Environmental Monitoring Report

Pilgrim, Seabrook, and Vermont Yankee Nuclear Power Station Emergency Planning Zones 2012 - 2013

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EXECUTIVE SUMMARY

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 years 2012 and 2013. 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, shellfish, 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 direct 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-l0 Research & Education Foundation, Inc., a non-profit under contract with MDPH, conducts the direct radiation 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.

With one exception, radiation monitoring results in 2012 and 2013 for areas surrounding the three nuclear power stations affecting 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 otherwise attributable to a known source or man-made event (e.g., Fukushima, Chernobyl, sewage effluent). At PNPS, one Irish moss sample from 2013 showed a detection of Zinc-65 above the laboratory Reporting Level (RL) but below any level of health concern. All other Irish moss samples (n=3) from this location were less than the RL. Overall, no radiation indicators or radionuclides were detected at a level of health concern.

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 years 2012 and 2013. 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, shellfish, 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 direct 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-l0 Research & Education Foundation, Inc., a non-profit under contract with MDPH, conducts the direct radiation 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. ENVIRONMENTAL MONITORING CONDUCTED WITHIN EACH EPZ

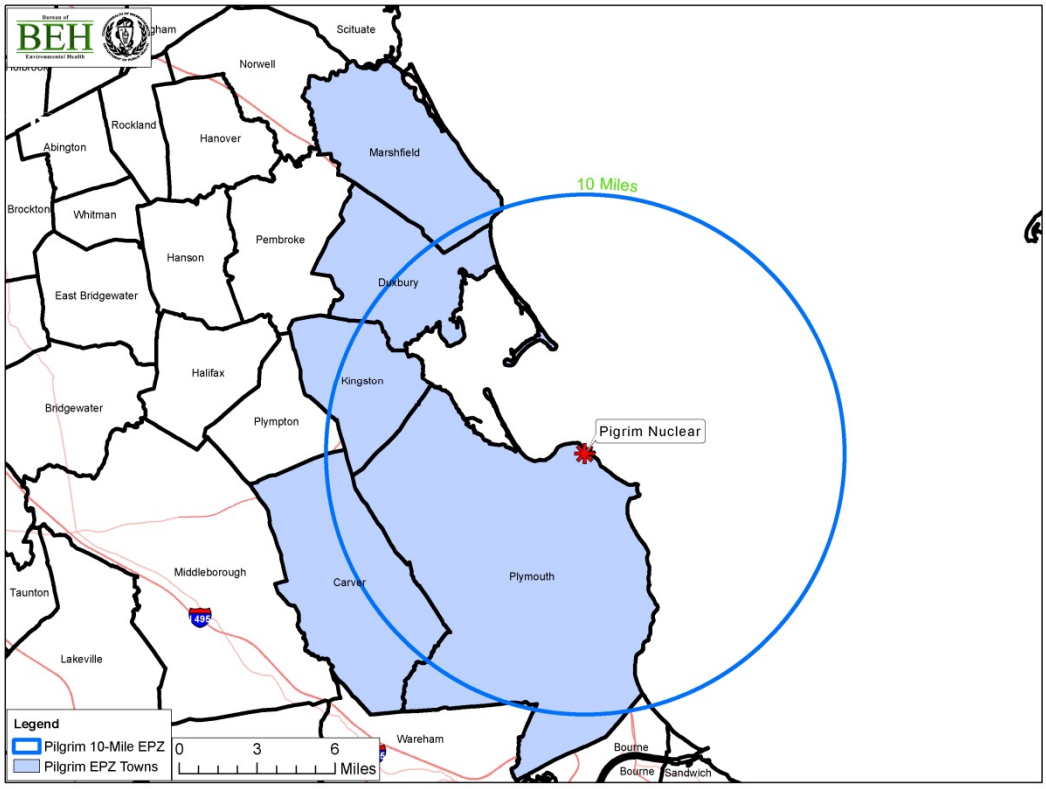
This section provides descriptions of the three nuclear power plant 10-mile EPZs in Massachusetts along with a summary of environmental samples collected and analyzed in 2012 and 2013.

A. Pilgrim Nuclear Power Station

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

Figure 1.

Pilgrim Nulcear Power Station - Massachusetts EPZ Communities



Routine radiation monitoring conducted within and outside the PNPS EPZ includes: direct radiation, air, surface water, fish, lobsters, shellfish, sediment, Irish moss, crops, and milk. These are described in detail below. A focused investigation of tritium in groundwater at PNPS is ongoing and not part of this report; rather, regular updates on this monitoring effort, which includes sampling of groundwater and surface water, are posted on the MDPH website.

i. Air/Direct Radiation

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

MDPH has a network of 15 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 three times the typical background readings. Starting in 2012 and continuing through 2013, MDPH relocated three of the real-time monitors to locations that better represent the area's coastal and more densely populated areas.

Finally, MDPH has thermoluminescent dosimeters (TLDs) placed at 39 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 milliRoentgen (mR). TLD results are compared to a background location in Boston.

ii. Surface Water

Seawater is typically collected on a monthly schedule 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 typically collected monthly at the Powder Point Bridge in Duxbury by Entergy, and MERL analyzes split samples using gamma spectroscopy. A quarterly composite of the Powder Point Bridge surface water samples is also analyzed for tritium.

iii. Fish, Lobster, and Shellfish

Fish, lobsters, and shellfish are routinely collected from the PNPS discharge canal by Entergy, and split samples are analyzed by MERL using gamma spectroscopy. Fish and lobsters are also collected one to two times per year from Cape Cod Bay by Entergy, and MERL also analyzes spilt samples using gamma spectroscopy. Mussels are collected semiannually from Green Harbor in Marshfield by Entergy and clams from Duxbury Bay and Plymouth Harbor; these three locations are considered background locations by Entergy for federal reporting requirements, but considered "indicator" locations by MDPH because they fall within the 10 mile EPZ. The split samples are analyzed by MERL using gamma spectroscopy.

iv. Sediment

Sediment is collected from the PNPS discharge canal semiannually by Entergy and split samples are analyzed by MERL using gamma spectroscopy. Sediment is also collected by Entergy at Green Harbor in Marshfield and Duxbury Bay in Duxbury. Samples are collected from Marshfield semiannually and from Duxbury annually. MERL analyzes split samples using gamma spectroscopy from both locations.

v. 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 semiannually by Entergy and split samples are analyzed by MERL using gamma spectroscopy. Irish moss is also collected at least semiannually by Entergy from a background location outside the 10-mile EPZ at Brant Rock in Marshfield and MERL also analyzes split samples by gamma spectroscopy.

vi. Crops

Crops (e.g., corn, apples, gourds, gourd leaves, pumpkins, squash, and hay forage) are collected by Entergy from a Plymouth County farm located within the PNPS 10-mile EPZ

annually and split samples are analyzed by MERL using gamma spectroscopy. Samples of vegetables and wild vegetation are also collected annually 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 annually by Entergy and MERL analyzes split samples using gamma spectroscopy. Finally, cranberries are collected from cranberry bogs located in Plymouth and in Kingston on an annual basis by Entergy, and MERL analyzes split samples using gamma spectroscopy. In 2013, MDPH added a background cranberry sampling location in East Taunton.

vii. Milk

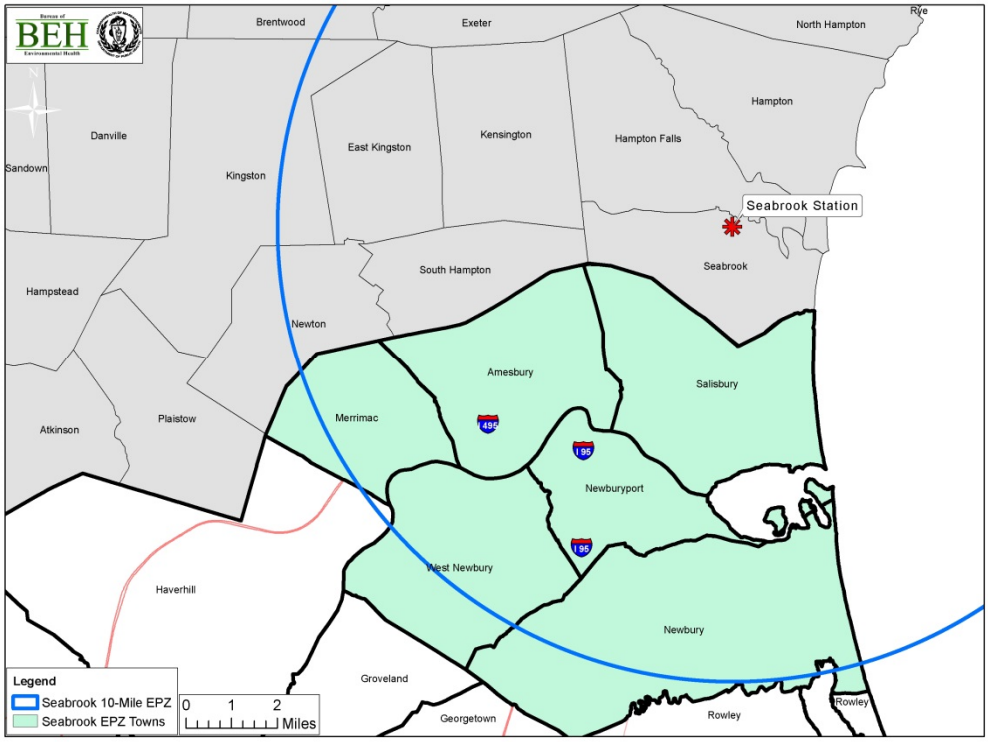
Samples of cow's milk are collected monthly from a farm located in Duxbury by MDPH and are analyzed at MERL using gamma spectroscopy and for iodine-131. Although this farm is located just outside the EPZ (i.e., 11 miles from PNPS), it is currently the closest dairy farm to PNPS where milk samples are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

B. Seabrook Nuclear Power Station

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

Figure 2.

Seabrook Nulcear Power Station - Massachusetts EPZ Communities



Routine radiation monitoring conducted within and outside the Seabrook EPZ includes the following environmental media: air, surface water, fish, lobster, shellfish, sediment, Irish moss,

crops, and milk. MDPH receives split samples from Nextera (the utility that owns Seabrook) for all media except milk and air. Sampling locations and activities within Massachusetts are described in detail below.

i. Air/Direct Radiation

MDPH collects air particulate filters weekly at the Salisbury Fire Station and filters are analyzed by MERL for gross beta and gross alpha radioactivity. 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 TLDs at 34 locations throughout the Seabrook EPZ in Massachusetts that are collected quarterly and measure total ambient gamma radiation in mR. TLD results are compared to a background location in Boston.

As previously mentioned, in 2012 and 2013 MDPH provided funding to the C-l0 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 10-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 the typical background readings.

ii. Surface Water

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

iii. Fish, Lobster, and Shellfish

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

iv. Sediment

Sediment samples are collected from Ipswich Bay, a background location, by Nextera semiannually 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, semiannually and split samples are analyzed by MERL using gamma spectroscopy.

v. 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) semiannually from Ipswich Bay, considered a background location, and split samples are analyzed by MERL using gamma spectroscopy.

vi. Crops

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

vii. Milk

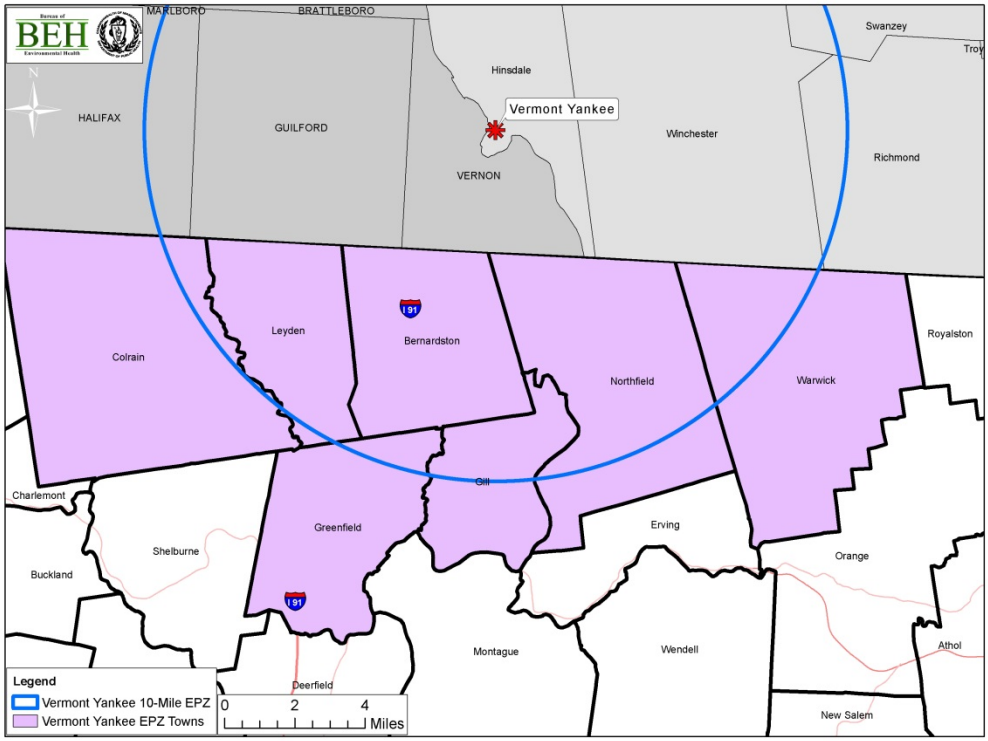
Samples of cow's milk are collected monthly by MDPH from a farm located in Rowley, MA and analyzed by MERL using gamma spectroscopy and are also analyzed for iodine-131. This farm is located outside the Seabrook EPZ and considered a background location.

C. Vermont Yankee Nuclear Power Station

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

Figure 3.

Vermont Yankee Nulcear Power Station - Massachusetts EPZ Communities



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.

i. Air/Direct Radiation

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 late 2012. MDPH collects air particulate filters weekly at the Northfield Transfer Station and filters are analyzed by MERL for gross beta and gross alpha radioactivity. A filter composite is also analyzed quarterly by gamma spectroscopy. Charcoal air cartridges are collected weekly at the Northfield Transfer Station and 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 TLDs at 7 locations within, or just outside, the VY EPZ in Massachusetts that are collected quarterly and measure total ambient gamma radiation in mR. TLD results are compared to a background location in Boston, MA.

ii. Surface Water

MDPH collects surface water samples on a quarterly basis from the Connecticut River at two locations within the VY EPZ communities of Northfield and Gill, MA. Surface water samples are analyzed by MERL using gamma spectroscopy and samples are also analyzed for tritium. Surface water samples are also collected quarterly from a location outside the VY 10-mile EPZ communities at the Millers River in Athol. The background surface water samples are also analyzed by gamma spectroscopy and for tritium.

iii. Fish

MDPH collects fish samples semiannually from the Connecticut River in Northfield and Gill, MA and from the Millers River in Athol, MA as a background location. Fish samples are analyzed by MERL using gamma spectroscopy.

iv. Sediment

Sediment samples are collected semiannually from the Connecticut River at two locations within the VY EPZ communities of Northfield and Gill, MA. Sediment samples are analyzed by MERL using gamma spectroscopy. Sediment samples are also collected semiannually from a background location at the Millers River in Athol and analyzed by MERL using gamma spectroscopy.

v. Wild Grass

MDPH collects wild grass samples semiannually from locations within the VY EPZ communities near the Connecticut River in Northfield and Gill, MA. Grass samples are analyzed by MERL using gamma spectroscopy. Samples of grass are also collected semiannually from a background location near the Millers River in Athol,and analyzed by gamma spectroscopy.

vi. Crops

Crops (e.g. pumpkins, elderberries, and pasture grass) are collected from several farms located within the VY EPZ in Bernardston and Northfield, MAannually 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 annually and are analyzed by MERL using gamma spectroscopy.

vii. 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.

III. 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 nitrogen and oxygen in the 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 typical background levels, a hard-to-detects (HTDs) analysis may be warranted. The analyses of HTDs, such as Strontium-90, would be conducted on an as needed basis as few laboratories in the country have the capability to analyze for HTDs.

Air filters collected from each of the three EPZs are analyzed weekly for gross alpha and gross beta radioactivity. Gross alpha and beta analysis is a screening-level tool that does not identify individual radionuclides; therefore, air filters are also analyzed quarterly for individual gamma radionuclides (e.g., Cesium-137) using gamma spectroscopy. Results are compared to results from 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. 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. Air sample analyses provide a complete picture of radiation types within the EPZ as compared to the background location.

In addition to gamma spectroscopy, surface water samples are analyzed for tritium. Tritium exists in the environment primarily as tritiated water; thus, it is more mobile in groundwater and surface water than other radionuclides, and provides a good indicator to evaluate potential radioactive impacts to water bodies in the vicinity of the power stations.

IV. MDPH ENVIRONMENTAL MONITORING RESULTS

A. 2012 Environmental Monitoring Results

In 2012, radiation monitoring results for Massachusetts have been either non-detect, naturally occurring (i.e., Potassium-40, Beryllium-7, and Lead-214), or 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). No detectible 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 – 9.

i. Pilgrim Nuclear Power Station

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 varying amounts in air, water bodies, soils, and sediments.

Although Cesium-137 was detected in a bluefish sample collected from the PNPS discharge canal on July 16, 2012, at a concentration of 10.1 picocuries per kilogram (pCi/kg), this detection is consistent with levels measured in fish from other locations reported in the scientific literature and considered attributable to historical fallout from bomb testing in the 1950s and 1960s (Burger et. al., 2007; Amund et. al., 1996). Cs-137 was below detection limits in all other fish samples from the discharge canal (See Table 2).

Air filter and cartridge analyses indicated low levels of gross alpha and gross beta radiation, as well as naturally occurring Beryllium-7 and Potassium-40 for most samples. The results are consistent with results obtained from the background location in Boston.

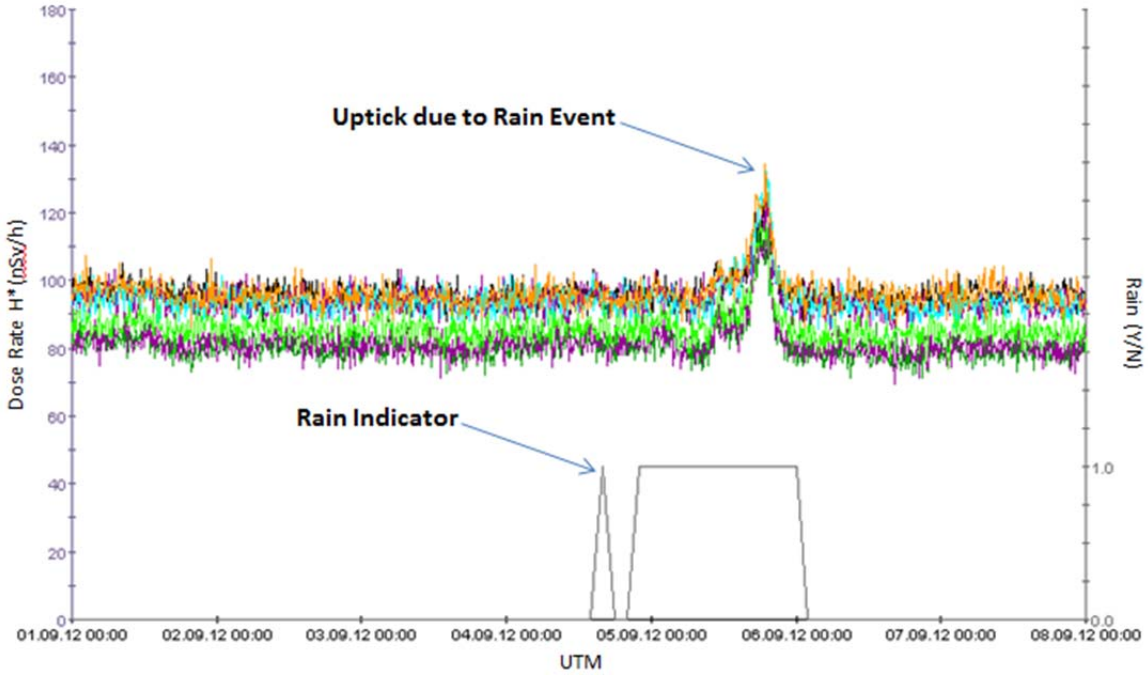
In 2012, real-time monitoring for the PNPS EPZ did not show radiation levels above typical background levels (i.e., approximately 0.010 mrem/hour) with the exception of brief increases (e.g., 0.020 mrem/hour) that are expected due to rainfall washout from naturally occurring radionuclides (Beryllium-7, Potassium-40, and Lead-214). For reference, Figure 4 below puts these doses into context. According to the NRC, the average U.S. resident is exposed to approximately 310 mrem per year (or 0.035 mrem/hr) from natural background radiation sources.

In 2012, TLDs in the PNPS EPZ ranged between 11.5 and 21.2 mR/quarter, which compares to an average of 13.35 mR/quarter for the background location in Boston. TLD readings can vary with location, due to proximity to objects with naturally occurring radiation such as bricks and granite.

Figure 4.
Background Dose Information for Average U.S. Resident (Source: NRC 2014)

Dose	**Millirems/year**
Annual Dose – All Sources	620 per year
Annual Dose – Due to Natural Background Radiation	310 per year

Figure 5.
Real-Time Monitoring System Output Showing Increased Activity During Rain Event



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

ii. Seabrook Nuclear Power Station

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 in air, water bodies, soils, and sediments.

Although not detected at levels of concern with respect to human health (FDA, 2005), 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 24.6 pCi/kg on May 21, 2012 and 82.8 pCi/kg on November 26, 2012. It should be noted that the indicator location for Irish moss located at the Seabrook facility in New Hampshire 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 picocuries per liter (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 approximately 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.

Air filter and cartridge analyses indicated low levels of gross alpha and gross beta radiation, as well as naturally occurring Beryllium-7 and Potasium-40 for most samples. The results are consistent with results obtained from the background location in Boston.

In 2012, real-time monitoring for the Seabrook EPZ did not show gamma radiation levels above typical background levels (i.e., approximately 0.010 mrem/hour) with the exception of brief

increases (e.g., 0.020 mrem/hour) that are expected due to rainfall washout from naturally occurring radionuclides such as Beryllium-7, Potassium-40, and Lead-214. Beta readings are also collected and typically range around 40 to 50 counts per minute with the exception of brief increases that occur due to rainfall washout from naturally occurring radionuclides.

TLD results for the Seabrook EPZ ranged from 14.3 to 22.5 mR /quarter, compared to an average of 13.83 mR/quarter for the background location in Boston. TLD readings can vary with location, due to proximity to objects with naturally occurring radiation such as bricks and granite.

iii. Vermont Yankee Nuclear Power Station

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, 8, and 9 below). As mentioned, Potassium-40, Beryllium-7, and Lead-214 occur naturally in varying amounts in 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 56.8 and 123.0 pCi/kg, compared with 96.3 pCi/kg for the background location at the Millers River in Athol, 10 miles outside the Vermont Yankee EPZ.

Although Cesium-137 was detected at 9.7 pCi/kg in a large mouth bass sample collected from the Connecticut River, this detection is consistent with levels measured in fish from other locations reported in the scientific literature and considered attributable to historical fallout from bomb testing in the 1950s and 1960s (VTDOH, 2012; Burger et. al. 2007; ATSDR, 2004; Amund et.al., 1996). Cs-137 was below detection limits in all other fish samples from the Connecticut River (See Table 8).

Iodine-131 was detected in the background surface water sample at the Millers River in Athol at 8.1 pCi/L (9.2 pCi/L confirmatory duplicate) on May 23, 2012. There is a sewage treatment plant approximately 1 mile upstream of this sampling location and this detection was likely due to a medical source in sewage effluent. An additional follow-up sample was taken from the same location on June 20, 2012 and indicated no detectable iodine-131. Iodine-131 was not detected in any other samples taken at this location in 2012.

Air filter and cartridge analyses indicated low levels of gross alpha and gross beta radiation, as well as naturally occurring Beryllium-7 and Potasium-40 for most samples. The results are consistent with results obtained from the background location in Boston.

As described above, a TLD program was established in the fourth quarter of 2012 for the VY EPZ. Results for TLDs ranged from 13.5 to 15.8 mR for the fourth quarter within and near the VY EPZ, which compares to 13.8 mR for the fourth quarter for the background location in Boston. TLD readings can vary with location, due to proximity to objects with naturally occurring radiation such as bricks and granite.

B. 2013 Environmental Monitoring Results

In 2013, with one exception most radiation monitoring results for Massachusetts have been either non-detect, naturally occurring (i.e., Potassium-40, Berylium-7, and Lead-214), or 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). The one exception was a detection of Zinc-65 in an

Irish moss sample collected near the PNPS Discharge Canal. No detectible 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 10-18.

i. Pilgrim Nuclear Power Station

Naturally occurring Potassium-40, Beryllium-7, and Lead-214 were detected in most samples of environmental media for which they were analyzed from both within and outside of the PNPS EPZ (see Tables 10, 11, and 12). As mentioned, Potassium-40, Beryllium-7, and Lead-214 occur naturally in varying amounts in air, water bodies, soils, and sediments.

Although Cesium-137 was detected in a bluefish sample collected from the PNPS discharge canal on July 15, 2013, at a concentration of 7.9 pCi/kg, this detection is consistent with levels measured in fish from other locations reported in the scientific literature and considered attributable to historical fallout from bomb testing in the 1950s and 1960s (Burger et. al. 2007; Amund et.al., 1996) . Cs-137 was below detection limits in all other fish samples from the discharge canal (see Table 11).

The MERL split sample for the Irish moss collected at the PNPS Discharge Canal had a detection of Zinc-65 at 43.8 pCi/kg on May 22, 2013. The detection is likely related to the permitted discharge of cooling water at PNPS. Irish moss has been shown to have high sorption values for zinc (Romera et. al., 2007), which may contribute to the enrichment of Zinc-65. Results of Irish moss samples from 2012 and the subsequent sample for 2013, collected on October 16, showed no detectable activity above the laboratory reporting levels for Zinc-65 which ranged from <30 - <52.8 pCi/L.

In 2013, like 2012, real-time monitoring for the PNPS EPZ did not show radiation levels above typical background levels (i.e., approximately 0.010 mrem per hour) with the exception of brief increases (e.g., 0.020 mrem per hour) that are expected due to rainfall washout from naturally occurring radionuclides (Beryllium-7, Potassium-40, and Lead-214). For reference, Figure 4 above puts these doses into context.

Air filter and cartridge analyses indicated low levels of gross alpha and gross beta radiation, as well as naturally occurring Beryllium-7 and Potasium-40 for most samples. The results are consistent with results obtained from the background location in Boston.

Results of TLDs deployed in the PNPS EPZ in 2013 ranged from 10.7 and 21.4 mR per quarter, which compares to an average of 12.5 mR per quarter for the background location in Boston. TLD readings can vary with location, due to proximity to objects with naturally occurring radiation such as bricks and granite.

ii. Seabrook Nuclear Power Station

Naturally occurring Potassium-40, Beryllium-7, and Lead-214 were detected in most samples of environmental media for which they were analyzed from both within and outside of the Seabrook EPZ (see Tables 13, 14, and 15). As mentioned, Potassium-40, Beryllium-7, and Lead-214 occur naturally in varying amounts in air, water bodies, soils, and sediments.

Although not detected at levels of concern with respect to human health (FDA, 2005), 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 21.1 pCi/kg on May 21,

2013. As previously noted, this sample is collected downgradient and proximate to a sewage discharge point, and the indicator sample for Seabrook has been historically non-detect.

In 2013, like 2012, real-time monitoring for the Seabrook EPZ did not show gamma radiation levels above typical background levels (i.e., approximately 0.010 mrem per hour) with the exception of brief increases (e.g., 0.020 mrem per hour) that are expected due to rainfall washout from naturally occurring radionuclides. Beta readings are also collected and typically range around 40 to 50 counts per minute with the exception of brief increases that also occur due to rainfall washout of naturally occurring radionuclides.

Air filter and cartridge analyses indicate low levels of gross alpha and gross beta radiation, as well as naturally occurring Beryllium-7 and Potasium-40 for most samples. The results are consistent with results obtained from the background location in Boston.

Results of TLDs deployed in the Seabrook EPZ in 2013 ranged from 12.0 to 21.0 mR per quarter, compared to an average of 13.2 mR per quarter for the background location in Boston. TLD readings can vary with location, due to proximity to objects with naturally occurring radiation such as bricks and granite.

iii. Vermont Yankee Nuclear Power Station

In 2013, naturally occurring Potassium-40, Beryllium-7, and Lead-214 were detected in most samples of environmental media for which they were analyzed from both within and outside of the VY EPZ (see Tables 16, 17, and 18). As mentioned, Potassium-40, Beryllium-7, and Lead-214 occur naturally in varying amounts in air, water bodies, soils, and sediments.

Cesium-137, most likely attributable to bomb testing from the 1950s and 1960s, was detected in sediment from one sample collected at the Connecticut River in the Vermont Yankee EPZ at 63.3 pCi/kg. Cesium-137 was also detected in two background sediment samples collected at the Millers River in Athol, 10 miles outside the Vermont Yankee EPZ, at concentrations of 70.3 and 121.0 pCi/L. Cesium-137 was also detected in grass collected at the Athol background location at a concentration of 26.0 pCi/L. Cesium-137 was not detected in any of the samples collected within the EPZ.

Although Cesium-137 was detected at 15.8 pCi/kg in a composite fish sample collected from the Connecticut River, this detection is consistent with levels measured in fish from other locations reported in the scientific literature and considered attributable to historical fallout from bomb testing in the 1950s and 1960s (VTDOH, 2012; Burger et. al. 2007; ATSDR, 2004; Amund et.al., 1996). Cs-137 was below detection limits in all other fish samples from the Connecticut River in 2013 (see Table 17).

Air filter and cartridge analyses indicate low levels of gross alpha and gross beta radiation, as well as naturally occurring Beryllium-7 and Potasium-40 for most samples. The results are consistent with results obtained from the background location in Boston.

Results of TLDs deployed within and near the VY EPZ in 2013 ranged from 10.1 to 15.7 mR per quarter, compared to an average of 13.4 mR per quarter for the background location in Boston. TLD readings can vary with location, due to proximity to objects with naturally occurring radiation such as bricks and granite.

V. SUMMARY

With one exception (one Irish moss sample in 2013), radiation monitoring results for areas surrounding the three nuclear power stations affecting 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 otherwise attributable to a known source or man-made event (e.g., Fukushima, Chernobyl, sewage effluent). At PNPS, one Irish moss sample showed a detection of Zinc-65 above the laboratory reporting level. No radiation indicators or radionuclides were detected at a level of health concern.

VI. TABLES

Table 1. Pilgrim Nuclear Power Station 2012 Environmental Monitoring Data - Liquid Matrices

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]	1/31/2012	258	<5.6	<10.8	<5.8	<17.7	<7.0	-	<6.0	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)[1]	2/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background)[1]	2/28/2012	<341	<7.6	<16.0	<7.8	<20.9	<9.0	-	<8.3	-	-
Surface Water	Powder Point Bridge (Background)[1]	4/3/2012	307	<5.7	<11.1	<5.9	<18.4	<7.4	-	<6.1	-	-
Surface Water	Powder Point Bridge (Background)[1]	5/1/2012	<420	<10.0	<20.5	<10.9	<27.2	<10.7	-	<10.7	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)[1]	5/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background)[1]	5/29/2012	322	<5.1	<10.8	<5.5	<14.1	<6.1	-	<5.7	-	-
Surface Water	Powder Point Bridge (Background)[1]	7/2/2012	<342	<6.7	<15.6	<7.8	<17.8	<9.8	-	<7.7	-	-
Surface Water	Powder Point Bridge (Background)[1]	7/31/2012	413	<5.2	<10.5	<5.5	<13.7	<6.4	-	<5.7	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)[1]	8/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background)[1]	8/28/2012	<341	<7.3	<15.8	<7.5	<18.2	<8.9	-	<8.3	-	-
Surface Water	Powder Point Bridge (Background)[1]	10/2/2012	433	<5.5	<13.2	<6.0	<15.6	<12.7	-	<5.9	-	-
Surface Water	Powder Point Bridge (Background)[1]	10/30/2012	436	<6.0	<12.3	<5.9	<16.0	<10.2	-	<5.7	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background)[1]	11/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background)[1]	11/26/2012	<186	<6.3	<15.3	<6.9	<18.1	<11.0	-	<6.8	-	-
Surface Water	Powder Point Bridge (Background)[1]	1/2/2013	<292	<6.6	<15.0	<7.0	<19.9	<9.6	-	<6.9	-	-
Surface Water	PNPS Discharge Canal	1/31/2012	<341	<7.6	<16.1	<8.1	<22.1	<9.4	-	<8.5	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	2/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	2/28/2012	<343	<7.3	<15.3	<7.8	<20.4	<7.6	-	<8.4	-	-
Surface Water	PNPS Discharge Canal	4/2/2012	<272	<10.3	<21.9	<10.7	<28.8	<13.9	-	<10.8	-	-
Surface Water	PNPS Discharge Canal	5/1/2012	<342	<7.5	<15.6	<7.7	<21.7	<8.7	-	<8.1	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	5/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	5/29/2012	<420	<9.9	<21.3	<10.2	<25.7	<11.8	-	<10.7	-	-
Surface Water	PNPS Discharge Canal	7/2/2012	<184	<6.5	<13.2	<6.5	<15.5	<9.1	-	<6.7	-	-
Surface Water	PNPS Discharge Canal	7/31/2012	<293	<6.7	<13.7	<7.1	<17.2	<8.0	-	<7.3	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	8/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	8/28/2012	<185	<6.9	<13.3	<6.8	<16.4	<8.3	-	<6.9	-	-
Surface Water	PNPS Discharge Canal	10/2/2012	805	<6.0	<13.4	<6.2	<16.0	<12.4	-	<6.5	-	-
Surface Water	PNPS Discharge Canal	10/30/2012	905	<6.4	<13.5	<6.6	<17.1	<11.7	-	<6.8	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	11/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	11/26/2012	890	<6.4	<13.9	<6.4	<17.3	<11.4	-	<6.5_	-	-
Surface Water	PNPS Discharge Canal	1/2/2013	864	<6.3	<13.2	<6.4	<17.6	<9.6	-	<6.9	-	-
Milk	Duxbury	1/27/2012	1140	-	-	-	-	<2.5	<13.0	<12.0	<40.8	-
Milk	Duxbury	2/14/2012	1330	-	-	-	-	<2.4	<10.8	<11.4	<36.5	-
Milk	Duxbury	3/6/2012	1260	-	-	-	-	<2.6	<7.4	<9.1	<28.4	-
Milk	Duxbury	4/3/2012	1220	-	-	-	-	<2.0	<7.8	<8.8	<29.1	-
Milk	Duxbury	5/8/2012	1200	-	-	-	-	<1.9	<10.5	<19.7	<37.9	-
Milk	Duxbury	6/5/2012	1260	-	-	-	-	<2.0	<7.5	<8.9	<28.9	-
Milk	Duxbury	7/3/2012	1180	-	-	-	-	<2.4	<6.7	<8.4)	<27.5	-
Milk	Duxbury	8/7/2012	1170	-	-	-	-	<2.0	<8.0	<7.5	<25.3	-
Milk	Duxbury	9/11/2012	1200	-	-	-	-	<2.2	<7.6	<7.6	<25.5	-
Milk	Duxbury	10/2/2012	1910	-	-	-	-	<2.0	<6.1	<6.8	<21.4	-
Milk	Duxbury	11/20/2012	1950	-	-	-	-	<2.0	<6.1	<6.9	<22.0	-
Milk	Duxbury	12/4/2012	1940	-	-	-	-	<2.1	<6.1	<6.8	<21.8	-

1. Sample considered “background” for the purpose of monitoring required by federal regulations, but considered “indicator” by MDPH because it falls within the 10-mile EPZ.

“-“ = 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 2012 Environmental Monitoring Data - Solid Matrices

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) [1]	5/2/2012	268	5620	<18.5	<48.1	<19.7	<50.6	<61.8	<18.9	-	-
Chondrus	PNPS – Discharge Canal	5/9/2012	56	8750	<9.7	<26.2	<11.4	<30.0	<17.3	<9.4	-	-
Chondrus	Brant Rock Marshfield (Background) [1]	9/19/2012	138	7510	<15.4	<72.4	<15.2	<45.9	<1590	<14.7	-	-
Chondrus	PNPS – Discharge Canal	10/23/2012	110	5470	<11.9	<28.4	<14.1	<35.4	<12.9	<12.8	-	-
Chondrus	Brant Rock Marshfield (Background) [1]	10/17/2012	418	5380	<10.1	<25.2	<10.4	<28.6	<17.4	<9.5	-	-
Mussels	Green Harbor Marshfield (Background) [1]	5/2/2012	<237	2340	<15.9	<71.6	<15.9	<44.8	-	<14.9	<35.3	-
Clams	Duxbury Bay (Background) [1]	5/2/2012	<124	2260	<8.2	<36.8	<7.7	<22.2	-	<7.9	<25.2	-
Mussels	Plymouth Harbor (Background) [1]	5/5/2012	<130	1630	<9.3	<43.4	<9.8	<27.2	-	<9.4	<19.5	-
Clams	Plymouth Harbor (Background) [1]	5/7/2012	<115	1970	<8.1	<34.8	<8.2	<24.4	-	<7.6	45.7	-
Mussels	PNPS – Discharge Canal	6/11/2012	<96	1750	<9.0	<27.5	<9.0	<25.6	-	<9.5	<19.7	-
Mussels	Green Harbor Marshfield (Background) [1]	9/19/2012	<192	1320	<13.7	<64.5	<13.4	<44.8	-	<13.4	111.0	-
Mussels	PNPS – Discharge Canal	10/23/2012	<91	1990	<8.3	<24.4	<8.4	<23.6	-	<8.5	81.8	-
Clams	Duxbury Bay (Background) [1]	10/18/2012	<91	1310	<8.8	<27.1	<8.3	<24.7	-	<7.9	54.6	-
Clams	Plymouth Harbor (Background) [1]	10/18/2012	<160	2310	<14.1	<48.8	<14.2	<45.3	-	<14.9	116.0	-
Winter Flounder	PNPS Discharge Canal	4/26/2012	<542	3230	<35.8	<169	<34.6	<105	-	<35.5	159.0	-
Winter Flounder	Cape Cod Bay (Background) [1]	4/27/2012	<634	3110	<42.1	<201	<41.5	<113	-	<41.6	151.0	-
Tautog	PNPS – Discharge Canal	7/16/2012	<505	3100	<41.2	<137	<38.0	<106	-	<40.8	219	-
Striped Bass	PNPS Discharge Canal	7/16/2012	<132	3740	<11.7	<45.6	<12.8	<37.1	-	<9.4	44.7	-
Bluefish	PNPS – Discharge Canal	7/16/2012	<169	4130	<14.7	<54.4	<14.9	<40.8	-	**10.6**	96.6	-
Striped Bass	Cape Cod Bay (Background) [1]	9/22/2012	<129	4320	<9.6	<46.9	<9.2	<29.8	-	<6.2	57.4	-
Bluefish	Cape Cod Bay (Background) [1]	9/22/2012	<117	4920	<8.6	<37.6	<9.2	<25.0	-	<6.1	37.3	-
Tautog	Narragansett Bay (Background) [1]	9/28/2012	<561	2930	<43.0	<168	<39.5	<121	-	<41.8	377	-
Winter Flounder	PNPS Discharge Canal	10/23/2012	<564	3200	<55.6	<165	<53.3	<162	-	<59.0	298	-
Lobster	PNPS Discharge Canal	6/26/2012	<105	2730	<12.3	<30.1	<13.5	<33.0	-	<12.5	<26.8	-
Lobster	Cape Cod Bay (Background) [1]	8/1/2012	<92	3070	<9.1	<25.9	<9.9	<24.2	-	<8.9	<21.1	-
Sediment	Green Harbor (Background) [1]	5/2/2012	-	8710	-	-	<57.0	-	-	<57.7	348.0	-
Sediment	Duxbury (Background) [1]	5/2/2012	-	9280	-	-	<40.8	-	-	<41.7	253.0	-
Sediment	PNPS Discharge Canal	6/11/2012	-	9220	-	-	<48.1	-	-	<45.6	206.0	-
Sediment	PNPS Discharge Canal	10/23/2012	-	10100	-	-	<48.4	-	-	<46.7	271.0	-
Sediment	Green Harbor (Background) [1]	10/24/2012	-	10100	-	-	<38.6	-	-	<39.8	315.0	-
Lettuce	Kingston	6/28/2012	49.7	3620	<8.2	<18.4	<9.6	<21.8	-	<8.7	<18.7	-
Lettuce	Bridgewater (Background)	7/6/2012	52.6	2330	<8.2	<20.2	<9.2	<23.3	-	<8.9	<18.8	-
Tomatoes	Plymouth	8/16/2012	<96.2	1920	<12.2	<25.5	<13.0	<32.6	-	<9.6	<29.5	-
Tomatoes	Bridgewater (Background)	8/16/2012	<47.5	1670	<5.7	<12.4	ND6.7	<15.1	-	<6.4	<14.8	-
Mixed Greens and Leaves	Plymouth	9/24/2012	561.0	6690	<12.0	<34.0	<13.4	<36.7	-	<12.7	<26.7	-
Tomatoes	Bridgewater (Background)	9/27/2012	<102	2500	<13.1	<32.2	<14.1	<38.8	-	<13.8	<32.8	-
Corn	Bridgewater (Background)	9/27/2012	<610	2200	<73.1	<164	<72.8	<195	-	<79.4	<183	-
Squash	Bridgewater (Background)	9/27/2012	<71.7	1710	<8.6	<18.6	<9.3	<23.1	-	<8.5	39.7	-
Squash	Bridgewater (Background)	9/27/2012	<112	4540	<13.6	<37.1	<15.0	<40.4	-	<14.7	<32.8	-
Cabbage	Bridgewater (Background)	9/27/2012	<109	2800	<13.6	<34.9	<14.1	<40.1		<13.8	63.3	
Beets	Plymouth	9/28/2012	134.0	4810	<10.9	<25.7	<11.0	<29.4	-	<10.9	71.4	-
Large Cucumbers	Plymouth	9/28/2012	<53.8	2330	<6.2	<14.1	<6.6	<16.8	-	<6.8	17.5	-
Onions	Plymouth	9/28/2012	<645	3210	<72.2	<158	<62.7	<165	-	<68.6	<183	-
Kale	Plymouth	9/28/2012	<1800	<5010	<187	<459	<185	<528	-	<211	<516	-
Squash	Plymouth	9/28/2012	<393	3420	<46.4	<99.5	<44.8	<113	-	<46.9	<120	-
Cranberries	Kingston (Background)	9/28/2012	44.7	1570	<7.0	<18.4	<7.7	<18.5	-	<7.5	<21.4	-
Pumpkin	Plymouth	10/5/2012	<58.7	1750	<6.5	<19.5	<7.1	<19.7	-	<7.1	<16.1	-

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)
Cranberries	Plymouth	10/5/2012	48.6	1040	<7.4	<19.2	<8.3	<19.8	-	<7.6	<19.1	-
Cranberries	Plymouth	1/14/2012	55.4	1450	<7.2	<14.4	<7.7	<19.7	-	<8.0	51.4	-
Pasture Grass/ Silage	Plymouth	10/5/2012	<99.0	2430	<11.0	<29.0	<12.0	<33.0	-	<12.0	<27.0	-
Pasture Grass/ Silage	Plymouth	10/5/2012	<99.0	2650	<8.0	<29.0	<12.0	<33.0	-	<12.0	<27.0	-
Pasture Grass/ Silage	Duxbury (Background)	11/20/2012	277	25900	<57.0	<129.0	<61.0	<161	-	<61.0	415.0	-

1. Sample considered “background” for the purpose of monitoring required by federal regulations, but considered “indicator” by MDPH because it falls within the 10-mile EPZ.

“-“ = 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 2012 Environmental Monitoring Data - Air Samples

Sample Type	Location	Date	1-131* (pCi/m^3)	Be-7* (pCi/m^3)	K-40* (pCi/m^3)	Mn-54* (pCi/m^3)	Fe-59* (pCi/m^3)	Co-60* (pCi/m^3)	Zn-65* (pCi/m^3)	Cs-134* (pCi/m^3)	Cs-137 * (pCi/m^3)	Pb-214* (pCi/m^3)	Gross Alpha (pCi/m^3)	Gross Beta (pCi/m^3)
Air	Pilgrim Station	1/3/2012	<0.0531	-	-	-	-	-	-	-	-	-	0.00493	0.0164
Air	Pilgrim Station	1/10/2012	<0.0626	-	-	-	-	-	-	-	-	-	0.00684	0.0212
Air	Pilgrim Station	1/17/2012	<0.0490	-	-	-	-	-	-	-	-	-	0.00432	0.0197
Air	Pilgrim Station	1/25/2012	<0.0461	-	-	-	-	-	-	-	-	-	0.00316	0.0159
Air	Pilgrim Station	1/31/2012	<0.0681	-	-	-	-	-	-	-	-	-	0.00434	0.0191
Air	Pilgrim Station	2/7/2012	<0.0527	-	-	-	-	-	-	-	-	-	0.00593	0.0228
Air	Pilgrim Station	2/14/2012	<0.0544	-	-	-	-	-	-	-	-	-	0.00462	0.0200
Air	Pilgrim Station Quarterly Filter Composite	2/15/2012	-	0.094	<0.037	<0.001	<0.013	<0.001	<0.004	-	<0.001	0.005	-	-
Air	Pilgrim Station	2/21/2012	<0.0384	-	-	-	-	-	-	-	-	-	0.00626	0.0304
Air	Pilgrim Station	2/28/2012	<0.0396	-	-	-	-	-	-	-	-	-	0.00286	0.0156
Air	Pilgrim Station	3/6/2012	<0.0432	-	-	-	-	-	-	-	-	-	0.00444	0.0241
Air	Pilgrim Station	3/13/2012	<0.0524	-	-	-	-	-	-	-	-	-	0.00495	0.0206
Air	Pilgrim Station	3/20/2012	<0.0677	-	-	-	-	-	-	-	-	-	0.00391	0.0222
Air	Pilgrim Station	3/27/2012	<0.0637	-	-	-	-	-	-	-	-	-	0.00307	0.0212
Air	Pilgrim Station	4/3/2012	<0.0419	-	-	-	-	-	-	-	-	-	0.00187	0.0172
Air	Pilgrim Station	4/10/2012	<0.0487	-	-	-	-	-	-	-	-	-	0.00413	0.0213
Air	Pilgrim Station	4/19/2012	<0.0326	-	-	-	-	-	-	-	-	-	0.00277	0.0177
Air	Pilgrim Station	4/25/2012	<0.0764	-	-	-	-	-	-	-	-	-	0.00359	0.0144
Air	Pilgrim Station	5/01/2012	<0.0507	-	-	-	-	-	-	-	-	-	0.00469	0.0229
Air	Pilgrim Station	5/08/2012	<0.0407	-	-	-	-	-	-	-	-	-	0.00147	0.0125
Air	Pilgrim Station Quarterly Filter Composite	5/15/2012	-	0.090	0.230	<0.002	<0.009	<0.002	<0.005	-	<0.002	0.006	-	-
Air	Pilgrim Station	5/15/2012	<0.0390	-	-	-	-	-	-	-	-	-	0.00148	0.0151
Air	Pilgrim Station	5/22/2012	<0.0554	-	-	-	-	-	-	-	-	-	0.00191	0.0136
Air	Pilgrim Station	5/29/2012	<0.0552	-	-	-	-	-	-	-	-	-	0.00155	0.0137
Air	Pilgrim Station	6/05/2012	<0.0408	-	-	-	-	-	-	-	-	-	0.00057	0.0120
Air	Pilgrim Station	6/12/2012	<0.0618	-	-	-	-	-	-	-	-	-	0.00065	0.0177
Air	Pilgrim Station	6/20/2012	<0.0537	-	-	-	-	-	-	-	-	-	0.00087	0.0100
Air	Pilgrim Station	6/26/2012	<0.0608	-	-	-	-	-	-	-	-	-	0.00269	0.0230
Air	Pilgrim Station	7/03/2012	<0.0496	-	-	-	-	-	-	-	-	-	0.00130	0.0248
Air	Pilgrim Station	7/10/2012	<0.0406	-	-	-	-	-	-	-	-	-	0.00641	0.0206
Air	Pilgrim Station	7/17/2012	<0.0359	-	-	-	-	-	-	-	-	-	0.00647	0.0172
Air	Pilgrim Station	7/24/2012	<0.0407	-	-	-	-	-	-	-	-	-	0.00462	0.0196
Air	Pilgrim Station	7/31/2012	<0.0535	-	-	-	-	-	-	-	-	-	0.00406	0.0199
Air	Pilgrim Station	8/7/2012	<0.0596	-	-	-	-	-	-	-	-	-	0.00404	0.0262
Air	Pilgrim Station Quarterly Filter Composite	8/15/2012	-	0.080	0.173	<0.002	<0.008	<0.001	<0.004	-	<0.001	0.007	-	-
Air	Pilgrim Station	8/14/2012	<0.0580	-	-	-	-	-	-	-	-	-	0.00438	0.0245
Air	Pilgrim Station	8/21/2012	<0.0372	-	-	-	-	-	-	-	-	-	0.00255	0.0153
Air	Pilgrim Station	8/28/2012	<0.0615	-	-	-	-	-	-	-	-	-	0.00410	0.0237
Air	Pilgrim Station	9/04/2012	<0.0371	-	-	-	-	-	-	-	-	-	0.00224	0.0230
Air	Pilgrim Station	9/11/2012	<0.0633	-	-	-	-	-	-	-	-	-	0.00261	0.0176
Air	Pilgrim Station	9/18/2012	<0.0580	-	-	-	-	-	-	-	-	-	0.00275	0.0235
Air	Pilgrim Station	9/25/2012	<0.0549	-	-	-	-	-	-	-	-	-	0.00254	0.0165
Air	Pilgrim Station	10/02/2012	<0.0376	-	-	-	-	-	-	-	-	-	0.00169	0.0203
Air	Pilgrim Station	10/09/2012	<0.0356	-	-	-	-	-	-	-	-	-	0.00986	0.0259
Air	Pilgrim Station	10/16/2012	<0.0554	-	-	-	-	-	-	-	-	-	0.00584	0.0198
Air	Pilgrim Station	10/23/2012	<0.0397	-	-	-	-	-	-	-	-	-	0.00893	0.0228
Air	Pilgrim Station	10/30/2012	<0.0366	-	-	-	-	-	-	-	-	-	0.00601	0.0179
Air	Pilgrim Station	11/06/2012	<0.0416	-	-	-	-	-	-	-	-	-	0.00383	0.0131
Air	Pilgrim Station	11/13/2012	<0.0385	-	-	-	-	-	-	-	-	-	0.00714	0.0280
Air	Pilgrim Station Quarterly Filter Composite	11/15/2012	-	0.063	0.067	<0.002	<0.011	<0.001	<0.005	-	<0.001	0.008	-	-
Air	Pilgrim Station	11/20/2012	<0.0363	-	-	-	-	-	-	-	-	-	0.00556	0.0196
Air	Pilgrim Station	11/27/2012	<0.0390	-	-	-	-	-	-	-	-	-	0.00649	0.0260

Sample Type	Location	Date	1-131* (pCi/m^3)	Be-7* (pCi/m^3)	K-40* (pCi/m^3)	Mn-54* (pCi/m^3)	Fe-59* (pCi/m^3)	Co-60* (pCi/m^3)	Zn-65* (pCi/m^3)	Cs-134* (pCi/m^3)	Cs-137 * (pCi/m^3)	Pb-214* (pCi/m^3)	Gross Alpha (pCi/m^3)	Gross Beta (pCi/m^3)
Air	Pilgrim Station	12/04/2012	<0.0379	-	-	-	-	-	-	-	-	-	0.00508	0.0221
Air	Pilgrim Station	12/11/2012	<0.0595	-	-	-	-	-	-	-	-	-	0.00645	0.0249
Air	Pilgrim Station	12/19/2012	<0.0296	-	-	-	-	-	-	-	-	-	0.00384	0.0161
Air	Pilgrim Station	12/26/2012	<0.0609	-	-	-	-	-	-	-	-	-	0.00290	0.0189
Air	Pilgrim Station	1/02/2013	<0.0566	-	-	-	-	-	-	-	-	-	0.00354	0.0182
Air	Background	1/3/2012	<0.0547	-	-	-	-	-	-	-	-	-	0.00203	0.0126
Air	Background	1/10/2012	<0.0541	-	-	-	-	-	-	-	-	-	0.00609	0.0238
Air	Background	1/17/2012	<0.0573	-	-	-	-	-	-	-	-	-	0.00421	0.0165
Air	Background	1/24/2012	<0.0669	-	-	-	-	-	-	-	-	-	0.00376	0.0192
Air	Background	1/31/2012	<0.0718	-	-	-	-	-	-	-	-	-	0.00707	0.0217
Air	Background	2/7/2012	<0.0740	-	-	-	-	-	-	-	-	-	0.00668	0.0241
Air	Background	2/14/2012	<0.0687	-	-	-	-	-	-	-	-	-	0.00528	0.0254
Air	Background Quarterly Composite	2/15/2012	-	0.103	0.035	<0.002	<0.014	<0.001	<0.005	-	<0.001	0.005	-	-
Air	Background	2/21/2012	<0.0447	-	-	-	-	-	-	-	-	-	0.00710	0.0299
Air	Background	2/28/2012	<0.0609	-	-	-	-	-	-	-	-	-	0.00756	0.0278
Air	Background	3/6/2012	<0.0573	-	-	-	-	-	-	-	-	-	0.00481	0.0211
Air	Background	3/13/2012	<0.574	-	-	-	-	-	-	-	-	-	0.00433	0.0247
Air	Background	3/20/2012	<0.0467	-	-	-	-	-	-	-	-	-	0.00509	0.0253
Air	Background	3/27/2012	<0.0710	-	-	-	-	-	-	-	-	-	0.00448	0.0224
Air	Background	4/3/2012	<0.0584	-	-	-	-	-	-	-	-	-	0.00349	0.0197
Air	Background	4/10/2012	<0.0748	-	-	-	-	-	-	-	-	-	0.00149	0.0155
Air	Background	4/17/2012	<0.0549	-	-	-	-	-	-	-	-	-	0.00243	0.0167
Air	Background	4/24/2012	<0.0594	-	-	-	-	-	-	-	-	-	0.00172	0.0147
Air	Background	5/1/2012	<0.0457	-	-	-	-	-	-	-	-	-	0.00196	0.0174
Air	Background	5/8/2012	<0.0558	-	-	-	-	-	-	-	-	-	0.00090	0.0086
Air	Background Quarterly Composite	5/15/2012	-	0.077	0.241	<0.002	<0.010	<0.002	<0.006	-	<0.002	0.007	-	-
Air	Background	5/15/2012	<0.0729	-	-	-	-	-	-	-	-	-	0.00138	0.0171
Air	Background	5/22/2012	<0.0628	-	-	-	-	-	-	-	-	-	0.00068	0.0149
Air	Background	5/29/2012	<0.0429	-	-	-	-	-	-	-	-	-	0.00079	0.0118
Air	Background	6/5/2012	<0.0693	-	-	-	-	-	-	-	-	-	0.00398	0.0175
Air	Background	6/12/2012	<0.0608	-	-	-	-	-	-	-	-	-	0.00261	0.0127
Air	Background	6/19/2012	<0.0646	-	-	-	-	-	-	-	-	-	0.00178	0.0122
Air	Background	6/26/2012	<0.0565	-	-	-	-	-	-	-	-	-	0.00109	0.0173
Air	Background	7/3/2012	<0.0562	-	-	-	-	-	-	-	-	-	0.00269	0.0206
Air	Background	7/10/2012	<0.0560	-	-	-	-	-	-	-	-	-	0.00352	0.0181
Air	Background	7/17/2012	<0.0615	-	-	-	-	-	-	-	-	-	0.00815	0.0249
Air	Background	7/24/2012	<0.0578	-	-	-	-	-	-	-	-	-	0.00648	0.0213
Air	Background	7/31/2012	<0.0601	-	-	-	-	-	-	-	-	-	0.00818	0.0256
Air	Background	8/7/2012	<0.0555	-	-	-	-	-	-	-	-	-	0.00479	0.0209
Air	Background Quarterly Composite	8/15/2012	-	0.072	0.040	<0.001	<0.008	<0.001	<0.004	-	<0.001	0.006	-	-
Air	Background	8/14/2012	<0.0554	-	-	-	-	-	-	-	-	-	0.00529	0.0218
Air	Background	8/21/2012	<0.0574	-	-	-	-	-	-	-	-	-	0.00179	0.0175
Air	Background	8/28/2012	<0.0549	-	-	-	-	-	-	-	-	-	0.00389	0.0282
Air	Background	9/04/2012	<0.0593	-	-	-	-	-	-	-	-	-	0.00333	0.0200
Air	Background	9/11/2012	<0.0600	-	-	-	-	-	-	-	-	-	0.00378	0.0203
Air	Background	9/18/2012	<0.0702	-	-	-	-	-	-	-	-	-	0.00133	0.0168
Air	Background	9/25/2012	<0.0666	-	-	-	-	-	-	-	-	-	0.00204	0.0224
Air	Background	10/2/2012	<0.0618	-	-	-	-	-	-	-	-	-	0.00299	0.0176
Air	Background	10/09/2012	<0.0623	-	-	-	-	-	-	-	-	-	0.00812	0.0289
Air	Background	10/16/2012	<0.0418	-	-	-	-	-	-	-	-	-	0.00338	0.0167
Air	Background	10/23/2012	<0.0386	-	-	-	-	-	-	-	-	-	0.00726	0.0273
Air	Background	10/30/2012	<0.0427	-	-	-	-	-	-	-	-	-	0.00205	0.0137
Air	Background	11/06/2012	<0.0419	-	-	-	-	-	-	-	-	-	0.00193	0.0148
Air	Background	11/13/2012	<0.0678	-	-	-	-	-	-	-	-	-	0.00498	0.0239
Air	Background	11/20/2012	<0.0581	-	-	-	-	-	-	-	-	-	0.00646	0.0240

Sample Type	Location	Date	1-131* (pCi/m^3)	Be-7* (pCi/m^3)	K-40* (pCi/m^3)	Mn-54* (pCi/m^3)	Fe-59* (pCi/m^3)	Co-60* (pCi/m^3)	Zn-65* (pCi/m^3)	Cs-134* (pCi/m^3)	Cs-137 * (pCi/m^3)	Pb-214* (pCi/m^3)	Gross Alpha (pCi/m^3)	Gross Beta (pCi/m^3)
Air	Background Quarterly Composite	11/15/2012	-	0.059	0.221	<0.002	<0.013	<0.002	<0.006	-	<0.002	0.011	-	-
Air	Background	11/27/2012	<0.0417	-	-	-	-	-	-	-	-	-	0.00395	0.0213
Air	Background	12/4/2012	<0.0620	-	-	-	-	-	-	-	-	-	0.00573	0.0305
Air	Background	12/11/2012	<0.0611	-	-	-	-	-	-	-	-	-	0.00495	0.0202
Air	Background	12/18/2012	<0.0596	-	-	-	-	-	-	-	-	-	0.00529	0.0256
Air	Background	12/26/2012	<0.0386	-	-	-	-	-	-	-	-	-	0.00311	0.0133
Air	Background	1/2/2013	<0.0645	-	-	-	-	-	-	-	-	-	0.00471	0.0238

"-" = 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 2012 Environmental Monitoring Data - Liquid Matrix

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)	1/26/2012	<268	<9.8	<22.8	<10.5	<27.5	<19.6	-	<10.9	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	2/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	2/21/2012	<342	<7.5	<14.7	<7.8	<20.1	<8.3	-	<8.0	-	-
Surface Water	Ipswich Bay (Background)	3/21/2012	<266	<10.6	<22.0	<10.6	<30.4	<15.4	-	<10.7	-	-
Surface Water	Ipswich Bay (Background)	4/17/2012	<266	<9.8	<20.3	<10.1	<25.5	<12.3	-	<10.5	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	5/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	5/21/2012	<420	<9.7	<21.9	<10.0	<26.2	<21.1	-	<10.6	-	-
Surface Water	Ipswich Bay (Background)	6/21/2012	361	<5.0	<10.2	<5.2	<12.7	<6.0	-	<5.7	-	-
Surface Water	Ipswich Bay (Background)	7/17/2012	<341	<7.0	<16.2	<7.5	<19.2	<11.3	-	<7.9	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	8/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	8/21/2012	<341	<7.1	<15.1	<7.4	<18.9	<8.6	-	<7.4	-	-
Surface Water	Ipswich Bay (Background)	9/18/2012	867	<6.1	<15.4	<6.2	<15.4	<26.1	-	<6.6	-	-
Surface Water	Ipswich Bay (Background)	10/25/2012	821	<6.0	<13.0	<6.6	<14.6	<9.1	-	<6.3	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	11/15/2012	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	11/19/2012	855	<6.5	<14.2	<6.8	<17.7	<12.9	-	<6.6	-	-
Surface Water	Ipswich Bay (Background)	12/12/2012	825	<6.3	<13.9	<6.6	<15.0	<12.9	-	<6.3	-	-
Milk	Rowley (Background)	1/11/2012	1300	-	-	-	-	<1.9	<11.7	<11.3	<37.7	-
Milk	Rowley (Background)	2/8/2012	1360	-	-	-	-	<2.3	<12.3	<11.2	<39.4	-
Milk	Rowley (Background)	3/8/2012	1330	-	-	-	-	<1.9	<7.8	<8.9	<28.1	-
Milk	Rowley (Background)	4/11/2012	1430	-	-	-	-	<2.3	<10.6	<11.6	<35.7	-
Milk	Rowley (Background)	5/2/2012	1540	-	-	-	-	<2.6	<5.7	<5.6	<19.8	-
Milk	Rowley (Background)	6/13/2012	1310	-	-	-	-	<2.0	<6.6	<7.3	<25.3	-
Milk	Rowley (Background)	7/11/2012	1650	-	-	-	-	<2.2	<5.9	<6.2	<21.4	-
Milk	Rowley (Background)	8/8/2012	1390	-	-	-	-	<2.0	<7.5	<8.8	<27.9	-
Milk	Rowley (Background)	9/6/2012	1350	-	-	-	-	<2.0	<6.8	<7.4	<25.1	-
Milk	Rowley (Background)	10/3/2012	2010	-	-	-	-	<2.2	<5.8	<6.6	<21.2	-
Milk	Rowley (Background)	11/7/2012	2060	-	-	-	-	<2.3	<6.5	<6.8	<22.6	-
Milk	Rowley (Background)	12/5/2012	2040	-	-	-	-	<2.2	<6.0	<6.8	<22.5	-

"-" = 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 2012 Environmental Monitoring Data - Solid Matrix

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	5/21/2012	251	9890	<11.4	<31.1	<12.9	<33.8	21.8	<11.4	-
Chondrus	Ipswich Bay	5/21/2012 (Duplicate)	228	<730	<14.2	<38.8	<15.9	<42.4	24.6	<14.7	-
Chondrus	Ipswich Bay	11/26/2012	188	22500	<13.8	<33.9	<15.6	<40.6	82.8	<13.9	-
Winter Flounder	Ipswich Bay	5/21/2012	<142	4390	<12.5	<46.5	<13.3	<34.9	-	<11.9	MD(24.9
Winter Flounder	Ipswich Bay	8/21/2012	<100	4250	<8.3	<33.7	<9.3	<21.6	-	<8.2	35.2
Skate fish	Ipswich Bay	11/19/2012	<1260	<2600	<104	<391	<102	<319	-	<106	898.0
Lobster	Ipswich Bay	5/24/2012	<97	1920	<7.8	<28.1	<7.7	<21.0	-	<7.4	<16.9
Lobster	Ipswich Bay	11/20/2012	<92	3580	<9.8	<25.5	<10.1	<27.6	-	<9.9	97.8
Mytilus	Ipswich Bay	5/23/2012	<101	1560	<8.3	<28.8	<8.1	<22.3	-	<8.1	<18.0
Modiolus	Ipswich Bay	5/21/2012	<140	1500	<11.9	<43.6	<11.2	<34.5	-	<12.0	<24.9
Mytilus	Ipswich Bay	11/19/2012	<64.0	918	<6.8	<18.5	<7.4	<21.6	-	<7.4	40.3
Modiolus	Ipswich Bay	11/26/2012	<57.0	1920	<6.6	<16.4	<6.9	<18.5	-	<6.4	29.0
Sediment	Ipswich Bay (Subtidal)	5/21/2012	-	10400	-	-	<53.6	-	-	<55.6	1740
Sediment	Ipswich Bay (Subtidal)	5/21/2012	-	13300	-	-	<50.9	-	-	<58.5	1130
Sediment	Ipswich Bay (Subtidal)	5/21/2012	-	12600	-	-	<55.0	-	-	<55.7	680
Sediment	Ipswich Bay (Beach)	5/23/2012	-	15400	-	-	<50.4	-	-	<49.2	289
Sediment	Ipswich Bay (Beach)	5/23/2012	-	16000	-	-	<49.4	-	-	<47.1	243
Sediment	Ipswich Bay (Beach)	5/23/2012	-	17200	-	-	<39.4	-	-	<39.5	223
Sediment	Ipswich Bay (Beach)	11/19/2012	-	12300	-	-	<46.3	-	-	<44.5	219
Sediment	Ipswich Bay (Beach)	11/19/2012	-	14100	-	-	<38.0	-	-	<39.4	297
Sediment	Ipswich Bay (Beach)	11/19/2012	-	12000	-	-	<40.6	-	-	<40.2	246
Sediment	Ipswich Bay (Subtidal)	11/19/2012	-	12900	-	-	<46.6	-	-	<52.0	1360
Sediment	Ipswich Bay (Subtidal)	11/19/2012	-	10200	-	-	<55.9	-	-	<59.8	1730
Sediment	Ipswich Bay (Subtidal)	11/19/2012	-	12400	-	-	<46.1	-	-	<51.7	1600
Strawberries	Salisbury	6/19/2012	<61.6	933	<7.1	<15.7	<7.3	<19.5	-	<7.4	<17.3
Strawberries	Ipswich (Control)	6/19/2012	<42.5	1300	<5.7	<13.1	<5.9	<15.2	-	<5.7	<19.9
Garden Tomatoes	Ipswich (Control)	7/26/2012	<86.3	2470	<10.5	<23.6	<11.7	<27.3	-	<10.9	<24.1
Garden Tomatoes	Salisbury	7/26/2012	<57.5	2380	<7.1	<14.8	<7.6	<18.7	-	<7.2	<16.2
Garden Tomatoes	Ipswich (Control)	8/21/2012	<73.3	1950	<9.4	<21.4	<10.5	<26.2	-	<10.0	<21.5
Garden Tomatoes	Salisbury	8/21/2012	<60.2	2550	<7.4	<15.7	<8.6	<19.2	-	<7.7	<18.0
Corn	Rowley	10/3/2012	<928	<2700	<98.6	<247	<95.8	<256	-	<112	<252
Apples	Amesbury	10/3/2012	<56.2	1430	<6.1	<15.5	<6.3	<15.8	-	<6.1	<28.2

"-" = 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

Table 6. Seabrook Nuclear Power Station 2012 Environmental Monitoring Data - Air Samples

Sample Type	Location	Date	1-131* (pCi/m^3)	Be-7* (pCi/m^3)	K-40* (pCi/m^3)	Mn-54* (pCi/m^3)	Fe-59* (pCi/m^3)	Co-60* (pCi/m^3)	Zn-65* (pCi/m^3)	Cs-134* (pCi/m^3)	Cs-137 * (pCi/m^3)	Pb-214* (pCi/m^3)	Gross Alpha (pCi/m^3)	Gross Beta (pCi/m^3)
Air	Salisbury Fire Station	1/4/2012	<0.0704	-	-	-	-	-	-	-	-	-	0.01020	0.0253
Air	Salisbury Fire Station	1/11/2012	<0.0822	-	-	-	-	-	-	-	-	-	0.00871	0.0238
Air	Salisbury Fire Station	1/18/2012	<0.0843	-	-	-	-	-	-	-	-	-	0.00575	0.0238
Air	Salisbury Fire Station	1/25/2012	<0.0663	-	-	-	-	-	-	-	-	-	0.00480	0.0176
Air	Salisbury Fire Station	2/1/2012	<0.0633	-	-	-	-	-	-	-	-	-	0.00447	0.0167
Air	Salisbury Fire Station	2/8/2012	<0.0591	-	-	-	-	-	-	-	-	-	0.00646	0.0269
Air	Salisbury Fire Station	2/15/2012	<0.0476	-	-	-	-	-	-	-	-	-	0.00783	0.0275
Air	Salisbury Fire Station (Quarterly Composite)	2/15/2012	-	0.093	0.294	<0.003	<0.022	<0.002	<0.007	-	<0.002	0.007	-	-
Air	Salisbury Fire Station	2/22/2012	<0.0775	-	-	-	-	-	-	-	-	-	0.01100	0.0424
Air	Salisbury Fire Station	2/29/2012	<0.1000	-	-	-	-	-	-	-	-	-	0.00916	0.0305
Air	Salisbury Fire Station	3/7/2012**	<6.19	-	-	-	-	-	-	-	-	-	0.03990	0.1290
Air	Salisbury Fire Station	3/14/2012	<0.0543	-	-	-	-	-	-	-	-	-	0.00670	0.0317
Air	Salisbury Fire Station	3/21/2012	<0.0595	-	-	-	-	-	-	-	-	-	0.00583	0.0238
Air	Salisbury Fire Station	3/28/2012	<0.0662	-	-	-	-	-	-	-	-	-	0.00495	0.0232
Air	Salisbury Fire Station	4/3/2012	<0.0564	-	-	-	-	-	-	-	-	-	0.00473	0.0228
Air	Salisbury Fire Station	4/10/2012	<0.0607	-	-	-	-	-	-	-	-	-	0.00147	0.0173
Air	Salisbury Fire Station	4/17/2012	<0.0803	-	-	-	-	-	-	-	-	-	0.00507	0.0242
Air	Salisbury Fire Station	4/25/2012	<0.0471	-	-	-	-	-	-	-	-	-	0.00181	0.0133
Air	Salisbury Fire Station	5/2/2012	<0.0622	-	-	-	-	-	-	-	-	-	0.00216	0.0183
Air	Salisbury Fire Station	5/9/2012	<0.0501	-	-	-	-	-	-	-	-	-	0.00217	0.0146
Air	Salisbury Fire Station (Quarterly Composite)	5/15/2012	-	0.085	0.275	<0.002	<0.011	<0.002	<0.006	-	<0.002	0.014	-	-
Air	Salisbury Fire Station	5/16/2012	<0.0498	-	-	-	-	-	-	-	-	-	0.00307	0.0284
Air	Salisbury Fire Station	5/23/2012	<0.0496	-	-	-	-	-	-	-	-	-	0.00114	0.0133
Air	Salisbury Fire Station	5/30/2012	<0.0553	-	-	-	-	-	-	-	-	-	0.00269	0.0178
Air	Salisbury Fire Station	6/6/2012	<0.0842	-	-	-	-	-	-	-	-	-	0.00109	0.0162
Air	Salisbury Fire Station	6/13/2012	<0.0683	-	-	-	-	-	-	-	-	-	0.00172	0.0138
Air	Salisbury Fire Station	6/20/2012	<0.0700	-	-	-	-	-	-	-	-	-	0.00018	0.0163
Air	Salisbury Fire Station	6/27/2012	<0.0469	-	-	-	-	-	-	-	-	-	0.00232	0.0231
Air	Salisbury Fire Station	7/5/2012	<0.0575	-	-	-	-	-	-	-	-	-	0.00050	0.0179
Air	Salisbury Fire Station	7/11/2012	<0.0790	-	-	-	-	-	-	-	-	-	0.00494	0.0221
Air	Salisbury Fire Station	7/18/2012	<0.0695	-	-	-	-	-	-	-	-	-	0.00751	0.0361
Air	Salisbury Fire Station	7/25/2012	<0.0643	-	-	-	-	-	-	-	-	-	0.00646	0.0198
Air	Salisbury Fire Station	8/1/2012	<0.0477	-	-	-	-	-	-	-	-	-	0.00437	0.0232
Air	Salisbury Fire Station	8/8/2012	<0.0483	-	-	-	-	-	-	-	-	-	0.00585	0.0246
Air	Salisbury Fire Station	8/15/2012**	<0.1300	-	-	-	-	-	-	-	-	-	0.00464	0.0383
Air	Salisbury Fire Station (Quarterly Composite)	8/15/2012	-	0.086	<0.046	<0.002	<0.011	<0.002	<0.006	-	<0.002	0.008	-	-
Air	Salisbury Fire Station	8/22/2012	<0.0651	-	-	-	-	-	-	-	-	-	0.00239	0.0222
Air	Salisbury Fire Station	8/29/2012	<0.0718	-	-	-	-	-	-	-	-	-	0.00329	0.0265
Air	Salisbury Fire Station	9/5/2012	<0.0694	-	-	-	-	-	-	-	-	-	0.00254	0.0250
Air	Salisbury Fire Station	9/12/2012	<0.0823	-	-	-	-	-	-	-	-	-	0.00239	0.0235
Air	Salisbury Fire Station	9/19/2012	<0.0626	-	-	-	-	-	-	-	-	-	0.00172	0.0211
Air	Salisbury Fire Station	9/26/2012	<0.0472	-	-	-	-	-	-	-	-	-	0.00111	0.0232
Air	Salisbury Fire Station	10/3/2012	<0.0716	-	-	-	-	-	-	-	-	-	-0.00047	0.0186
Air	Salisbury Fire Station	10/10/2012	<0.0704	-	-	-	-	-	-	-	-	-	0.01080	0.0284
Air	Salisbury Fire Station	10/17/2012	<0.0523	-	-	-	-	-	-	-	-	-	0.00831	0.0178
Air	Salisbury Fire Station	10/25/2012	<0.0589	-	-	-	-	-	-	-	-	-	0.00698	0.0245
Air	Salisbury Fire Station	10/31/2012	<0.0807	-	-	-	-	-	-	-	-	-	0.00595	0.0190
Air	Salisbury Fire Station	11/7/2012	<0.0773	-	-	-	-	-	-	-	-	-	0.00431	0.0135
Air	Salisbury Fire Station	11/14/2012	<0.0842	-	-	-	-	-	-	-	-	-	0.00936	0.0315
Air	Salisbury Fire Station	11/21/2012	<0.0668	-	-	-	-	-	-	-	-	-	0.01310	0.0427
Air	Salisbury Fire Station	11/28/2012	<0.0682	-	-	-	-	-	-	-	-	-	0.01060	0.0363
Air	Salisbury Fire Station	12/5/2012	<0.0478	-	-	-	-	-	-	-	-	-	0.00997	0.0347
Air	Salisbury Fire Station	12/12/2012	<0.0712	-	-	-	-	-	-	-	-	-	0.00509	0.0157
Air	Salisbury Fire Station (Quarterly Composite)	11/15/2012	-	0.076	0.251	<0.002	<0.015	<0.002	<0.007	-	<0.002	0.008	-	-
Air	Salisbury Fire Station	12/19/2012	<0.0514	-	-	-	-	-	-	-	-	-	0.00751	0.0261
Air	Salisbury Fire Station	12/26/2012	<0.0469	-	-	-	-	-	-	-	-	-	0.00680	0.0236

Sample Type	Location	Date	1-131* (pCi/m^3)	Be-7* (pCi/m^3)	K-40* (pCi/m^3)	Mn-54* (pCi/m^3)	Fe-59* (pCi/m^3)	Co-60* (pCi/m^3)	Zn-65* (pCi/m^3)	Cs-134* (pCi/m^3)	Cs-137 * (pCi/m^3)	Pb-214* (pCi/m^3)	Gross Alpha (pCi/m^3)	Gross Beta (pCi/m^3)
Air	Salisbury Fire Station	½/2013	<0.0518	-	-	-	-	-	-	-	-	-	0.00632	0.0231
Air	Background	1/3/2012	<0.0547	-	-	-	-	-	-	-	-	-	0.00203	0.0126
Air	Background	1/10/2012	<0.0541	-	-	-	-	-	-	-	-	-	0.00609	0.0238
Air	Background	1/17/2012	<0.0573	-	-	-	-	-	-	-	-	-	0.00421	0.0165
Air	Background	1/24/2012	<0.0669	-	-	-	-	-	-	-	-	-	0.00376	0.0192
Air	Background	1/31/2012	<0.0718	-	-	-	-	-	-	-	-	-	0.00707	0.0217
Air	Background	2/7/2012	<0.0740	-	-	-	-	-	-	-	-	-	0.00668	0.0241
Air	Background	2/14/2012	<0.0687	-	-	-	-	-	-	-	-	-	0.00528	0.0254
Air	Background Quarterly Composite	2/15/2012	-	0.103	0.035	<0.002	<0.014	<0.001	<0.005	-	<0.001	0.005	-	-
Air	Background	2/21/2012	<0.0447	-	-	-	-	-	-	-	-	-	0.00710	0.0299
Air	Background	2/28/2012	<0.0609	-	-	-	-	-	-	-	-	-	0.00756	0.0278
Air	Background	3/6/2012	<0.0573	-	-	-	-	-	-	-	-	-	0.00481	0.0211
Air	Background	3/13/2012	<0.0574	-	-	-	-	-	-	-	-	-	0.00433	0.0247
Air	Background	3/20/2012	<0.0467	-	-	-	-	-	-	-	-	-	0.00509	0.0253
Air	Background	3/27/2012	<0.0710	-	-	-	-	-	-	-	-	-	0.00448	0.0224
Air	Background	4/3/2012	<0.0584	-	-	-	-	-	-	-	-	-	0.00349	0.0197
Air	Background	4/10/2012	<0.0748	-	-	-	-	-	-	-	-	-	0.00149	0.0155
Air	Background	4/17/2012	<0.0549	-	-	-	-	-	-	-	-	-	0.00243	0.0167
Air	Background	4/24/2012	<0.0594	-	-	-	-	-	-	-	-	-	0.00172	0.0147
Air	Background	5/1/2012	<0.0457	-	-	-	-	-	-	-	-	-	0.00196	0.0174
Air	Background	5/8/2012	<0.0558	-	-	-	-	-	-	-	-	-	0.00090	0.0086
Air	Background Quarterly Composite	5/15/2012	-	0.077	0.241	<0.002	<0.010	<0.002	<0.006	-	<0.002	0.007	-	-
Air	Background	5/15/2012	<0.0729	-	-	-	-	-	-	-	-	-	0.00138	0.0171
Air	Background	5/22/2012	<0.0628	-	-	-	-	-	-	-	-	-	0.00068	0.0149
Air	Background	5/29/2012	<0.0429	-	-	-	-	-	-	-	-	-	0.00079	0.0118
Air	Background	6/5/2012	<0.0693	-	-	-	-	-	-	-	-	-	0.00398	0.0175
Air	Background	6/12/2012	<0.0608	-	-	-	-	-	-	-	-	-	0.00261	0.0127
Air	Background	6/19/2012	<0.0646	-	-	-	-	-	-	-	-	-	0.00178	0.0122
Air	Background	6/26/2012	<0.0565	-	-	-	-	-	-	-	-	-	0.00109	0.0173
Air	Background	7/3/2012	<0.0562	-	-	-	-	-	-	-	-	-	0.00269	0.0206
Air	Background	7/10/2012	<0.0560	-	-	-	-	-	-	-	-	-	0.00352	0.0181
Air	Background	7/17/2012	<0.0615	-	-	-	-	-	-	-	-	-	0.00815	0.0249
Air	Background	7/24/2012	<0.0578	-	-	-	-	-	-	-	-	-	0.00648	0.0213
Air	Background	7/31/2012	<0.0601	-	-	-	-	-	-	-	-	-	0.00818	0.0256
Air	Background	8/7/2012	<0.0555	-	-	-	-	-	-	-	-	-	0.00479	0.0209
Air	Background Quarterly Composite	8/15/2012	-	0.072	0.040	<0.001	<0.008	<0.001	<0.004	-	<0.001	0.006	-	-
Air	Background	8/14/2012	<0.0554	-	-	-	-	-	-	-	-	-	0.00529	0.0218
Air	Background	8/21/2012	<0.0574	-	-	-	-	-	-	-	-	-	0.00179	0.0175
Air	Background	8/28/2012	<0.0549	-	-	-	-	-	-	-	-	-	0.00389	0.0282
Air	Background	9/04/2012	<0.0593	-	-	-	-	-	-	-	-	-	0.00333	0.0200
Air	Background	9/11/2012	<0.0600	-	-	-	-	-	-	-	-	-	0.00378	0.0203
Air	Background	9/18/2012	<0.0702	-	-	-	-	-	-	-	-	-	0.00133	0.0168
Air	Background	9/25/2012	<0.0666	-	-	-	-	-	-	-	-	-	0.00204	0.0224
Air	Background	10/2/2012	<0.0618	-	-	-	-	-	-	-	-	-	0.00299	0.0176
Air	Background	10/09/2012	<0.0623	-	-	-	-	-	-	-	-	-	0.00812	0.0289
Air	Background	10/16/2012	<0.0418	-	-	-	-	-	-	-	-	-	0.00338	0.0167
Air	Background	10/23/2012	<0.0386	-	-	-	-	-	-	-	-	-	0.00726	0.0273
Air	Background	10/30/2012	<0.0427	-	-	-	-	-	-	-	-	-	0.00205	0.0137
Air	Background	11/06/2012	<0.0419	-	-	-	-	-	-	-	-	-	0.00193	0.0148
Air	Background	11/13/2012	<0.0678	-	-	-	-	-	-	-	-	-	0.00498	0.0239
Air	Background	11/20/2012	<0.0581	-	-	-	-	-	-	-	-	-	0.00646	0.0240
Air	Background Quarterly Composite	11/15/2012	-	0.059	0.221	<0.002	<0.013	<0.002	<0.006	-	<0.002	0.011	-	-
Air	Background	11/27/2012	<0.0417	-	-	-	-	-	-	-	-	-	0.00395	0.0213
Air	Background	12/4/2012	<0.0620	-	-	-	-	-	-	-	-	-	0.00573	0.0305
Air	Background	12/11/2012	<0.0611	-	-	-	-	-	-	-	-	-	0.00495	0.0202
Air	Background	12/18/2012	<0.0596	-	-	-	-	-	-	-	-	-	0.00529	0.0256
Air	Background	12/26/2012	<0.0386	-	-	-	-	-	-	-	-	-	0.00311	0.0133

Sample Type	Location	Date	1-131* (pCi/m^3)	Be-7* (pCi/m^3)	K-40* (pCi/m^3)	Mn-54* (pCi/m^3)	Fe-59* (pCi/m^3)	Co-60* (pCi/m^3)	Zn-65* (pCi/m^3)	Cs-134* (pCi/m^3)	Cs-137 * (pCi/m^3)	Pb-214* (pCi/m^3)	Gross Alpha (pCi/m^3)	Gross Beta (pCi/m^3)
Air	Background	1/2/2013	<0.0645	-	-	-	-	-	-	-	-	-	0.00471	0.0238

"-" = 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
** Power Outage resulted in lower air volumes, and therefore higher detection limits.

Table 7. Vermont Yankee Nuclear Power Station 2012 Environmental Monitoring Data - Liquid Matrix

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	3/22/2012	<199	<6.9	<14.4	<7.3	<18.4	<6.5	-	<8.1	-	<300
Surface Water	Connecticut River, Northfield	5/23/2012	<195	<7.0	<14.5	<7.0	<19.4	<7.9	-	<7.8	-	<300
Surface Water	Connecticut River, Northfield	8/28/2012	<208	<7.3	<15.2	<7.5	<19.4	<7.9	-	<8.0	-	<300
Surface Water	Connecticut River, Northfield	11/28/2012	<170	<5.4	<11.6	<5.5	<14.7	<8.2	-	<5.5	-	<300
Surface Water	Connecticut River, Gill	3/22/2012	<248	<9.8	<19.9	<10.3	<26.4	<10.5	-	<10.2	-	<300
Surface Water	Connecticut River, Gill	5/23/2012	<238	<9.7	<20.2	<10.1	<23.6	<10.9	-	<10.1	-	<300
Surface Water	Connecticut River, Gill	8/28/2012	<175	<6.6	<13.3	<6.7	<17.8	<8.2	-	<7.2	-	<300
Surface Water	Connecticut River, Gill	11/28/2012	<169	<6.4	<14.4	<6.7	<17.9	<10.3	-	<7.1	-	<300
Surface Water	Millers River Athol (Background)	3/22/2012	<106	<4.8	<9.7	<5.3	<13.3	<5.4	-	<5.6	-	<300
Surface Water	Millers River Athol (Background)	5/23/2012	<103	<4.7	<9.5	<5.3	<12.1	8.1 (9.2 confirmatory duplicate)	-	<5.3	-	<300
Surface Water	Millers River Athol (Background)	6/20/2012	<214	<7.4	<14.7	<7.6	<17.0	<6.7	-	<8.3	-	<300
Surface Water	Millers River Athol (Background)	8/28/2012	<169	<5.2	<10.6	<5.6	<14.5	<6.6		<5.9		<300
Surface Water	Millers River Athol (Background)	11/28/2012	<168	<6.0	<14.5	<6.5	<17.7	<11.0	-	<6.6	-	<300
Milk	Bernardston	1/19/2012	1400	-	-	-	-	<2.4	<12.6	<11.2	<38.9	-
Milk	Bernardston	2/16/2012	1390	-	-	-	-	<2.0	<11.6	<10.8	<38.6	-
Milk	Bernardston	3/22/2012	1290	-	-	-	-	<1.2	<10.0	<10.5	<35.5	-
Milk	Bernardston	4/28/2012	1350	-	-	-	-	<2.7	<7.3	<8.9	<29.0	-
Milk	Bernardston	5/23/2012	1340	-	-	-	-	<2.3	<9.8	<10.7	<36.7	-
Milk	Bernardston	6/20/2012	1530	-	-	-	-	<2.5	<5.7	<6.4	<19.7	-
Milk	Bernardston	7/17/2012	1150	-	-	-	-	<2.2	<6.4	<7.7	<24.1	-
Milk	Bernardston	8/28/2012	1140	-	-	-	-	<2.1	<6.6	<7.6	<24.8	-
Milk	Bernardston	9/25/2012	1540	-	-	-	-	<2.5	<5.7	<6.2	<20.8	-
Milk	Bernardston	10/24/2012	1970	-	-	-	-	<2.3	<6.1	<6.7	<21.6	-
Milk	Bernardston	11/28/2012	1570	-	-	-	-	<2.3	<5.6	<5.7	<18.4	-
Milk	Bernardston	12/26/2012	1930	-	-	-	-	<2.1	<6.3	<7.0	<22.3	-

"-" = 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 = iodine-131, Cs-134 = Cesium-134, Cs-137 = Cesium-137, Ba-140 = barium-140, H-3 = tritium

Table 8. Vermont Yankee Nuclear Power Station 2012 Environmental Monitoring Data - Solid Matrix

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)
Elderberries	Northfield	9/25/2012	198.0	6180	<14.0	<32.8	<15.2	<41.0	<15.1	<31.1
Pumpkins	Northfield	9/25/2012	<54.9	4780	<6.8	<16.5	<7.6	<19.1	<6.8	<18.4
Apples	Colrain (Background)	10/10/2012	<50.1	994	<5.6	<13.0	<6.0	<16.1	<5.7	33.8
Pasture Grass/ Silage	Bernardston	10/24/2012	2880	6860	<25.1	<51.0	<27.5	<66.0	<27.2	118
Grass	Northfield Routes 5 & 10	4/18/2012	1580	6760	<25.9	<60.2	<28.6	-	<27.9	95.1
Grass	Millers River Athol (Background)	4/18/2012	753	9410	<18.0	<41.9	<20.0	-	<14.3	74.5
Grass	Gill, CT River	4/18/2012	517	11500	<27.7	<71.9	<32.3	-	<32.0	<86.6
Grass	Northfield, CT River	4/18/2012	<164	9840	<30.6	<67.8	<32.0	-	<31.1	215.0
Grass	Millers River Athol (Background)	9/25/2012	1190	5480	<26.2	<54.6	<26.6	-	<27.3	182.0
Grass	Northfield Routes 5 & 10	9/25/2012	1110	8990	<28.2	<59.2	<29.0	-	<28.0	97.0
Grass	Gill, CT River	9/25/2012	2330	11400	<24.7	<54.1	<27.1	-	<25.4	89.4
Grass	Northfield, CT River	9/25/2012	2290	9650	<31.1	<71.4	<34.2	-	<21.4	<75.0
Sediment	Northfield, CT River	4/18/2012		7260	-	-	<28.5	-	<32.6	448.0
Sediment	Gill, CT River	4/18/2012	-	10700	-	-	<45.8	-	123.0	787.0
Sediment	Athol, Millers River (Background)	4/18/2012	-	7550	-	-	<28.4	-	<23.9	535.0
Sediment	Northfield, CT River	8/28/2012	-	10200	-	-	<58.3	-	56.8	533.0
Sediment	Gill, CT River	8/28/2012	-	8280	-	-	<41.6	-	<47.5	432.0
Sediment	Athol, Millers River (Background)	8/28/2012	-	10300	-	-	<56.9	-	93.6	698.0
Fish (composite sample)	Athol, Millers River (Background)	6/20/2012	<1640	5530	<105	<432	<108	<283	<114	<255
Fish (composite sample)	Gill/Northfield, CT River	6/21/2012	<1710	2630	<122	<441	<105	<298	<117	<244
Fish (composite sample)	Athol, Millers River (Background)	10/24/2012	<997	5270	<64.0	<284	<53.0	<164	<43.0	<197
Large Mouth Bass	Gill/Northfield, CT River	10/25/2012	<188	4050	<13.0	<71.0	<12.0	<39.0	9.7	52.0
Fish (composite sample)	Gill/Northfield, CT River	10/25/2012**	<2560	8830	<150	<727	<133	<435	<140	<1260

"-" = 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
** Small sample size resulted in larger detection limits.

Table 9. Vermont Yankee Nuclear Power Station 2012 Environmental Monitoring Data - Air Samples

Sample Type	Location	Date	1-131* (pCi/m^3)	Be-7* (pCi/m^3)	K-40* (pCi/m^3)	Mn-54* (pCi/m^3)	Fe-59* (pCi/m^3)	Co-60* (pCi/m^3)	Zn-65* (pCi/m^3)	Cs-134* (pCi/m^3)	Cs-137 * (pCi/m^3)	Pb-214* (pCi/m^3)	Gross Alpha (pCi/m^3)	Gross Beta (pCi/m^3)
Air	Northfield Transfer Station	12/4/2012	<0.0709	-	-	-	-	-	-	-	-	-	0.00759	0.0361
Air	Northfield Transfer Station	12/12/2012	<0.0528	-	-	-	-	-	-	-	-	-	0.00379	0.0180
Air	Northfield Transfer Station (Quarterly Composite)	12/15/2012	-	0.063	<0.102	<0.005	<0.020	<0.004	<0.013	-	<0.004	0.019	-	-
Air	Northfield Transfer Station	12/19/2012	<0.0641	-	-	-	-	-	-	-	-	-	0.00418	0.0262
Air	Northfield Transfer Station	12/26/2012	<0.0395	-	-	-	-	-	-	-	-	-	0.00308	0.0202
Air	Northfield Transfer Station	1/2/2013	<0.0691	-	-	-	-	-	-	-	-	-	0.00483	0.0293
Air	Background	12/4/2012	<0.0620	-	-	-	-	-	-	-	-	-	0.00573	0.0305
Air	Background	12/11/2012	<0.0611	-	-	-	-	-	-	-	-	-	0.00495	0.0202
Air	Background	12/18/2012	<0.0596	-	-	-	-	-	-	-	-	-	0.00529	0.0256
Air	Background	12/26/2012	<0.0386	-	-	-	-	-	-	-	-	-	0.00311	0.0133
Air	Background	1/2/2013	<0.0645	-	-	-	-	-	-	-	-	-	0.00471	0.0238

"-" = 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 10. Pilgrim Nuclear Power Station 2013 Environmental Monitoring Data - Liquid Matrices

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]	1/29/2013	450	<5.6	<10.7	<5.7	<15.3	<7.0	-	<5.9	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background) [1]	2/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background)[1]	2/26/2013	539	<6.3	<12.6	<6.2	<17.9	<7.2	-	<6.4	-	-
Surface Water	Powder Point Bridge (Background) [1]	4/2/2013	<184	<6.6	<14.5	<6.5	<17.0	<12.1	-	<6.9	-	-
Surface Water	Powder Point Bridge (Background) [1]	4/30/2013	<293	<6.2	<14.5	<6.6	<16.5	<11.9	-	<6.6	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background) [1]	5/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background) [1]	5/28/2013	<292	<6.7	<15.8	<6.4	<17.7	<14.6	-	<7.0	-	-
Surface Water	Powder Point Bridge (Background) [1]	7/2/2013	823	<6.0	<13.1	<6.4	<16.2	<11.0	-	<6.6	-	-
Surface Water	Powder Point Bridge (Background) [1]	7/30/2013	<293	<6.3	<14.4	<6.9	<17.0	<8.3	-	<7.0	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background) [1]	8/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background) [1]	9/3/2013	347	<6.8	<14.5	<7.1	<18.0	<8.8	-	<7.3	-	-
Surface Water	Powder Point Bridge (Background) [1]	10/1/2013	837	<6.1	<14.4	<6.4	<15.9	<14.5	-	<6.4	-	-
Surface Water	Powder Point Bridge (Background) [1]	10/29/2013	392	<5.3	<9.8	<5.0	<13.1	<5.5	-	<5.0	-	-
Surface Water	Powder Point Bridge Quarterly Tritium Composite (Background) [1]	11/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Powder Point Bridge (Background) [1]	12/2/2013	324	<7.6	<16.3	<7.5	<20.2	<16.0	-	<7.8	-	-
Surface Water	Powder Point Bridge (Background) [1]	12/30/2013	331	<5.4	<12.1	<5.6	<16.3	<12.7	-	<5.7	-	-
Surface Water	PNPS Discharge Canal	1/29/2013	<293	<6.6	<14.2	<7.1	<19.8	<8.4	-	<7.1	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	2/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	2/26/2013	<292	<6.5	<13.8	<7.3	<19.9	<7.7	-	<7.4	-	-
Surface Water	PNPS Discharge Canal	4/2/2013	833	<5.9	<14.0	<6.1	<15.6	<12.2	-	<6.3	-	-
Surface Water	PNPS Discharge Canal	5/1/2013	886	<5.8	<13.1	<6.1	<15.0	<10.9	-	<6.4	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	5/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	5/28/2013	816	<6.1	<14.2	<6.5	<15.7	<14.4	-	<6.4	-	-
Surface Water	PNPS Discharge Canal	7/2/2013	888	<6.2	<12.5	<6.4	<15.4	<8.6	-	<6.5	-	-
Surface Water	PNPS Discharge Canal	7/30/2013	920	<6.0	<12.8	<6.4	<15.5	<7.9	-	<6.4	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	8/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	9/3/2013	903	<6.1	<12.4	<6.3	<15.1	<8.0	-	<6.5	-	-
Surface Water	PNPS Discharge Canal	10/1/2013	830	<6.0	<13.8	<6.5	<16.5	<12.6	-	<6.6	-	-
Surface Water	PNPS Discharge Canal	10/29/2013	802	<5.8	<11.9	<6.1	<14.9	<6.8	-	<6.1	-	-
Surface Water	PNPS Discharge Canal Quarterly Tritium Composite	11/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	PNPS Discharge Canal	12/2/2013	290	<5.4	<11.5	<5.6	<15.2	<10.3	-	<5.6	-	-
Surface Water	PNPS Discharge Canal	12/30/2013	298	<6.1	<13.8	<6.2	<18.2	<14.2	-	<6.6	-	-
Milk	Duxbury	1/15/2013	1910	-	-	-	-	<2.0	<6.4	<7.0	<22.7	-
Milk	Duxbury	2/5/2013	1940	-	-	-	-	<2.4	<6.5	<7.2	<22.6	-
Milk	Duxbury	3/5/2013	1920	-	-	-	-	<2.3	<6.4	<7.2	<22.2	-
Milk	Duxbury	4/2/2013	1930	-	-	-	-	<2.4	<6.2	<7.0	<22.2	-
Milk	Duxbury	5/7/2013	1890	-	-	-	-	<2.3	<5.8	<6.7	<21.4	-
Milk	Duxbury	6/4/2013	1990	-	-	-	-	<2.3	<6.0	<7.0	<21.7	-
Milk	Duxbury	7/2/2013	1960	-	-	-	-	<2.4	<5.9	<6.9	<22.0	-
Milk	Duxbury	8/6/2013	1980	-	-	-	-	<2.4	<6.0	<6.9	<22.0	-
Milk	Duxbury	9/10/2013	1930	-	-	-	-	<2.7	<6.0	<6.9	<21.4	-
Milk	Duxbury	10/1/2013	1430	-	-	-	-	<2.6	<5.7	<5.9	<18.8	-
Milk	Duxbury	11/5/2013	1840	-	-	-	-	<2.7	<6.2	<6.7	<21.6	-
Milk	Duxbury	12/3/2013	1230	-	-	-	-	<2.8	<6.5	<7.0	<20.8	-

1. Sample considered “background” for the purpose of monitoring required by federal regulations, but considered “indicator” by MDPH because it falls within the 10-mile EPZ.

“-“ = not analyzed

* 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 11. Pilgrim Nuclear Power Station 2013 Environmental Monitoring Data - Solid Matrices

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	Brant Rock Marshfield (Background) [1]	4/27/2013	<116	7990	<10.1	<35.0	<11.0	<29.9	<126.0	<10.1	-
Chondrus	PNPS – Discharge Canal	5/22/2013	<116	9690	<17.1	<36.6	<13.9	43.8	<17.1	<18.2	-
Chondrus	Brant Rock Marshfield (Background) [1]	10/15/2013	133	5750	<8.2	<19.7	<9.1	<22.8	<12.7	<8.4	-
Chondrus	PNPS – Discharge Canal	10/16/2013	148	9110	<18.5	<42.1	<20.4	<52.8	<21.4	<19.7	-
Clams	Duxbury Bay (Background) [1]	4/27/2013	<191	2610	<15.5	<61.4	<16.2	<49.1	-	<15.5	119.0
Mussels	Green Harbor Marshfield (Background) [1]	4/27/2013	<189	2020	<15.5	<63.6	<15.3	<47.7	-	<16.2	62.1
Clams	Plymouth Harbor (Background) [1]	5/22/2013	<98	2150	<12.5	<26.7	<12.8	<35.8	-	<12.9	71.3
Mussels	PNPS – Discharge Canal	6/12/2013	<70	2100	<7.8	<18.2	<7.7	<18.4	-	<7.5	<21.1
Mussels	Green Harbor Marshfield (Background) [1]	10/15/2013	<239	1390	<14.4	<64.6	<12.7	<44.2	-	<13.3	52.5
Clams	Duxbury Bay (Background) [1]	10/15/2013	<262	2100	<13.1	<61.3	<13.5	<39.8	-	<13.2	53.7
Clams	Plymouth Harbor (Background) [1]	10/24/2013	<214	1900	<11.6	<48.1	<12.3	<37.7	-	<12.9	83.3
Mussels	PNPS – Discharge Canal	11/7/2013	<815	1420	<61.0	<205.0	<56.7	<167.0	-	<61.9	688.0
Winter Flounder	PNPS Discharge Canal	4/25/2013	<166	4240	<13.1	<58.6	<14.0	<38.9	-	<13.7	60.3
Winter Flounder	Cape Cod Bay (Background) [1]	4/26/2013	<474	2680	<35.9	<143.0	<35.3	<98.7	-	<37.8	220.0
Bluefish	BuzzardsBay (Background) [1]	6/26/2013	<99	5240	<9.9	<28.6	<10.4	<28.0	-	<7.5	37.4
Striped Bass	Buzzards Bay (Background) [1]	6/27/2013	<107	5260	<12.2	<37.0	<12.6	<34.9	-	<12.5	50.0
Striped Bass	PNPS – Discharge Canal	7/15/2013	<65	4490	<6.9	<19.1	<7.5	<19.3	-	<4.6	35.3
Bluefish	PNPS – Discharge Canal	7/15/2013	<72	4430	<7.5	<23.6	<7.8	<20.3	-	7.9	<19.7
Tautog	Buzzards Bay (Background) [1]	9/27/2013	<263	4950	<15.1	<85.7	<14.7	<45.5	-	<14.2	102.0
Tautog	PNPS Discharge Canal	9/27/2013	<260	5940	<13.4	<73.3	<13.4	<42.5	-	<13.6	166.0
Lobster	PNPS Discharge Canal	6/20/2013	<126	2760	<13.1	<40.2	<13.4	<37.2	-	<13.5	110
Lobster	Cape Cod Bay (Background) [1]	7/25/2013	<98	2420	<12.5	<30.2	<13.8	<35.4	-	<13.4	<44.8
Sediment	Green Harbor (Background) [1]	4/27/2013	-	7660	-	-	<33.7	-	-	<35.7	241
Sediment	PNPS Discharge Canal	5/22/2013	-	8500	-	-	<32.0	-	-	<30.6	135
Sediment	Duxbury (Background) [1]	10/15/2013	-	9720	-	-	<34.6	-	-	<34.7	462
Sediment	Green Harbor (Background) [1]	10/15/2013	-	9020	-	-	<42.4	-	-	<43.2	526
Sediment	PNPS Discharge Canal	10/16/2013	-	10400	-	-	<35.2	-	-	<35.3	<91
Snap Peas	Plymouth	6/21/2013	<69.5	2080	<8.5	<17.2	<8.9	<20.7	-	<8.9	30.6
Snap Peas	Kingston	6/25/2013	<59.6	2590	<7.3	<15.5	<8.0	<19.3	-	<7.7	<21.9
Lettuce/Boc Choi	Brookline (Background)	7/1/2013	80.1	2550	<6.7	<14.3	<7.3	<17.5	-	<6.9	26.9
Tomatoes	Plymouth	8/21/2013	<110.0	2920	<13.7	<29.2	<15.7	<37.0	-	<14.7	<34.3
Tomatoes	Kingston	8/27/2013	<49.3	2540	<6.3	<13.3	<6.9	<16.7	-	<6.8	<18.6
Tomatoes	Brookline (Background)	8/29/2013	<50.0	2850	<6.3	<13.4	<6.9	<16.3	-	<6.8	<14.9
Tomatillos	Taunton	9/22/2013	<34.9	2580	<5.8	<13.7	<6.9	<16.1	-	<6.0	23.8
Corn	Bridgewater	9/20/2013	<109.0	3050	<12.7	<30.6	<12.8	<33.0	-	<12.5	<27.2
Tomatoes	Bridgewater	9/20/2013	<48.4	1930	<5.6	<14.7	<6.0	<15.0	-	<5.7	<11.5
Cranberries	East Taunton (Background)	9/30/2013	<53.5	812	<7.1	<16.8	<8.2	<21.1	-	<8.0	21.9
Tomatoes	Plymouth	9/27/2013	<73.3	2310	<8.6	<19.7	<9.5	<23.1	-	<8.8	23.5
Cucumbers	Plymouth	9/27/2013	<47.2	1710	<5.5	<12.6	<6.2	<15.4	-	<5.9	16.5
Butternut Squash	Plymouth	9/27/2013	<52.0	2300	<6.0	<14.9	<7.0	<17.3	-	<6.1	26.1
Pumpkins	Plymouth	9/27/2013	<50.5	2810	<6.1	<16.3	<6.2	<16.4	-	<5.9	22.3
Pumpkin Leaves	Plymouth	9/27/2013	493.0	4840	<9.0	<24.0	<9.8	<26.5	-	<9.2	40.2
Cranberries	Kingston	10/3/2013	<140.0	777	<13.7	<34.5	<13.2	<34.4	-	<13.6	<33.1
Cranberries	Plymouth	10/8/2013	29.8	567	<3.8	<9.7	<4.6	<11.0	-	<4.1	20.0

1. Sample considered “background” for the purpose of monitoring required by federal regulations, but considered “indicator” by MDPH because it falls within the 10-mile EPZ.

“-“ = not analyzed

* 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

Table 12. Pilgrim Nuclear Power Station 2013 Environmental Monitoring Data - Air Samples

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Pilgrim Station	1/8/2013	<0.0497	-	-	-	-	-	-	-	-	0.01200	0.0413
Air	Pilgrim Station	1/15/2013	<0.0373	-	-	-	-	-	-	-	-	0.00583	0.0216
Air	Pilgrim Station	1/22/2013	<0.0601	-	-	-	-	-	-	-	-	0.00359	0.0172
Air	Pilgrim Station	1/29/2013	<0.0594	-	-	-	-	-	-	-	-	0.00432	0.0199
Air	Pilgrim Station	2/5/2013	<0.0406	-	-	-	-	-	-	-	-	0.00322	0.0170
Air	Pilgrim Station	2/12/2013	<0.0633	-	-	-	-	-	-	-	-	0.00300	0.0148
Air	Pilgrim Station	2/19/2013	<0.0410	-	-	-	-	-	-	-	-	0.00329	0.0171
Air	Pilgrim Station	2/26/2013	<0.0722	-	-	-	-	-	-	-	-	0.00179	0.0160
Air	Pilgrim Station	3/5/2013	<0.0406	-	-	-	-	-	-	-	-	0.00181	0.0201
Air	Pilgrim Station	3/12/2013	<0.0605	-	-	-	-	-	-	-	-	0.00153	0.0174
Air	Pilgrim Station	3/20/2013	<0.0418	-	-	-	-	-	-	-	-	0.00222	0.0151
Air	Pilgrim Station	3/26/2013	<0.1150	-	-	-	-	-	-	-	-	<0.00220	0.0179
Air	Pilgrim Station	4/2/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00135	0.0121
Air	Pilgrim Station Quarterly Filter Composite	2/15/2013	-	<0.085	<0.064	<0.030	<0.028	<0.003	<0.009	<0.003	<0.006	-	-
Air	Pilgrim Station	4/9/2013	<0.0639	-	-	-	-	-	-	-	-	0.00562	0.0252
Air	Pilgrim Station	4/17/2013	<0.0352	-	-	-	-	-	-	-	-	0.00240	<0.00146
Air	Pilgrim Station	4/23/2013	<0.0410	-	-	-	-	-	-	-	-	0.00428	0.0209
Air	Pilgrim Station	4/30/2013	<0.6400	-	-	-	-	-	-	-	-	<0.01960	0.0978
Air	Pilgrim Station	5/7/2013	<0.0404	-	-	-	-	-	-	-	-	0.00215	0.0188
Air	Pilgrim Station	5/14/2013	<0.0436	-	-	-	-	-	-	-	-	<0.00194	0.0134
Air	Pilgrim Station	5/21/2013	<0.0387	-	-	-	-	-	-	-	-	0.00232	0.0188
Air	Pilgrim Station	5/28/2013	<0.0394	-	-	-	-	-	-	-	-	<0.00186	0.0106
Air	Pilgrim Station	6/4/2013	<0.0363	-	-	-	-	-	-	-	-	0.00290	0.0240
Air	Pilgrim Station	6/11/2013	<0.0367	-	-	-	-	-	-	-	-	<0.00171	0.0110
Air	Pilgrim Station	6/18/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00176	0.0191
Air	Pilgrim Station	6/25/2013	<0.0374	-	-	-	-	-	-	-	-	<0.00180	0.0119
Air	Pilgrim Station	7/2/2013	<0.0377	-	-	-	-	-	-	-	-	<0.00181	0.0142
Air	Pilgrim Station Quarterly Filter Composite	5/15/2013	-	0.097	<0.067	<0.003	<0.016	<0.003	<0.008	<0.003	0.013	-	-
Air	Pilgrim Station	7/9/2013	<0.0364	-	-	-	-	-	-	-	-	0.00364	0.0152
Air	Pilgrim Station	7/16/2013	<0.0375	-	-	-	-	-	-	-	-	0.00258	0.0169
Air	Pilgrim Station	7/23/2013	<0.0403	-	-	-	-	-	-	-	-	0.00280	0.0195
Air	Pilgrim Station	7/30/2013	<0.0381	-	-	-	-	-	-	-	-	0.00344	0.0186
Air	Pilgrim Station	8/6/2013	<0.0410	-	-	-	-	-	-	-	-	0.00183	0.0127
Air	Pilgrim Station	8/13/2013	<0.0343	-	-	-	-	-	-	-	-	0.00235	0.0170
Air	Pilgrim Station	8/20/2013	<0.0398	-	-	-	-	-	-	-	-	0.00378	0.0243
Air	Pilgrim Station	8/27/2013	<0.0434	-	-	-	-	-	-	-	-	0.00276	0.0249
Air	Pilgrim Station	9/3/2013	<0.0433	-	-	-	-	-	-	-	-	0.00423	0.0273
Air	Pilgrim Station	9/10/2013	<0.0402	-	-	-	-	-	-	-	-	0.00210	0.0181
Air	Pilgrim Station	9/17/2013	<0.0391	-	-	-	-	-	-	-	-	<0.00151	0.0239
Air	Pilgrim Station	9/24/2013	<0.0438	-	-	-	-	-	-	-	-	<0.00163	0.0160
Air	Pilgrim Station	10/1/2013	<0.0460	-	-	-	-	-	-	-	-	<0.00165	0.0145
Air	Pilgrim Station Quarterly Filter Composite	8/15/2013	-	0.096	<0.064	<0.003	<0.015	<0.003	<0.007	<0.002	<0.005	-	-
Air	Pilgrim Station	10/8/2013	<0.0439	-	-	-	-	-	-	-	-	0.00621	0.0256
Air	Pilgrim Station	10/16/2013	<0.0391	-	-	-	-	-	-	-	-	0.00551	0.0191
Air	Pilgrim Station	10/22/2013	<0.0562	-	-	-	-	-	-	-	-	0.00458	0.0247
Air	Pilgrim Station	10/29/2013	<0.0451	-	-	-	-	-	-	-	-	0.00306	0.0174
Air	Pilgrim Station	11/5/2013	<0.0456	-	-	-	-	-	-	-	-	<0.00262	0.0187
Air	Pilgrim Station	11/12/2013	<0.0468	-	-	-	-	-	-	-	-	<0.00258	0.0160
Air	Pilgrim Station	11/19/2013	<0.0475	-	-	-	-	-	-	-	-	0.00386	0.0237
Air	Pilgrim Station	11/26/2013	<0.0496	-	-	-	-	-	-	-	-	<0.00270	0.0154
Air	Pilgrim Station	12/3/2013	<0.0315	-	-	-	-	-	-	-	-	<0.00280	0.0173
Air	Pilgrim Station	12/10/2013	<0.0436	-	-	-	-	-	-	-	-	0.00422	0.0282
Air	Pilgrim Station	12/17/2013	<0.0516	-	-	-	-	-	-	-	-	0.00462	0.0278
Air	Pilgrim Station	12/24/2013	<0.0381	-	-	-	-	-	-	-	-	0.00384	0.0305

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Pilgrim Station	12/31/2013	<0.0417	-	-	-	-	-	-	-	-	<0.00276	0.0197
Air	Pilgrim Station Quarterly Filter Composite	11/15/2013	-	<0.098	0.076	<0.003	<0.044	<0.002	<0.008	<0.002	<0.005	-	-
Air	Background	1/8/2013	<0.0745	-	-	-	-	-	-	-	-	0.00511	0.0250
Air	Background	1/15/2013	<0.0618	-	-	-	-	-	-	-	-	0.00794	0.0259
Air	Background	1/22/2013	<0.0645	-	-	-	-	-	-	-	-	0.00328	0.0166
Air	Background	1/29/2013	<0.0671	-	-	-	-	-	-	-	-	0.00322	0.0183
Air	Background	2/5/2013	<0.0443	-	-	-	-	-	-	-	-	0.00366	0.0168
Air	Background	2/12/2013	<0.0438	-	-	-	-	-	-	-	-	0.00248	0.0184
Air	Background	2/19/2013	<0.0419	-	-	-	-	-	-	-	-	0.00354	0.0161
Air	Background	2/26/2013	<0.0742	-	-	-	-	-	-	-	-	0.00171	0.0119
Air	Background	3/5/2013	<0.0690	-	-	-	-	-	-	-	-	<0.00153	0.0127
Air	Background	3/12/2013	<0.0442	-	-	-	-	-	-	-	-	<0.00154	0.0130
Air	Background	3/19/2013	<0.0450	-	-	-	-	-	-	-	-	0.00232	0.0155
Air	Background	3/26/2013	<0.0421	-	-	-	-	-	-	-	-	0.00161	0.0167
Air	Background	4/2/2013	<0.0725	-	-	-	-	-	-	-	-	<0.00144	0.0108
Air	Background Quarterly Composite	2/15/2013	-	<0.082	<0.067	<0.003	<0.027	<0.003	<0.009	<0.003	<0.006	-	-
Air	Background	4/9/2013	<0.0408	-	-	-	-	-	-	-	-	0.00531	0.0287
Air	Background	4/16/2013	<0.0431	-	-	-	-	-	-	-	-	0.00374	0.0124
Air	Background	4/23/2013	<0.0693	-	-	-	-	-	-	-	-	0.00401	0.0200
Air	Background	4/30/2013	<0.0657	-	-	-	-	-	-	-	-	0.00245	0.0146
Air	Background	5/7/2013	<0.0462	-	-	-	-	-	-	-	-	0.00235	0.0174
Air	Background	5/14/2013	<0.0441	-	-	-	-	-	-	-	-	<0.00209	0.0136
Air	Background	5/21/2013	<0.0421	-	-	-	-	-	-	-	-	<0.00206	0.0133
Air	Background	5/28/2013	<0.0480	-	-	-	-	-	-	-	-	<0.00205	0.0084
Air	Background	6/4/2013	<0.0458	-	-	-	-	-	-	-	-	0.00208	0.0165
Air	Background	6/11/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00210	0.0126
Air	Background	6/18/2013	<0.0398	-	-	-	-	-	-	-	-	0.00222	0.0209
Air	Background	6/25/2013	<0.0422	-	-	-	-	-	-	-	-	<0.00208	0.0162
Air	Background	7/2/2013	<0.0458	-	-	-	-	-	-	-	-	<0.00205	0.0233
Air	Background Quarterly Composite	5/15/2013	-	0.074	<0.069	<0.003	<0.015	<0.003	<0.009	<0.028	0.010	-	-
Air	Background	7/9/2013	<0.0442	-	-	-	-	-	-	-	-	0.00273	0.0150
Air	Background	7/16/2013	<0.0427	-	-	-	-	-	-	-	-	0.00401	0.0247
Air	Background	7/23/2013	<0.0441	-	-	-	-	-	-	-	-	0.00479	0.0208
Air	Background	7/29/2013	<0.0462	-	-	-	-	-	-	-	-	0.00287	0.0184
Air	Background	8/6/2013	<0.0342	-	-	-	-	-	-	-	-	0.00341	0.0210
Air	Background	8/13/2013	<0.0372	-	-	-	-	-	-	-	-	0.00250	0.0152
Air	Background	8/20/2013	<0.0401	-	-	-	-	-	-	-	-	0.00406	0.0228
Air	Background	8/27/2013	<0.0388	-	-	-	-	-	-	-	-	0.00353	0.0265
Air	Background	9/3/2013	<0.0401	-	-	-	-	-	-	-	-	0.00351	0.0286
Air	Background	9/10/2013	<0.0488	-	-	-	-	-	-	-	-	<0.00156	0.0181
Air	Background	9/17/2013	<0.0445	-	-	-	-	-	-	-	-	0.00217	0.0292
Air	Background	9/24/2013	<0.0387	-	-	-	-	-	-	-	-	<0.00157	0.0149
Air	Background	10/1/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00155	0.0154
Air	Background Quarterly Composite	8/15/2013	-	0.087	<0.070	<0.002	<0.011	<0.002	<0.005	<0.002	<0.004	-	-
Air	Background	10/8/2013	<0.0417	-	-	-	-	-	-	-	-	0.00887	0.0255
Air	Background	10/15/2013	<0.0403	-	-	-	-	-	-	-	-	0.00424	0.0175
Air	Background	10/22/2013	<0.0406	-	-	-	-	-	-	-	-	0.00760	0.0244
Air	Background	10/29/2013	<0.0420	-	-	-	-	-	-	-	-	<0.00239	0.0161
Air	Background	11/5/2013	<0.0406	-	-	-	-	-	-	-	-	0.00555	0.0217
Air	Background	11/12/2013	<0.0306	-	-	-	-	-	-	-	-	0.00339	0.0165
Air	Background	11/19/2013	<0.0428	-	-	-	-	-	-	-	-	<0.00243	0.0177
Air	Background	11/26/2013	<0.0303	-	-	-	-	-	-	-	-	<0.00243	0.0131
Air	Background	12/3/2013	<0.0257	-	-	-	-	-	-	-	-	<0.00241	0.0139
Air	Background	12/10/2013	<0.0339	-	-	-	-	-	-	-	-	0.00444	0.0293
Air	Background	12/17/2013	<0.0358	-	-	-	-	-	-	-	-	0.00370	0.0269
Air	Background	12/24/2013	<0.0461	-	-	-	-	-	-	-	-	0.00321	0.0235

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Background	12/31/2014	<0.0368	-	-	-	-	-	-	-	-	0.00353	0.0289
Air	Background Quarterly Composite	11/15/2013	-	0.086	<0.040	<0.002	<0.032	<0.002	<0.006	<0.001	<0.003	-	-

"-" = not analyzed

* 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 13. Seabrook Nuclear Power Station 2013 Environmental Monitoring Data - Liquid Matrix

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)	1/29/2013	900	<6.4	<13.8	<6.7	<17.3	<10.5	-	<6.6	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	2/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	2/19/2013	578	<6.5	<14.3	<6.9	<21.8	<11.0	-	<6.6	-	-
Surface Water	Ipswich Bay (Background)	3/21/2013	756	<6.4	<14.5	<6.1	<17.1	<16.3	-	<6.7	-	-
Surface Water	Ipswich Bay (Background)	4/16/2013	762	<5.8	<12.2	<6.2	<15.1	<7.2	-	<6.5	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	5/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	5/21/2013	<283	<5.5	<13.0	<5.6	<14.4	<12.3	-	<5.7	-	-
Surface Water	Ipswich Bay (Background)	6/18/2013	759	<5.9	<12.3	<6.2	<15.7	<7.3	-	<6.4	-	-
Surface Water	Ipswich Bay (Background)	7/16/2013	779	<6.4	<13.1	<6.2	<16.3	<10.3	-	<6.7	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	8/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	8/19/2013	834	<6.1	<12.6	<6.2	<15.2	<8.4	-	<6.4	-	-
Surface Water	Ipswich Bay (Background)	9/18/2013	<292	<6.7	<15.1	<7.3	<16.9	<10.7	-	<7.0	-	-
Surface Water	Ipswich Bay (Background)	10/21/2013	382	<5.2	<10.4	<5.5	<13.3	<6.3	-	<5.2	-	-
Surface Water	Ipswich Bay (Background) Quarterly Composite	11/15/2013	-	-	-	-	-	-	-	-	-	<300
Surface Water	Ipswich Bay (Background)	11/15/2013	383	<7.2	<15.4	<7.3	<19.9	<11.0	-	<7.5	-	-
Surface Water	Ipswich Bay (Background)	12/11/2013	276	<5.3	<11.6	<5.8	<16.4	<11.2	-	<5.5	-	-
Milk	Rowley (Background)	1/2/2013	2060	-	-	-	-	<2.4	<6.4	<7.0	<22.8	-
Milk	Rowley (Background)	2/6/2013	2090	-	-	-	-	<2.4	<6.5	<6.8	<22.9	-
Milk	Rowley (Background)	3/6/2013	2000	-	-	-	-	<2.4	<6.3	<7.0	<22.4	-
Milk	Rowley (Background)	4/3/2013	2030	-	-	-	-	<2.3	<6.2	<7.0	<22.2	-
Milk	Rowley (Background)	5/1/2013	2050	-	-	-	-	<2.3	<5.7	<6.3	<23.3	-
Milk	Rowley (Background)	6/5/2013	2110	-	-	-	-	<2.3	<5.9	<6.5	<22.1	-
Milk	Rowley (Background)	7/3/2013	2080	-	-	-	-	<2.4	<6.0	<6.6	<22.7	-
Milk	Rowley (Background)	8/7/2013	2080	-	-	-	-	<2.5	<5.9	<6.8	<22.5	-
Milk	Rowley (Background)	9/4/2013	2090	-	-	-	-	<2.6	<5.9	<6.5	<21.9	-
Milk	Rowley (Background)	10/2/2013	1530	-	-	-	-	<2.6	<5.9	<5.5	<18.8	-
Milk	Rowley (Background)	11/6/2013	1910	-	-	-	-	<2.7	<5.8	<6.3	<21.3	-
Milk	Rowley (Background)	12/4/2013	1450	-	-	-	-	<6.6	<6.1	<5.7	<18.9	-

"-" = not analyzed

* 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 14. Seabrook Nuclear Power Station 2013 Environmental Monitoring Data - Solid Matrix

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 (Background)	5/21/2013	94	10500	<10.4	<28.3	<12.0	<33.1	21.1	<10.7	-
Chondrus	Ipswich Bay (Background)	11/21/2013	264	6670	<10.4	<25.2	<11.6	<29.7	<14.2	<10.5	-
Winter Flounder	Ipswich Bay (Background)	5/21/2013	<186	4370	<15.6	<69.8	<15.4	<48.1	-	<15.0	73.2
Winter Flounder	Ipswich Bay (Background)	8/19/2013	<149	5150	<16.5	<41.0	<17.9	<45.8	-	<17.3	84.7
Skate fish	Ipswich Bay (Background)	11/21/2013	<1580	2730	<140.0	<426.0	<138.0	<401.0	-	<143.0	1230
Lobster	Ipswich Bay (Background)	5/24/2013	<74	2900	<7.0	<20.4	<7.4	<18.8	-	<7.2	<19.7
Lobster	Ipswich Bay (Background)	11/14/2013	<65	2100	<6.2	<20.8	<6.6	<17.5	-	<6.1	40.6
Mytilus	Ipswich Bay (Background)	5/20/2013	<79	2470	<7.5	<20.7	<7.9	<19.5	-	<7.6	<21.6
Modiolus	Ipswich Bay (Background)	5/21/2013	<161	1850	<14.2	<52.2	<14.0	<36.8	-	<14.0	52.8
Modiolus	Ipswich Bay (Background)	11/21/2013	<126	1640	<11.0	<34.0	<11.8	<35.3	-	<11.3	59.7
Mytilus	Ipswich Bay (Background)	11/22/2013	<86	1690	<7.9	<23.5	<7.6	<25.2	-	<8.1	42.3
Sediment (Beach)	Ipswich (Background)	5/20/2013	-	16600	-	-	<49.2	-	-	<46.1	228
Sediment (Beach)	Ipswich (Background)	5/20/2013	-	13700	-	-	<42.7	-	-	<41.8	173
Sediment (Beach)	Ipswich (Background)	5/20/2013	-	13100	-	-	<45.4	-	-	<45.4	190
Sediment (Subtidal)	Ipswich (Background)	5/21/2013	-	10900	-	-	<56.2	-	-	<62.1	2020
Sediment (Subtidal)	Ipswich (Background)	5/21/2013	-	12000	-	-	<53.8	-	-	<55.1	784
Sediment (Subtidal)	Ipswich (Background)	5/21/2013	-	11200	-	-	<48.3	-	-	<48.9	650
Sediment (Subtidal)	Ipswich (Background)	11/21/2013	-	12600	-	-	<62.9	-	-	<69.9	2150
Sediment (Subtidal)	Ipswich (Background)	11/21/2013	-	12400	-	-	<41.8	-	-	<43.2	808
Sediment (Subtidal)	Ipswich (Background)	11/21/2013	-	12200	-	-	<39.6	-	-	<40.8	753
Sediment (Beach)	Ipswich (Background)	11/22/2013	-	14100	-	-	<34.5	-	-	<32.6	296
Sediment (Beach)	Ipswich (Background)	11/22/2013	-	14300	-	-	<38.0	-	-	<40.0	278
Sediment (Beach)	Ipswich (Background)	11/22/2013	-	14600	-	-	<36.3	-	-	<33.9	150
Strawberries	Ipswich (Background)	6/25/2013	<53.7	1320	<7.0	<15.7	<7.8	<20.1	-	<7.7	65.6
Strawberries	Salisbury	6/25/2013	<55.4	2020	<6.8	<14.3	<7.4	<18.3	-	<7.1	32.6
Green Beans	Salisbury	7/25/2013	<6.2	3050	<7.7	<16.7	<8.5	<20.3	-	<8.1	24.3
Green Beans	Ipswich (Background)	7/25/2013	<61.8	2390	<8.3	<19.3	<8.8	<23.4	-	<9.1	59.8
Green Beans	Ipswich (Background)	8/21/2013	<56.3	2520	<7.0	<14.9	<7.5	<18.3	-	<7.4	<19.4
Swiss Chard	Salisbury	8/21/2013	57.6	3860	<7.9	<17.0	<8.9	<21.7	-	<8.6	27.1

"-" = not analyzed

* 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

Table 15. Seabrook Nuclear Power Station 2013 Environmental Monitoring Data - Air Samples

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Salisbury Fire Station	1/9/2013	<0.0724	-	-	-	-	-	-	-	-	0.00518	0.0300
Air	Salisbury Fire Station	1/16/2013	<0.0529	-	-	-	-	-	-	-	-	0.00727	0.0281
Air	Salisbury Fire Station	1/23/2013	<0.0695	-	-	-	-	-	-	-	-	0.00462	0.0181
Air	Salisbury Fire Station	1/30/2013	<0.0514	-	-	-	-	-	-	-	-	0.00425	0.0233
Air	Salisbury Fire Station	2/6/2013	<0.0870	-	-	-	-	-	-	-	-	0.00509	0.0256
Air	Salisbury Fire Station	2/13/2013	<0.0854	-	-	-	-	-	-	-	-	0.00256	0.0190
Air	Salisbury Fire Station	2/20/2013	<0.0771	-	-	-	-	-	-	-	-	0.00385	0.0221
Air	Salisbury Fire Station	2/27/2013	<0.0515	-	-	-	-	-	-	-	-	<0.00171	0.0119
Air	Salisbury Fire Station	3/6/2013	<0.0816	-	-	-	-	-	-	-	-	0.00221	0.0111
Air	Salisbury Fire Station	3/13/2013	<0.0529	-	-	-	-	-	-	-	-	<0.00171	0.0153
Air	Salisbury Fire Station	3/20/2013	<0.0844	-	-	-	-	-	-	-	-	0.00273	0.0158
Air	Salisbury Fire Station	3/27/2013	<0.0796	-	-	-	-	-	-	-	-	0.00231	0.0162
Air	Salisbury Fire Station	4/3/2013	<0.0818	-	-	-	-	-	-	-	-	<0.00175	0.0136
Air	Salisbury Fire Station (Quarterly Composite)	2/15/2013	-	<0.083	<0.077	<0.004	<0.034	<0.003	<0.010	<0.003	<0.006	-	-
Air	Salisbury Fire Station	4/10/2013	<0.0518	-	-	-	-	-	-	-	-	0.00540	0.0231
Air	Salisbury Fire Station	4/17/2013	<0.0472	-	-	-	-	-	-	-	-	<0.00236	0.0153
Air	Salisbury Fire Station	4/24/2013	<0.0452	-	-	-	-	-	-	-	-	<0.00221	0.0148
Air	Salisbury Fire Station	5/1/2013	<0.0448	-	-	-	-	-	-	-	-	0.00254	0.0219
Air	Salisbury Fire Station	5/8/2013	<0.0481	-	-	-	-	-	-	-	-	<0.00209	0.0171
Air	Salisbury Fire Station	5/15/2013	<0.0474	-	-	-	-	-	-	-	-	<0.002190	0.0154
Air	Salisbury Fire Station	5/22/2013	<0.0683	-	-	-	-	-	-	-	-	<0.00230	0.0155
Air	Salisbury Fire Station	5/29/2013	<0.0520	-	-	-	-	-	-	-	-	<0.00219	0.0110
Air	Salisbury Fire Station	6/5/2013	<0.0433	-	-	-	-	-	-	-	-	0.00244	0.0230
Air	Salisbury Fire Station	6/12/2013	<0.0515	-	-	-	-	-	-	-	-	<0.00212	0.0109
Air	Salisbury Fire Station	6/19/2013	<0.0506	-	-	-	-	-	-	-	-	<0.00222	0.0220
Air	Salisbury Fire Station	6/26/2013	<0.0534	-	-	-	-	-	-	-	-	<0.00221	0.0320
Air	Salisbury Fire Station	7/3/2013	<0.0544	-	-	-	-	-	-	-	-	<0.00215	0.0143
Air	Salisbury Fire Station (Quarterly Composite)	5/15/2013	-	0.076	<0.078	<0.003	<0.022	<0.003	<0.010	<0.003	<0.007	-	-
Air	Salisbury Fire Station	7/10/2013	<0.0514	-	-	-	-	-	-	-	-	0.00561	0.0198
Air	Salisbury Fire Station	7/17/2013	<0.0477	-	-	-	-	-	-	-	-	0.00371	0.0184
Air	Salisbury Fire Station	7/24/2013	<0.0571	-	-	-	-	-	-	-	-	0.00202	0.0131
Air	Salisbury Fire Station	7/31/2013	<0.0506	-	-	-	-	-	-	-	-	<0.00192	0.0159
Air	Salisbury Fire Station	8/7/2013	<0.0453	-	-	-	-	-	-	-	-	0.00307	0.0216
Air	Salisbury Fire Station	8/14/2013	<0.0489	-	-	-	-	-	-	-	-	<0.00193	0.0173
Air	Salisbury Fire Station	8/21/2013	<0.0534	-	-	-	-	-	-	-	-	0.00410	0.0243
Air	Salisbury Fire Station	8/28/2013	<0.0514	-	-	-	-	-	-	-	-	0.00581	0.0343
Air	Salisbury Fire Station	9/4/2013	<0.0507	-	-	-	-	-	-	-	-	0.00558	0.0289
Air	Salisbury Fire Station	9/11/2013	<0.0558	-	-	-	-	-	-	-	-	0.00212	0.0198
Air	Salisbury Fire Station	9/18/2013	<0.0597	-	-	-	-	-	-	-	-	0.00258	0.0247
Air	Salisbury Fire Station	9/25/2013	<0.0563	-	-	-	-	-	-	-	-	<0.00199	0.0203
Air	Salisbury Fire Station	10/2/2013	<0.0577	-	-	-	-	-	-	-	-	<0.00200	0.0198
Air	Salisbury Fire Station (Quarterly Composite)	8/15/2013	-	0.071	<0.079	<0.004	<0.020	<0.003	<0.010	<0.003	<0.008	-	-
Air	Salisbury Fire Station	10/9/2013	<0.0609	-	-	-	-	-	-	-	-	0.00378	0.0262
Air	Salisbury Fire Station	10/16/2013	<0.0533	-	-	-	-	-	-	-	-	0.00478	0.0248
Air	Salisbury Fire Station	10/23/2013	<0.3690	-	-	-	-	-	-	-	-	<0.02420	0.0589
Air	Salisbury Fire Station	10/30/2013	<0.0515	-	-	-	-	-	-	-	-	<0.00289	0.0120
Air	Salisbury Fire Station	11/6/2013	<0.0542	-	-	-	-	-	-	-	-	0.00745	0.0303
Air	Salisbury Fire Station	11/13/2013	<0.0381	-	-	-	-	-	-	-	-	<0.00296	0.0168
Air	Salisbury Fire Station	11/20/2013	<0.0354	-	-	-	-	-	-	-	-	0.00534	0.0251
Air	Salisbury Fire Station	11/27/2013	<0.0555	-	-	-	-	-	-	-	-	<0.00227	0.0131
Air	Salisbury Fire Station	12/4/2013	<0.0344	-	-	-	-	-	-	-	-	<0.00236	0.0162
Air	Salisbury Fire Station	12/11/2013	<0.0487	-	-	-	-	-	-	-	-	0.00372	0.0305
Air	Salisbury Fire Station	12/18/2013	<0.0387	-	-	-	-	-	-	-	-	0.00301	0.0252
Air	Salisbury Fire Station	12/26/2013	<0.0311	-	-	-	-	-	-	-	-	0.00349	0.0278
Air	Salisbury Fire Station (Quarterly Composite)	11/15/2013	-	0.105	<0.031	<0.002	<0.037	<0.002	<0..006	<0.001	<0.004	-	-
Air	Background	1/8/2013	<0.0745	-	-	-	-	-	-	-	-	0.00511	0.0250
Air	Background	1/15/2013	<0.0618	-	-	-	-	-	-	-	-	0.00794	0.0259

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Background	1/22/2013	<0.0645	-	-	-	-	-	-	-	-	0.00328	0.0166
Air	Background	1/29/2013	<0.0671	-	-	-	-	-	-	-	-	0.00322	0.0183
Air	Background	2/5/2013	<0.0443	-	-	-	-	-	-	-	-	0.00366	0.0168
Air	Background	2/12/2013	<0.0438	-	-	-	-	-	-	-	-	0.00248	0.0184
Air	Background	2/19/2013	<0.0419	-	-	-	-	-	-	-	-	0.00354	0.0161
Air	Background	2/26/2013	<0.0742	-	-	-	-	-	-	-	-	0.00171	0.0119
Air	Background	3/5/2013	<0.0690	-	-	-	-	-	-	-	-	<0.00153	0.0127
Air	Background	3/12/2013	<0.0442	-	-	-	-	-	-	-	-	<0.00154	0.0130
Air	Background	3/19/2013	<0.0450	-	-	-	-	-	-	-	-	0.00232	0.0155
Air	Background	3/26/2013	<0.0421	-	-	-	-	-	-	-	-	0.00161	0.0167
Air	Background	4/2/2013	<0.0725	-	-	-	-	-	-	-	-	<0.00144	0.0108
Air	Background Quarterly Composite	2/15/2013	-	<0.082	<0.067	<0.003	<0.027	<0.003	<0.009	<0.003	<0.006	-	-
Air	Background	4/9/2013	<0.0408	-	-	-	-	-	-	-	-	0.00531	0.0287
Air	Background	4/16/2013	<0.0431	-	-	-	-	-	-	-	-	0.00374	0.0124
Air	Background	4/23/2013	<0.0693	-	-	-	-	-	-	-	-	0.00401	0.0200
Air	Background	4/30/2013	<0.0657	-	-	-	-	-	-	-	-	0.00245	0.0146
Air	Background	5/7/2013	<0.0462	-	-	-	-	-	-	-	-	0.00235	0.0174
Air	Background	5/14/2013	<0.0441	-	-	-	-	-	-	-	-	<0.00209	0.0136
Air	Background	5/21/2013	<0.0421	-	-	-	-	-	-	-	-	<0.00206	0.0133
Air	Background	5/28/2013	<0.0480	-	-	-	-	-	-	-	-	<0.00205	0.0084
Air	Background	6/4/2013	<0.0458	-	-	-	-	-	-	-	-	0.00208	0.0165
Air	Background	6/11/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00210	0.0126
Air	Background	6/18/2013	<0.0398	-	-	-	-	-	-	-	-	0.00222	0.0209
Air	Background	6/25/2013	<0.0422	-	-	-	-	-	-	-	-	<0.00208	0.0162
Air	Background	7/2/2013	<0.0458	-	-	-	-	-	-	-	-	<0.00205	0.0233
Air	Background Quarterly Composite	5/15/2013	-	0.074	<0.069	<0.003	<0.015	<0.003	<0.009	<0.028	0.010	-	-
Air	Background	7/9/2013	<0.0442	-	-	-	-	-	-	-	-	0.00273	0.0150
Air	Background	7/16/2013	<0.0427	-	-	-	-	-	-	-	-	0.00401	0.0247
Air	Background	7/23/2013	<0.0441	-	-	-	-	-	-	-	-	0.00479	0.0208
Air	Background	7/29/2013	<0.0462	-	-	-	-	-	-	-	-	0.00287	0.0184
Air	Background	8/6/2013	<0.0342	-	-	-	-	-	-	-	-	0.00341	0.0210
Air	Background	8/13/2013	<0.0372	-	-	-	-	-	-	-	-	0.00250	0.0152
Air	Background	8/20/2013	<0.0401	-	-	-	-	-	-	-	-	0.00406	0.0228
Air	Background	8/27/2013	<0.0388	-	-	-	-	-	-	-	-	0.00353	0.0265
Air	Background	9/3/2013	<0.0401	-	-	-	-	-	-	-	-	0.00351	0.0286
Air	Background	9/10/2013	<0.0488	-	-	-	-	-	-	-	-	<0.00156	0.0181
Air	Background	9/17/2013	<0.0445	-	-	-	-	-	-	-	-	0.00217	0.0292
Air	Background	9/24/2013	<0.0387	-	-	-	-	-	-	-	-	<0.00157	0.0149
Air	Background	10/1/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00155	0.0154
Air	Background Quarterly Composite	8/15/2013	-	0.087	<0.070	<0.002	<0.011	<0.002	<0.005	<0.002	<0.004	-	-
Air	Background	10/8/2013	<0.0417	-	-	-	-	-	-	-	-	0.00887	0.0255
Air	Background	10/15/2013	<0.0403	-	-	-	-	-	-	-	-	0.00424	0.0175
Air	Background	10/22/2013	<0.0406	-	-	-	-	-	-	-	-	0.00760	0.0244
Air	Background	10/29/2013	<0.0420	-	-	-	-	-	-	-	-	<0.00239	0.0161
Air	Background	11/5/2013	<0.0406	-	-	-	-	-	-	-	-	0.00555	0.0217
Air	Background	11/12/2013	<0.0306	-	-	-	-	-	-	-	-	0.00339	0.0165
Air	Background	11/19/2013	<0.0428	-	-	-	-	-	-	-	-	<0.00243	0.0177
Air	Background	11/26/2013	<0.0303	-	-	-	-	-	-	-	-	<0.00243	0.0131
Air	Background	12/3/2013	<0.0257	-	-	-	-	-	-	-	-	<0.00241	0.0139
Air	Background	12/10/2013	<0.0339	-	-	-	-	-	-	-	-	0.00444	0.0293
Air	Background	12/17/2013	<0.0358	-	-	-	-	-	-	-	-	0.00370	0.0269
Air	Background	12/24/2013	<0.0461	-	-	-	-	-	-	-	-	0.00321	0.0235
Air	Background	12/31/2014	<0.0368	-	-	-	-	-	-	-	-	0.00353	0.0289
Air	Background Quarterly Composite	11/15/2013	-	0.086	<0.040	<0.002	<0.032	<0.002	<0.006	<0.001	<0.003	-	-

"-" = not analyzed

* 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 16. Vermont Yankee Nuclear Power Station 2013 Environmental Monitoring Data - Liquid Matrix

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	3/20/2013	824	<6.4	<13.1	<7.0	<19.1	<7.5	-	<7.0	-	<300
Surface Water	Connecticut River, Gill	3/20/2013	553	<6.2	<12.0	<6.2	<16.2	<7.5	-	<6.6	-	<300
Surface Water	Millers River Athol (Background)	3/20/2013	240	<5.9	<11.6	<5.8	<15.5	<7.0	-	<6.1	-	<300
Surface Water	Connecticut River, Northfield	5/29/2013	561	<5.1	<10.4	<5.0	<12.4	<6.2	-	<5.4	-	<300
Surface Water	Connecticut River, Gill	5/29/2013	523	<6.0	<14.2	<6.1	<14.8	<17.0	-	<6.3	-	<300
Surface Water	Millers River Athol (Background)	5/29/2013	557	<6.2	<14.3	<6.1	<15.1	<19.5	-	<6.3	-	<300
Surface Water	Connecticut River, Northfield	10/1/2013	1020	<6.9	<13.8	<7.0	<16.6	<9.0	-	<7.2	-	<300
Surface Water	Connecticut River, Gill	10/1/2013	<168	<4.8	<9.7	<5.0	<12.1	<6.4	-	<5.2	-	<300
Surface Water	Millers River Athol (Background)	10/1/2013	1080	<6.8	<14.8	<6.7	<16.8	<12.5	-	<7.1	-	<300
Surface Water	Connecticut River, Northfield	11/13/2013	450	<5.5	<11.2	<6.0	<14.3	<6.7	-	<6.0	-	<300
Surface Water	Connecticut River, Gill	11/13/2013	410	<5.6	<11.8	<5.9	<14.6	<8.6	-	<6.0	-	<300
Surface Water	Millers River Athol (Background)	11/13/2013	504	<5.8	<11.4	<5.7	<15.0	<6.3	-	<6.2	-	<300
Milk	Bernardston	1/23/2013	1970	-	-	-	-	<2.2	<7.1	<7.5	<23.6	-
Milk	Bernardston	2/19/2013	1930	-	-	-	-	<2.3	<6.4	<7.0	<21.8	-
Milk	Bernardston	3/20/2013	2030	-	-	-	-	<2.5	<6.1	<6.9	<22.3	-
Milk	Bernardston	4/23/2013	1890	-	-	-	-	<2.3	<6.0	<6.8	<22.0	-
Milk	Bernardston	5/29/2013	1940	-	-	-	-	<1.6	<5.9	<6.8	<21.9	-
Milk	Bernardston	6/18/2013	1790	-	-	-	-	<2.4	<5.9	<7.0	<21.5	-
Milk	Bernardston	7/23/2013	1760	-	-	-	-	<2.5	<5.9	<7.1	<22.2	-
Milk	Bernardston	8/20/2013	1970	-	-	-	-	<2.6	<6.0	<6.8	<21.5	-
Milk	Bernardston	9/24/2013	1360	-	-	-	-	<2.6	<8.0	<7.5	<27.9	-
Milk	Bernardston	10/23/2013	1780	-	-	-	-	<2.9	<6.0	<6.5	<21.8	-
Milk	Bernardston	11/19/2013	1840	-	-	-	-	<2.7	<6.4	<6.6	<20.8	-
Milk	Bernardston	12/18/2013	1470	-	-	-	-	<1.8	<9.5	<8.4	<28.6	-

"-" = not analyzed

* 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 17. Vermont Yankee Nuclear Power Station 2013 Environmental Monitoring Data - Solid Matrix

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)
Butternut Squash	Northfield	10/1/2013	<68	3030	<8.1	<20.7	<9.6	<24.1	<8.2	35.6
Pumpkins	Northfield	10/1/2013	<67	5470	<7.5	<20.8	<8.7	<21.7	<7.7	<15.8
Apples	Northfield	10/1/2013	<75	1060	<8.0	<18.9	<8.2	<20.6	<7.8	44.0
Apples	Colrain (Background)	10/8/2013	<50	906	<5.4	<12.3	<5.9	<14.8	<5.7	<13.2
Pasture Grass/Silage	Bernardston	10/8/2013	1470	4830	<15.4	<35.4	<17.1	<44.9	<16.8	64.0
Grass	Northfield, CT River	5/29/2013	559	13700	<37.7	<83.1	<40.2	-	<37.8	190.0
Grass	Gill, CT River	5/29/2013	2190	13200	<33.0	<79.4	<36.2	-	<36.6	311.0
Grass	Northfield Routes 5 & 10	5/29/2013	549	9010	<26.4	<64.3	<29.1	-	<27.5	<64.1
Grass	Millers River Athol (Background)	5/29/2013	1130	11900	<33.8	<90.8	<38.9	-	<37.3	255.0
Grass	Northfield Routes 5 & 10	10/1/2013	2980	6840	<50.1	<119.0	<54.0	-	<54.8	169.0
Grass	Northfield, CT River	10/1/2013	1040	6030	<34.7	<77.1	<38.7	-	<33.5	102.0
Grass	Gill, CT River	10/1/2013	2800	8070	<50.2	<116.0	<52.2	-	<54.1	137.0
Grass	Millers River Athol (Background)	10/1/2013	3900	10500	<36.4	<87.6	<43.6	-	26.0	<83.8
Sediment	Northfield, CT River	5/29/2013	-	15400	-	-	<56.0	-	63.3	580
Sediment	Gill, CT River	5/29/2013	-	6750	-	-	<40.8	-	<44.6	307
Sediment	Athol, Millers River (Background)	5/29/2013	-	11200	-	-	<50.4	-	121.0	739
Sediment	Northfield, CT River	10/1/2013	-	12100	-	-	<53.4	-	<46.3	493
Sediment	Gill, CT River	10/1/2013	-	7240	-	-	<41.9	-	<41.5	354
Sediment	Athol, Millers River (Background)	10/1/2013	-	11600	-	-	<49.3	-	70.3	642
Fish (composite)	Athol, Millers River (Background)	8/20/2013	<648	4340	<75.9	<153.0	<78.2	<187.0	<86.8	318
Fish (composite)	Gill/Northfield, CT River	8/22/2013	<79	5140	<8.9	<24.1	<8.9	<23.7	15.8	<23
Fish (Bass)	Gill/Northfield, CT River	10/22/2013	<674	3950	<46.5	<179.0	<41.7	<124.0	<32.9	396
Fish (Bass)	Gill/Northfield, CT River	10/22/2013	<582	3670	<42.8	<160.0	<39.1	<118.0	<42.1	365
Fish (composite)	Athol, Millers River (Background)	10/23/2013	<1430	4460	<109.0	<393.0	<99.4	<315.0	<67.6	308

"-" = not analyzed

* 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

Table 18. Vermont Yankee Nuclear Power Station 2013 Environmental Monitoring Data - Air Samples

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Northfield Transfer Station	1/9/2013	<0.0574	-	-	-	-	-	-	-	-	0.01160	0.0443
Air	Northfield Transfer Station	1/15/2013	<0.0846	-	-	-	-	-	-	-	-	0.01050	0.0327
Air	Northfield Transfer Station	1/23/2013	<0.0348	-	-	-	-	-	-	-	-	0.00749	0.0231
Air	Northfield Transfer Station	1/29/2013	<0.0774	-	-	-	-	-	-	-	-	0.00561	0.0246
Air	Northfield Transfer Station	2/5/2013	<0.0769	-	-	-	-	-	-	-	-	0.00962	0.0289
Air	Northfield Transfer Station	2/12/2013	<0.0727	-	-	-	-	-	-	-	-	0.00545	0.0269
Air	Northfield Transfer Station	2/19/2013	<0.0388	-	-	-	-	-	-	-	-	0.00529	0.0213
Air	Northfield Transfer Station	2/26/2013	<0.0508	-	-	-	-	-	-	-	-	0.00268	0.0154
Air	Northfield Transfer Station	3/5/2013	<0.0456	-	-	-	-	-	-	-	-	0.00238	0.0180
Air	Northfield Transfer Station	3/12/2013	<0.0990	-	-	-	-	-	-	-	-	0.00266	0.0146
Air	Northfield Transfer Station	3/20/2013	<0.0573	-	-	-	-	-	-	-	-	0.00247	0.0218
Air	Northfield Transfer Station	3/26/2013	<0.0556	-	-	-	-	-	-	-	-	0.00198	0.0191
Air	Northfield Transfer Station	4/2/2013	<0.0744	-	-	-	-	-	-	-	-	<0.00129	0.0180
Air	Northfield Transfer Station (Quarterly Composite)	2/15/2013	-	<0.092	<0.060	<0.003	<0.034	<0.002	<0.008	<0.002	<0.005	-	-
Air	Northfield Transfer Station	4/9/2013	<0.0462	-	-	-	-	-	-	-	-	0.00739	0.0237
Air	Northfield Transfer Station	4/16/2013	<0.0541	-	-	-	-	-	-	-	-	0.00311	0.0133
Air	Northfield Transfer Station	4/23/2013	<0.0384	-	-	-	-	-	-	-	-	0.00511	0.0204
Air	Northfield Transfer Station	4/30/2013	<0.0599	-	-	-	-	-	-	-	-	0.00488	0.0277
Air	Northfield Transfer Station	5/7/2013	<0.0603	-	-	-	-	-	-	-	-	0.00358	0.0196
Air	Northfield Transfer Station	5/14/2013	<0.0496	-	-	-	-	-	-	-	-	0.00287	0.0150
Air	Northfield Transfer Station	5/21/2013	<0.0440	-	-	-	-	-	-	-	-	0.00200	0.0140
Air	Northfield Transfer Station	5/29/2013	<0.0347	-	-	-	-	-	-	-	-	0.00183	0.0142
Air	Northfield Transfer Station	6/4/2013	<0.0513	-	-	-	-	-	-	-	-	0.00315	0.0222
Air	Northfield Transfer Station	6/11/2013	<0.0436	-	-	-	-	-	-	-	-	<0.00181	0.0144
Air	Northfield Transfer Station	6/18/2013	<0.0400	-	-	-	-	-	-	-	-	0.00244	0.0194
Air	Northfield Transfer Station	6/25/2013	<0.0451	-	-	-	-	-	-	-	-	0.00351	0.0212
Air	Northfield Transfer Station	7/2/2013	<0.0386	-	-	-	-	-	-	-	-	<0.00180	0.0208
Air	Northfield Transfer Station (Quarterly Composite)	5/15/2013	-	0.108	<0.063	<0.003	<0.020	<0.003	<0.008	<0.002	<0.005	-	-
Air	Northfield Transfer Station	7/9/2013	<0.0489	-	-	-	-	-	-	-	-	0.00423	0.0182
Air	Northfield Transfer	7/16/2013	<0.0494	-	-	-	-	-	-	-	-	0.00510	0.0216

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
	Station												
Air	Northfield Transfer Station	7/23/2013	<0.0402	-	-	-	-	-	-	-	-	0.00923	0.0284
Air	Northfield Transfer Station	7/30/2013	<0.0503	-	-	-	-	-	-	-	-	0.00496	0.0193
Air	Northfield Transfer Station	8/6/2013	<0.0444	-	-	-	-	-	-	-	-	0.00733	0.0182
Air	Northfield Transfer Station	8/13/2013	<0.0558	-	-	-	-	-	-	-	-	0.00346	0.0195
Air	Northfield Transfer Station	8/20/2013	<0.0457	-	-	-	-	-	-	-	-	0.00425	0.0236
Air	Northfield Transfer Station	8/27/2013	<0.0512	-	-	-	-	-	-	-	-	0.00683	0.0278
Air	Northfield Transfer Station	9/3/2013	<0.0499	-	-	-	-	-	-	-	-	0.00507	0.0285
Air	Northfield Transfer Station	9/10/2013	<0.0493	-	-	-	-	-	-	-	-	0.00323	0.0185
Air	Northfield Transfer Station	9/17/2013	<0.0555	-	-	-	-	-	-	-	-	0.00351	0.0274
Air	Northfield Transfer Station	9/24/2013	<0.0473	-	-	-	-	-	-	-	-	0.00198	0.0200
Air	Northfield Transfer Station	10/1/2013	<0.0513	-	-	-	-	-	-	-	-	<0.00166	0.0174
Air	Northfield Transfer Station (Quarterly Composite)	8/15/2013	-	0.110	<0.071	<0.002	<0.013	<0.002	<0.005	<0.002	<0.004	-	-
Air	Northfield Transfer Station	10/8/2013	<0.0472	-	-	-	-	-	-	-	-	0.01370	0.0338
Air	Northfield Transfer Station	10/15/2013	<0.0582	-	-	-	-	-	-	-	-	0.00997	0.0309
Air	Northfield Transfer Station	10/23/2013	<0.0399	-	-	-	-	-	-	-	-	0.01180	0.0330
Air	Northfield Transfer Station	10/29/2013	<0.0659	-	-	-	-	-	-	-	-	0.00502	0.0202
Air	Northfield Transfer Station	11/5/2013	<0.0523	-	-	-	-	-	-	-	-	0.00677	0.0275
Air	Northfield Transfer Station	11/13/2013	<0.0298	-	-	-	-	-	-	-	-	0.00290	0.0164
Air	Northfield Transfer Station	11/19/2013	<0.0370	-	-	-	-	-	-	-	-	0.00886	0.0344
Air	Northfield Transfer Station	11/26/2013	<0.0759	-	-	-	-	-	-	-	-	<0.00258	0.0188
Air	Northfield Transfer Station	12/3/2013	<0.0459	-	-	-	-	-	-	-	-	0.00427	0.0191
Air	Northfield Transfer Station	12/10/2013	<0.0618	-	-	-	-	-	-	-	-	0.00591	0.0325
Air	Northfield Transfer Station	12/18/2013	<0.0321	-	-	-	-	-	-	-	-	0.00421	0.0332
Air	Northfield Transfer Station	12/23/2013	<0.0999	-	-	-	-	-	-	-	-	0.00579	0.0334
Air	Northfield Transfer Station	12/31/2013	<0.0444	-	-	-	-	-	-	-	-	0.00484	0.0341
Air	Northfield Transfer Station (Quarterly Composite)	11/15/2013	-	0.135	0.069	<0.003	<0.050	<0.002	<0.008	<0.002	<0.005	-	-
	Background	1/8/2013	<0.0745	-	-	-	-	-	-	-	-	0.00511	0.0250
Air	Background	1/15/2013	<0.0618	-	-	-	-	-	-	-	-	0.00794	0.0259
Air	Background	1/22/2013	<0.0645	-	-	-	-	-	-	-	-	0.00328	0.0166
Air	Background	1/29/2013	<0.0671	-	-	-	-	-	-	-	-	0.00322	0.0183
Air	Background	2/5/2013	<0.0443	-	-	-	-	-	-	-	-	0.00366	0.0168
Air	Background	2/12/2013	<0.0438	-	-	-	-	-	-	-	-	0.00248	0.0184
Air	Background	2/19/2013	<0.0419	-	-	-	-	-	-	-	-	0.00354	0.0161

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-137 * (pCi/m3)	Pb-214* (pCi/m3)	Gross Alpha (pCi/m3)	Gross Beta (pCi/m3)
Air	Background	2/26/2013	<0.0742	-	-	-	-	-	-	-	-	0.00171	0.0119
Air	Background	3/5/2013	<0.0690	-	-	-	-	-	-	-	-	<0.00153	0.0127
Air	Background	3/12/2013	<0.0442	-	-	-	-	-	-	-	-	<0.00154	0.0130
Air	Background	3/19/2013	<0.0450	-	-	-	-	-	-	-	-	0.00232	0.0155
Air	Background	3/26/2013	<0.0421	-	-	-	-	-	-	-	-	0.00161	0.0167
Air	Background	4/2/2013	<0.0725	-	-	-	-	-	-	-	-	<0.00144	0.0108
Air	Background Quarterly Composite	2/15/2013	-	<0.082	<0.067	<0.003	<0.027	<0.003	<0.009	<0.003	<0.006	-	-
Air	Background	4/9/2013	<0.0408	-	-	-	-	-	-	-	-	0.00531	0.0287
Air	Background	4/16/2013	<0.0431	-	-	-	-	-	-	-	-	0.00374	0.0124
Air	Background	4/23/2013	<0.0693	-	-	-	-	-	-	-	-	0.00401	0.0200
Air	Background	4/30/2013	<0.0657	-	-	-	-	-	-	-	-	0.00245	0.0146
Air	Background	5/7/2013	<0.0462	-	-	-	-	-	-	-	-	0.00235	0.0174
Air	Background	5/14/2013	<0.0441	-	-	-	-	-	-	-	-	<0.00209	0.0136
Air	Background	5/21/2013	<0.0421	-	-	-	-	-	-	-	-	<0.00206	0.0133
Air	Background	5/28/2013	<0.0480	-	-	-	-	-	-	-	-	<0.00205	0.0084
Air	Background	6/4/2013	<0.0458	-	-	-	-	-	-	-	-	0.00208	0.0165
Air	Background	6/11/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00210	0.0126
Air	Background	6/18/2013	<0.0398	-	-	-	-	-	-	-	-	0.00222	0.0209
Air	Background	6/25/2013	<0.0422	-	-	-	-	-	-	-	-	<0.00208	0.0162
Air	Background	7/2/2013	<0.0458	-	-	-	-	-	-	-	-	<0.00205	0.0233
Air	Background Quarterly Composite	5/15/2013	-	0.074	<0.069	<0.003	<0.015	<0.003	<0.009	<0.028	0.010	-	-
Air	Background	7/9/2013	<0.0442	-	-	-	-	-	-	-	-	0.00273	0.0150
Air	Background	7/16/2013	<0.0427	-	-	-	-	-	-	-	-	0.00401	0.0247
Air	Background	7/23/2013	<0.0441	-	-	-	-	-	-	-	-	0.00479	0.0208
Air	Background	7/29/2013	<0.0462	-	-	-	-	-	-	-	-	0.00287	0.0184
Air	Background	8/6/2013	<0.0342	-	-	-	-	-	-	-	-	0.00341	0.0210
Air	Background	8/13/2013	<0.0372	-	-	-	-	-	-	-	-	0.00250	0.0152
Air	Background	8/20/2013	<0.0401	-	-	-	-	-	-	-	-	0.00406	0.0228
Air	Background	8/27/2013	<0.0388	-	-	-	-	-	-	-	-	0.00353	0.0265
Air	Background	9/3/2013	<0.0401	-	-	-	-	-	-	-	-	0.00351	0.0286
Air	Background	9/10/2013	<0.0488	-	-	-	-	-	-	-	-	<0.00156	0.0181
Air	Background	9/17/2013	<0.0445	-	-	-	-	-	-	-	-	0.00217	0.0292
Air	Background	9/24/2013	<0.0387	-	-	-	-	-	-	-	-	<0.00157	0.0149
Air	Background	10/1/2013	<0.0411	-	-	-	-	-	-	-	-	<0.00155	0.0154
Air	Background Quarterly Composite	8/15/2013	-	0.087	<0.070	<0.002	<0.011	<0.002	<0.005	<0.002	<0.004	-	-
Air	Background	10/8/2013	<0.0417	-	-	-	-	-	-	-	-	0.00887	0.0255
Air	Background	10/15/2013	<0.0403	-	-	-	-	-	-	-	-	0.00424	0.0175
Air	Background	10/22/2013	<0.0406	-	-	-	-	-	-	-	-	0.00760	0.0244
Air	Background	10/29/2013	<0.0420	-	-	-	-	-	-	-	-	<0.00239	0.0161
Air	Background	11/5/2013	<0.0406	-	-	-	-	-	-	-	-	0.00555	0.0217
Air	Background	11/12/2013	<0.0306	-	-	-	-	-	-	-	-	0.00339	0.0165
Air	Background	11/19/2013	<0.0428	-	-	-	-	-	-	-	-	<0.00243	0.0177
Air	Background	11/26/2013	<0.0303	-	-	-	-	-	-	-	-	<0.00243	0.0131
Air	Background	12/3/2013	<0.0257	-	-	-	-	-	-	-	-	<0.00241	0.0139
Air	Background	12/10/2013	<0.0339	-	-	-	-	-	-	-	-	0.00444	0.0293
Air	Background	12/17/2013	<0.0358	-	-	-	-	-	-	-	-	0.00370	0.0269
Air	Background	12/24/2013	<0.0461	-	-	-	-	-	-	-	-	0.00321	0.0235
Air	Background	12/31/2014	<0.0368	-	-	-	-	-	-	-	-	0.00353	0.0289
Air	Background Quarterly Composite	11/15/2013	-	0.086	<0.040	<0.002	<0.032	<0.002	<0.006	<0.001	<0.003	-	-

"-" = not analyzed

* 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