pilgrim Station	3/1/2011	ND(0.0506)	-	-	-	-	-	-	-	-	-	0.00425	0.0026
Air	Pilgrim Station	3/8/2011	ND(0.0478)	-	-	-	-	-	-	-	-	-	0.00376	0.0060
Air	Pilgrim Station	3/15/2011	ND(0.0278)	-	-	-	-	-	-	-	-	-	0.00227	0.0024
Air	Pilgrim Station	3/22/2011	ND(0.0320)	-	-	-	-	-	-	-	-	-	0.00080	-0.0010
Air	Pilgrim Station	3/29/2011*	0.0281	-	-	-	-	-	-	ND(0.020)	ND(0.018)	-	0.00530	0.0052
Air	Pilgrim Station	4/5/2011*	0.0552	-	-	-	-	-	-	0.005	0.009	-	-0.00009	0.0170
Air	Pilgrim Station	4/12/2011*	0.0460	-	-	-	-	-	-	ND(0.018)	ND(0.013)	-	0.00427	0.0098
Air	Pilgrim Station	4/19/2011	ND(0.0167)	-	-	-	-	-	-	-	-	-	0.00256	0.0058
Air	Pilgrim Station	4/26/2011	ND(0.0207)	-	-	-	-	-	-	-	-	-	0.00284	0.0019
Air	Pilgrim Station	5/03/2011	ND(0.0370)	-	-	-	-	-	-	-	-	-	0.00087	-0.0021
Air	Pilgrim Station	5/10/2011	ND(0.0246)	-	-	-	-	-	-	-	-	-	0.00358	0.0072
Air	Pilgrim Station Quarterly Filter Composite	5/15/2011*	-	ND(0.311)	ND(0.020)	ND(0.002)	ND(0.157)	ND(0.001)	ND(0.005)	0.001	0.001	0.004	-	-
Air	Pilgrim Station	5/17/2011	ND(0.0474)	-	-	-	-	-	-	-	-	-	-0.00067	-0.0050
Air	Pilgrim Station	5/25/2011	ND(0.0337)	-	-	-	-	-	-	-	-	-	0.00245	-0.0016
Air	Pilgrim Station	5/31/2011	ND(0.0237)	-	-	-	-	-	-	-	-	-	0.00662	0.0172
Air	Pilgrim Station	6/07/2011	ND(0.0415)	-	-	-	-	-	-	-	-	-	0.00380	0.0100
Air	Pilgrim Station	6/14/2011	ND(0.0425)	-	-	-	-	-	-	-	-	-	0.00424	0.0113
Air	Pilgrim Station	6/22/2011	ND(0.0371)	-	-	-	-	-	-	-	-	-	0.00456	0.0088
Air	Pilgrim Station	6/28/2011	ND(0.0487)	-	-	-	-	-	-	-	-	-	0.00395	0.0070
Air	Pilgrim Station	7/05/2011	ND(0.0457)	-	-	-	-	-	-	-	-	-	0.00586	0.0153
Air	Pilgrim Station	7/12/2011	ND(0.0431)	-	-	-	-	-	-	-	-	-	0.00706	0.0170
Air	Pilgrim Station	7/19/2011	ND(0.0461)	-	-	-	-	-	-	-	-	-	0.00684	0.0161
Air	Pilgrim Station	7/26/2011	ND(0.0493)	-	-	-	-	-	-	-	-	-	0.00683	0.0187
Air	Pilgrim Station	8/2/2011	ND(0.0299)	-	-	-	-	-	-	-	-	-	0.00575	0.0147
Air	Pilgrim Station	8/9/2011	ND(0.0427)	-	-	-	-	-	-	-	-	-	0.00394	0.0099
Air	Pilgrim Station Quarterly Filter Composite	8/15/2011	-	0.1	ND(0.022)	ND(0.001)	ND(0.028)	ND(0.001)	ND(0.005)	ND(0.001)	ND(0.001)	0.01	-	-
Air	Pilgrim Station	8/16/2011	ND(0.0267)	-	-	-	-	-	-	-	-	-	0.00494	0.0092
Air	Pilgrim Station	8/23/2011	ND(0.0466)	-	-	-	-	-	-	-	-	-	0.00564	0.0145
Air	Pilgrim Station	8/31/2011	ND(0.0415)	-	-	-	-	-	-	-	-	-	0.00377	0.0135

Sample Type	Location	Date	1-131* (pCi/m3)	Be-7* (pCi/m3)	K-40* (pCi/m3)	Mn-54* (pCi/m3)	Fe-59* (pCi/m3)	Co-60* (pCi/m3)	Zn-65* (pCi/m3)	Cs-134* (pCi/m3)	Cs-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Pilgrim Station	9/06/2011	ND(0.0542)	-	-	-	-	-	-	-	-	-	0.00232	0.0095
Air	Pilgrim Station	9/13/2011	ND(0.0495)	-	-	-	-	-	-	-	-	-	0.00300	0.0104
Air	Pilgrim Station	9/20/2011	ND(0.0514)	-	-	-	-	-	-	-	-	-	0.00436	0.0176
Air	Pilgrim Station	9/27/2011	ND(0.0421)	-	-	-	-	-	-	-	-	-	0.00222	0.0119
Air	Pilgrim Station	10/04/2011	ND(0.0595)	-	-	-	-	-	-	-	-	-	0.00318	0.0162
Air	Pilgrim Station	10/11/2011	ND(0.0459)	-	-	-	-	-	-	-	-	-	0.00464	0.0242
Air	Pilgrim Station	10/18/2011	ND(0.0432)	-	-	-	-	-	-	-	-	-	0.00127	0.0117
Air	Pilgrim Station	10/25/2011	ND(0.0599)	-	-	-	-	-	-	-	-	-	0.00307	0.0172
Air	Pilgrim Station	11/01/2011	ND(0.0455)	-	-	-	-	-	-	-	-	-	0.00208	0.0127
Air	Pilgrim Station	11/08/2011	ND(0.0532)	-	-	-	-	-	-	-	-	-	0.00107	0.0167
Air	Pilgrim Station	11/15/2011	ND(0.0607)	-	-	-	-	-	-	-	-	-	0.00142	0.0251
Air	Pilgrim Station Quarterly Filter Composite	11/15/2011	-	0.08	ND(0.025)	ND(0.001)	ND(0.008)	ND(0.001)	ND(0.004)	ND(001)	ND(0.001)	0.01	-	-
Air	Pilgrim Station	11/23/2011	ND(0.0449)	-	-	-	-	-	-	-	-	-	0.00069	0.0181
Air	Pilgrim Station	11/29/2011	-	-	-	-	-	-	-	-	-	-	-	-
Air	Pilgrim Station	12/06/2011	ND(0.0496)	-	-	-	-	-	-	-	-	-	-0.00089	0.0032
Air	Pilgrim Station	12/13/2011	ND(0.0463)	-	-	-	-	-	-	-	-	-	0.00288	0.0149
Air	Pilgrim Station	12/20/2011	ND(0.0661)	-	-	-	-	-	-	-	-	-	0.00206	0.0156
Air	Pilgrim Station	12/27/2011	ND(0.0468)	-	-	-	-	-	-	-	-	-	-0.00010	0.0036
Air	Background	1/4/2011	ND(0.0550)	-	-	-	-	-	-	-	-	-	0.01110	0.0101
Air	Background	1/11/2011	ND(0.0551)	-	-	-	-	-	-	-	-	-	0.00702	0.0044
Air	Background	1/18/2011	ND(0.0535)	-	-	-	-	-	-	-	-	-	0.00074	-0.0051
Air	Background	1/25/2011	ND(0.0365)	-	-	-	-	-	-	-	-	-	0.00431	0.0036
Air	Background	2/1/2011	ND(0.0344)	-	-	-	-	-	-	-	-	-	0.00807	0.0091
Air	Background	2/8/2011	ND(0.0619)	-	-	-	-	-	-	-	-	-	0.00186	-0.0006
Air	Background	2/15/2011	ND(0.0684)	-	-	-	-	-	-	-	-	-	0.00598	0.0046
Air	Background Quarterly Composite	2/15/2011	-	ND(1.04)	ND(0.05)	ND(0.004)	ND(0.74)	ND(0.002)	ND(0.014)	-	ND(0.002)	0.017	-	-
Air	Background	2/22/2011	ND(0.0614)	-	-	-	-	-	-	-	-	-	0.00401	-0.0005
Air	Background	3/1/2011	ND(0.0724)	-	-	-	-	-	-	-	-	-	0.00154	-0.0019
Air	Background	3/8/2011	ND(0.0398)	-	-	-	-	-	-	-	-	-	0.00249	-0.0011
Air	Background	3/15/2011	ND(0.0677)	-	-	-	-	-	-	-	-	-	0.00179	-0.0018
Air	Background	3/22/2011	ND(0.0341)	-	-	-	-	-	-	-	-	-	-0.00234	-0.0051
Air	Background	3/29/2011	-	-	-	-	-	-	-	-	-	-	-0.01320	-0.0631
Air	Background	4/5/2011	-	-	-	-	-	-	-	-	-	-	-0.01150	-0.0534
Air	Background	4/12/2011	ND(0.0716)	-	-	-	-	-	-	-	-	-	0.00299	0.0032
Air	Background	4/19/2011	ND(0.0733)	-	-	-	-	-	-	-	-	-	-0.00053	-0.0030
Air	Background	4/26/2011	ND(0.0625)	-	-	-	-	-	-	-	-	-	0.00158	-0.0035
Air	Background	5/3/2011	ND(0.0490)	-	-	-	-	-	-	-	-	-	-0.00098	-0.0059
Air	Background	5/10/2011	ND(0.0541)	-	-	-	-	-	-	-	-	-	0.00114	-0.0038
Air	Background Quarterly Composite	5/15/2011	-	ND(0.363)	ND(0.036)	ND(0.003)	ND(0.162)	ND(0.002)	ND(0.009)	-	ND(0.002)	0.011	-	-
Air	Background	5/17/2011	ND(0.0640)	-	-	-	-	-	-	-	-	-	0.00014	-0.0123
Air	Background	5/24/2011	ND(0.0298)	-	-	-	-	-	-	-	-	-	0.00350	0.0039

Sample Type	Location	Date	1-131* (pCi/m3)	Be-7* (pCi/m3)	K-40* (pCi/m3)	Mn-54* (pCi/m3)	Fe-59* (pCi/m3)	Co-60* (pCi/m3)	Zn-65* (pCi/m3)	Cs-134* (pCi/m3)	Cs-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Background	5/31/2011	ND(0.0695)	-	-	-	-	-	-	-	-	-	0.00772	0.0191
Air	Background	6/7/2011	ND(0.0712)	-	-	-	-	-	-	-	-	-	0.00482	0.0073
Air	Background	6/14/2011	ND(0.0714)	-	-	-	-	-	-	-	-	-	0.00630	0.0115
Air	Background	6/21/2011	ND(0.0808)	-	-	-	-	-	-	-	-	-	0.00585	0.0096
Air	Background	6/28/2011	ND(0.0723)	-	-	-	-	-	-	-	-	-	0.00317	0.0045
Air	Background	7/5/2011	ND(0.0622)	-	-	-	-	-	-	-	-	-	0.00621	0.0131
Air	Background	7/12/2011	ND(0.0536)	-	-	-	-	-	-	-	-	-	0.00786	0.0174
Air	Background	7/19/2011	ND(0.0333)	-	-	-	-	-	-	-	-	-	0.00522	0.0134
Air	Background	7/26/2011	ND(0.0337)	-	-	-	-	-	-	-	-	-	0.00726	0.0196
Air	Background	8/2/2011	ND(0.0364)	-	-	-	-	-	-	-	-	-	0.00497	0.0104
Air	Background	8/9/2011	ND(0.0540)	-	-	-	-	-	-	-	-	-	0.00120	0.0100
Air	Background Quarterly Composite	8/15/2011	-	0.096	ND(0.032)	ND(0.002)	ND(0.038)	ND(0.002)	ND(0.007)	-	ND(0.002)	0.009	-	-
Air	Background	8/16/2011	ND(0.1030)	-	-	-	-	-	-	-	-	-	0.00412	0.0087
Air	Background	8/23/2011	ND(0.0759)	-	-	-	-	-	-	-	-	-	0.00536	0.0147
Air	Background	8/30/2011	ND(0.0631)	-	-	-	-	-	-	-	-	-	0.00588	0.0127
Air	Background	9/06/2011	ND(0.0734)	-	-	-	-	-	-	-	-	-	0.00412	0.0111
Air	Background	9/13/2011	ND(0.0719)	-	-	-	-	-	-	-	-	-	0.00311	0.0141
Air	Background	9/20/2011	ND(0.0680)	-	-	-	-	-	-	-	-	-	0.00479	0.0193
Air	Background	9/23/2011	ND(0.1820)	-	-	-	-	-	-	-	-	-	0.00550	0.0156
Air	Background	9/28/2011	ND(0.0880)	-	-	-	-	-	-	-	-	-	0.00362	0.0208
Air	Background	10/04/2011	ND(0.0823)	-	-	-	-	-	-	-	-	-	0.00393	0.0331
Air	Background	10/11/2011	ND(0.0628)	-	-	-	-	-	-	-	-	-	0.00845	0.0349
Air	Background	10/18/2011	ND(0.0764)	-	-	-	-	-	-	-	-	-	0.00253	0.0184
Air	Background	10/25/2011	ND(0.0621)	-	-	-	-	-	-	-	-	-	0.00281	0.0103
Air	Background	11/01/2011	ND(0.0584)	-	-	-	-	-	-	-	-	-	0.00201	0.0167
Air	Background	11/08/2011	ND(0.0545)	-	-	-	-	-	-	-	-	-	0.00060	0.0155
Air	Background	11/15/2011	ND(0.0571)	-	-	-	-	-	-	-	-	-	0.00190	0.0239
Air	Background Quarterly Composite	11/15/2011	-	0.094	ND(0.051)	ND(0.002)	ND(0.014)	ND(0.002)	ND(0.006)	-	ND(0.002)	0.010	-	-
Air	Background	11/22/2011	ND(0.0538)	-	-	-	-	-	-	-	-	-	0.00189	0.0223
Air	Background	11/29/2011	ND(0.0707)	-	-	-	-	-	-	-	-	-	0.00012	0.0169
Air	Background	12/6/2011	ND(0.0525)	-	-	-	-	-	-	-	-	-	-0.00234	0.0035
Air	Background	12/13/2011	ND(0.0559)	-	-	-	-	-	-	-	-	-	0.00304	0.0189
Air	Background	12/20/2011	ND(0.0548)	-	-	-	-	-	-	-	-	-	0.00354	0.0251
Air	Background	12/27/2011	ND(0.0522)	-	-	-	-	-	-	-	-	-	0.00137	0.0104

"-" = not analyzed
"ND" = not detected

* I-131 = iodine-131, Be-7 = beryllium-7, K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65, Cs-134 = cesium-134, Cs-137, = cesium-137, Pb-214 = lead-214

Table 4. Seabrook Nuclear Power Station 2011 Environmental Monitoring Data - Liquid Constituents

Sample Type	Location	Date	K-40* (pCi/L)	Mn-54* (pCi/L)	Fe-59* (pCi/L)	Co-60* (pCi/L)	Zn-65* (pCi/L)	1-131* (pCi/L)	Cs-134* (pCi/L)	Cs-137* (pCi/L)	Ba-140* (pCi/L)	H-3* (pCi/L)
Surface Water	Ipswich Bay (Background)	1/25/2011	320	ND(4.8)	ND(10.4)	ND(5.6)	ND(13.9)	ND(8.6)	-	ND(5.1)	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	2/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Ipswich Bay (Background)	2/24/2011	299	ND(5.2)	ND(12.6)	ND(6.0)	ND(15.3)	ND(10.1)	-	ND(5.9)	-	-
Surface Water	Ipswich Bay (Background)	3/22/2011	265	ND(5.3)	ND(13.7)	ND(5.9)	ND(14.8)	ND(15.1)	-	ND(5.9)	-	-
Surface Water	Ipswich Bay (Background)	4/19/2011	433	ND(5.8)	ND(15.0)	ND(6.1)	ND(16.8)	ND(20.9)	-	ND(6.2)	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	5/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Ipswich Bay (Background)	5/24/2011	298	ND(5.2)	ND(13.0)	ND(5.4)	ND(13.8)	ND(18.3)	-	ND(5.1)	-	-
Surface Water	Ipswich Bay (Background)	6/21/2011	308	ND(5.0)	ND(11.5)	ND(5.7)	ND(13.7)	ND(10.4)	-	ND(5.0)	-	-
Surface Water	Ipswich Bay (Background)	7/18/2011	267	ND(4.7)	ND(10.7)	ND(5.2)	ND(13.1)	ND(8.6)	-	ND(4.9)	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	8/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Ipswich Bay (Background)	8/24/2011	246	ND(4.8)	ND(10.3)	ND(5.2)	ND(11.9)	ND(7.3)	-	ND(5.2)	-	-
Surface Water	Ipswich Bay (Background)	9/21/2011	ND(261)	ND(9.9)	ND(20.9)	ND(10.2)	ND(25.2)	ND(15.1)	-	ND(10.6)	-	-
Surface Water	Ipswich Bay (Background)	10/26/2011	310	ND(7.2)	ND(17.6)	ND(7.9)	ND(20.3)	ND(13.4)	-	ND(8.5)	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	11/15/2011	-	-	-	-	-	-	-	-	-	ND(300)
Surface Water	Ipswich Bay (Background)	11/17/2011	348	ND(10.2)	ND(25.5)	ND(10.5)	ND(28.9)	ND(33.0)	-	ND(10.8)	-	-
Surface Water	Ipswich Bay (Background)	12/15/2011	ND(266)	ND(9.9)	ND(20.7)	ND(10.2)	ND(24.6)	ND(13.6)	-	ND(10.2)	-	-
Milk	Rowley (Background)	3/1/2011	1360	-	-	-	-	ND(1.9)	ND(5.9)	ND(6.2)	ND(19.5)	-
Milk	Rowley (Background)	4/14/2011	2590	-	-	-	-	ND(1.8)	ND(8.0)	ND(9.1)	ND(31.8)	-
Milk	Rowley (Background)	5/11/2011	1540	-	-	-	-	ND(1.2)	ND(5.9)	ND(6.3)	ND(20.4)	-
Milk	Rowley (Background)	6/8/2011	1570	-	-	-	-	ND(1.8)	ND(6.0)	ND(6.2)	ND(20.0)	-
Milk	Rowley (Background)	7/13/2011	1400	-	-	-	-	ND(1.2)	ND(4.7)	ND(5.0)	ND(18.6)	-
Milk	Rowley (Background)	8/11/2011	2860	-	-	-	-	ND(1.7)	ND(8.0)	ND(9.2)	ND(31.0)	-
Milk	Rowley (Background)	9/7/2011	1290	-	-	-	-	ND(1.9)	ND(7.4)	ND(8.7)	ND(28.6)	-
Milk	Rowley (Background)	10/12/2011	1320	-	-	-	-	ND(1.8)	ND(10.6)	ND(10.6)	ND(35.4)	-
Milk	Rowley (Background)	11/8/2011	1330	-	-	-	-	ND(2.3)	ND(10.5)	ND(10.7)	ND(36.2)	-
Milk	Rowley (Background)	12/6/2011	1360	-	-	-	-	ND(2.3)	ND(10.2)	ND(11.2)	ND(36.8)	-

"-" = not analyzed
"ND" = not detected

* K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65, I-131 = iodine-131, Cs-134 = cesium-134, Cs-137 = cesium-137, Ba-140 = barium-140, H-3 = tritium

Table 5. Seabrook Nuclear Power Station 2011 Environmental Monitoring Data - Solid Constituents

Sample Type	Location	Date	Be-7 * (pCi/kg)	K-40* (pCi/kg)	Mn-54* (pCi/kg)	Fe-59* (pCi/kg)	Co-60* (pCi/kg)	Zn-65* (pCi/Kg)	1-131* (pCi/kg)	Cs-137* (pCi/kg)	Pb-214* (pCi/kg)
Chondrus	Ipswich Bay	6/1/2011	194	8160	ND(13.2)	ND(79.3)	ND(14.0)	ND(42.4)	ND(2240)**	ND(12.6)	-
Chondrus	Ipswich Bay	11/16/2011	487	7580	ND(14.2)	ND(32.8)	ND(16.2)	ND(41.3)	17.9	ND(15.2)	-
Finfish	Ipswich Bay	6/1/2011	ND(265)	3530	ND(12.1)	ND(103)	ND(12.3)	ND(37.3)	-	ND(10.4)	35
Finfish	Ipswich Bay	8/24/2011	ND(169)	4450	ND(14.8)	ND(52.1)	ND(14.6)	ND(40.7)	-	ND(14.3)	ND(30.4)
Finfish	Ipswich Bay	11/16/2011	ND(1670)	4420	ND(73.5)	ND(502.0)	ND(68.1)	ND(233)	-	ND(65.4)	624
Lobster	Ipswich Bay	5/25/2011	ND(241)	1580	ND(10.0)	ND(91.1)	ND(9.5)	ND(30.6)	-	ND(8.9)	ND(18.3)
Lobster	Ipswich Bay	11/16/2011	ND(172)	1940	ND(8.1)	ND(60.5)	ND(7.8)	ND(25.0)	-	ND(7.3)	47.8
Mytilus	Ipswich Bay	5/24/2011	ND(267)_	1610	ND(11.7)	ND(92.3)	ND(10.3)	ND(33.2)	-	ND(10.4)	ND(22.0)
Modiolus	Ipswich Bay	6/1/2011	ND(269)	1420	ND(10.9)	ND(93.6)	ND(10.0)	ND(31.9)	-	ND(9.7)	ND(20.0)
Modiolus	Ipswich Bay	11/15/2011	ND(356.0)	1280	ND(16.8)	ND(113.0)	ND(14.0)	ND(49.4)	-	ND(14.5)	86.6
Mytilus	Ipswich Bay	11/15/2011	ND(225.0)	1190	ND(10.4)	ND(78.7)	ND(9.5)	ND(32.7)	-	ND(9.8)	18.7
Sediment	Ipswich Bay (Beach)	5/24/2011	-	15,300	-	-	ND(29.2)	-	-	ND(28.2)	302
Sediment	Ipswich Bay (Beach)	5/24/2011	-	16,400	-	-	ND(32.5)	-	-	ND(29.4)	276
Sediment	Ipswich Bay (Beach)	5/24/2011	-	15,200	-	-	ND(29.7)	-	-	ND(26.8)	244
Sediment	Ipswich Bay (Subtidal)	6/1/2011	-	11,600	-	-	ND(46.1)	-	-	ND(48.8)	1,880
Sediment	Ipswich Bay (Subtidal)	6/1/2011	-	11,900	-	-	ND(30.8)	-	-	ND(36.3)	957
Sediment	Ipswich Bay (Subtidal)	6/1/2011	-	11,600	-	-	ND(30.9)	-	-	ND(32.7)	758
Sediment	Ipswich Bay (Beach)	11/15/2011	-	13,200	-	-	ND(36.9)	-	-	ND(36.3)	487
Sediment	Ipswich Bay (Beach)	11/15/2011	-	14,000	-	-	ND(27.3)	-	-	ND(27.6)	369
Sediment	Ipswich Bay (Beach)	11/15/2011	-	14,000	-	-	ND(27.5)	-	-	ND(27.3)	398

Sample Type	Location	Date	Be-7 * (pCi/kg)	K-40* (pCi/kg)	Mn-54* (pCi/kg)	Fe-59* (pCi/kg)	Co-60* (pCi/kg)	Zn-65* (pCi/Kg)	1-131* (pCi/kg)	Cs-137* (pCi/kg)	Pb-214* (pCi/kg)
Sediment	Ipswich Bay (Subtidal)	11/16/2011	-	11,500	-	-	ND(38.4)	-	-	ND(44.0)	1,910
Sediment	Ipswich Bay (Subtidal)	11/16/2011	-	12,200	-	-	ND(42.9)	-	-	ND(42.5)	1,140
Sediment	Ipswich Bay (Subtidal)	11/16/2011	-	11,400	-	-	ND(32.9)	-	-	ND(34.1)	990
Strawberries	Ipswich	6/16/2011	ND(50.1)	805	ND(5.6)	ND(13.2)	ND(6.1)	ND(16.6)	-	ND(5.8)	31.7
Strawberries	Salisbury	6/16/2011	ND(64.0)	1220	ND(7.0)	ND(16.5)	ND(7.9)	ND(20.8)	-	ND(6.9)	ND(17.2)
Summer Squash	Ipswich	7/26/2011	ND(42.8)	1580	ND(5.5)	ND(12.8)	ND(6.5)	ND(16.3)	-	ND(5.8)	ND(13.3)
Garden Tomatoes	Salisbury	7/26/2011	ND(45.5)	1880	ND(5.9)	ND(13.1)	ND(6.3)	ND(16.5)	-	ND(6.0)	ND(13.6)
Garden Tomatoes	Ipswich	8/24/2011	ND(73.1)	2,130	ND(8.3)	ND(20.8)	ND(9.1)	ND(24.7)	-	ND(9.8)	ND(19.5)
Garden Tomatoes	Salisbury	8/24/2011	ND(44.2)	1,890	ND(5.4)	ND(12.1)	ND(6.3)	ND(16.0)	-	ND(5.6)	ND(14.2)

"-" = not analyzed
"ND" = not detected
* Be-7 = beryllium 7, K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65, I-131 = iodine-131, Cs-137 = cesium-137, Pb-214 – lead-214
** Delayed Analysis

Table 6. Seabrook Nuclear Power Station 2011 Environmental Monitoring Data - Gaseous Constituents

Sample Type	Location	Date	1-131* (pCi/m3)	Be-7* (pCi/m3)	K-40* (pCi/m3)	Mn-54* (pCi/m3)	Fe-59* (pCi/m3)	Co-60* (pCi/m3)	Zn-65* (pCi/m3)	Cs-134* (pCi/m3)	Cs-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Salisbury Fire Station	12/7/2011	ND(0.0646)	-	-	-	-	-	-	-	-	-	-0.00263	0.0072
Air	Salisbury Fire Station	12/14/2011	ND(0.0646)	-	-	-	-	-	-	-	-	-	0.00448	0.0212
Air	Salisbury Fire Station (Quarterly Composite)	12/15/2011	-	0.108	ND(0.198)	ND(0.008)	ND(0.034)	ND(0.007)	ND(0.022)	-	ND(0.007)	0.036	-	-
Air	Salisbury Fire Station	12/20/2011	ND(0.2140)	-	-	-	-	-	-	-	-	-	0.00067	0.0237
Air	Salisbury Fire Station	12/28/2011	ND(0.0643)	-	-	-	-	-	-	-	-	-	0.00175	0.0149

"-" = not analyzed
"ND" = not detected
* I-131 = iodine-131, Be-7 = beryllium-7, K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65, Cs-134 = cesium-134, Cs-137, = cesium-137, Pb-214 = lead-214

Table 7. Vermont Yankee Nuclear Power Station 2011 Environmental Monitoring Data - Liquid Constituents

Sample Type	Location	Date	K-40* (pCi/L)	Mn-54* (pCi/L)	Fe-59* (pCi/L)	Co-60* (pCi/L)	Zn-65* (pCi/L)	1-131* (pCi/L)	Cs-134* (pCi/L)	Cs-137* (pCi/L)	Ba-140* (pCi/L)	H-3* (pCi/L)
Surface Water	Connecticut River, Northfield	4/29/2011	ND(145)	ND(5.1)	ND(10.9)	ND(5.9)	ND(13.8)	ND(4.9)	-	ND(5.7)	-	ND(300)
Surface Water	Connecticut River, Northfield	8/18/2011	ND(101)	ND(4.9)	ND(9.0)	ND(4.9)	ND(12.8)	ND(4.9)	-	ND(4.8)	-	ND(300)
Surface Water	Connecticut River, Northfield	11/29/2011	ND(250)	ND(9.7)	ND(19.0)	ND(10.4)	ND(26.2)	ND(10.4)	-	ND(10.6)	-	ND(300)
Surface Water	Connecticut River, Gill	4/29/2011	ND(95.0)	ND(4.8)	ND(9.7)	ND(5.0)	ND(12.1)	ND(6.0)	-	ND(5.0)	-	ND(300)
Surface Water	Connecticut River, Gill	8/18/2011	ND(98.0)	ND(4.8)	ND(9.0)	ND(5.2)	ND(12.7)	ND(5.1)	-	ND(4.9)	-	ND(300)
Surface Water	Connecticut River, Gill	11/29/2011	ND(103)	ND(5.2)	ND(9.5)	ND(5.2)	ND(13.3)	ND(5.4)	-	ND(5.3)	-	ND(300)
Milk	Bernardston	4/29/2011	1360	-	-	-	-	ND(1.1)	ND(5.1)	ND(5.4)	ND(18.0)	-
Milk	Bernardston	5/24/2011	1350	-	-	-	-	ND(1.9)	ND(5.5)	ND(6.1)	ND(20.6)	-
Milk	Bernardston	7/6/2011	1390	-	-	-	-	ND(1.2)	ND(5.5)	ND(6.2)	ND(21.1)	-
Milk	Bernardston	7/20/2011	1360	-	-	-	-	ND(1.1)	ND(5.1)	ND(5.6)	ND(17.7)	-
Milk	Bernardston	8/18/2011	1410	-	-	-	-	ND(1.3)	ND(7.2)	ND(8.7)	ND(28.8)	-
Milk	Bernardston	9/22/2011	1220	-	-	-	-	ND(2.0)	ND(7.3)	ND(8.4)	ND(29.2)	-
Milk	Bernardston	10/13/2011	1270	-	-	-	-	ND(1.8)	ND(10.3)	ND(10.9)	ND(35.2)	-
Milk	Bernardston	11/29/2011	1230	-	-	-	-	ND(1.8)	ND(10.9)	ND(10.9)	ND(36.5)	-
Milk	Bernardston	12/15/2011	1370	-	-	-	-	ND(1.8)	ND(10.8)	ND(10.8)	ND(38.2)	-

“-“ = not analyzed
“ND” = not detected
* K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65, I-131 = iodine-131, Cs-134 = cesium-134, Cs-137 = cesium-137, Ba-140 = barium-140, H-3 = tritium

Table 8. Vermont Yankee Nuclear Power Station 2011 Environmental Monitoring Data - Solid Constituents

Sample Type	Location	Date	Be-7* (pCi/kg)	K-40* (pCi/kg)	Mn-54* (pCi/kg)	Fe-59* (pCi/kg)	Co-60* (pCi/kg)	Zn-65* (pCi/kg)	Cs-137* (pCi/kg)	Pb-214* (pCi/kg)
Apples	Northfield	9/22/2011	83.6	1150	ND(8.0)	ND(20.3)	ND(8.6)	ND(21.8)	ND(8.2)	ND(18.6)
Apples	Colrain (Background)	9/22/2011	ND(91.0)	759	ND(9.7)	ND(22.4)	ND(10.1)	ND(25.5)	ND(10.1)	ND(22.6)
Pumpkins	Northfield	9/22/2011	ND(53.4)	3910	ND(6.2)	ND(17.4)	ND(7.0)	ND(18.4)	ND(6.2)	ND(13.7)
Corn Silage	Bernardston	10/13/2011	3500	7130	ND(19.5)	ND(49.8)	ND(21.7)	ND(53.2)	ND(19.1)	ND(46.9)
Grass	Northfield, CT River	9/22/2011	4120	7550	ND(31.3)	ND(71.0)	ND(30.5)	ND(86.3)	26.7	159
Grass	Gill, CT River	9/22/2011	7130	5470	ND(30.7)	ND(77.7)	ND(31.4)	ND(87.3)	53.2	ND(70.1)
Grass	Northfield Routes 5 & 10	9/22/2011	6620	5980	ND(30.8)	ND(75.2)	ND(31.8)	ND(84.9)	ND(34.7)	ND(71.6)
Sediment	Northfield, CT River	9/22/2011	-	13600	-	-	ND(43.4)	-	59.8	647
Sediment	Gill, CT River	9/22/2011	-	7970	-	-	ND(33.4)	-	24.2	358
Sediment	Athol, Millers River (Background)	12/15/2011	-	12900	-	-	ND(38.8)	-	311	929
Fish (composite sample)	Gill, CT River	9/23/2011	ND(82.8)	2470	ND(8.4)	ND(27.9)	ND(9.4)	ND(23.9)	ND(5.7)	ND(18.5)

"-" = not analyzed
"ND" = not detected

* Be-7 = beryllium-7, K-40 = potassium-40, Mn-54 = manganese-54, Fe-59 = iron-59, Co-60 = cobalt-60, Zn-65 = zinc-65 , Cs-137 = cesium-137, Pb-214 = lead-214