ATTACHMENT 2

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

JANUARY 1, 2016 – DECEMBER 31, 2016

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT: JANUARY 1, 2016 – DECEMBER 31, 2016

MAY 2017

R.E. Ginna Nuclear Power Plant
1503 Lake Road
Ontario, New York 14519

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1. EXECUTIVE SUMMARY

The Radiological Environmental Monitoring Program (REMP) is a comprehensive surveillance program, which is implemented to assess the impact of site operations on the environment and compliance with 10 CFR 50 Appendix I and 40 CFR 190. Samples are collected from the aquatic and terrestrial pathways applicable to the site. The aquatic pathways include Lake Ontario fish, surface waters, groundwater, and lakeshore sediment. The terrestrial pathways include airborne particulate and radioiodine, milk, food products, and direct radiation.

Results of the monitoring program for the 2016 operational period for R.E. Ginna Nuclear Power Plant are included in this report. This report presents a synopsis of the REMP (Table 1), summary of the detectable activity analytical results (Table 2), sampling locations (Appendix A), compilation of the analytical data (Appendix B), results of the Quality Assurance Program (Appendix C), and results of the Land Use Survey (Appendix D). Interpretation of the data and conclusions are presented in the body of this report.

The results of the REMP verify that the effluent releases did not impact the environment with a measurable concentration of radioactive materials and/or levels of radiation that are higher than expected. The 2016 results for all pathways sampled were consistent with the previous five-year historical results and exhibited no adverse trends. The results of the REMP continue to demonstrate that the operation of the plant did not result in a significant measurable dose to a member of the general population, or adversely impact the environment as a result of radiological effluents. The program continues to demonstrate that the dose to a member of the public, as a result of the operation of R.E. Ginna Nuclear Power Plant, remains significantly below the federally required dose limits specified in 10 CFR 20 and 40 CFR 190.

2. INTRODUCTION

2.1 Station Description

The R.E. Ginna Nuclear Power Plant (Ginna), owned by Exelon Generation, is an operating nuclear generating facility consisting of one pressurized water reactor. Ginna achieved criticality in September 1969 and commenced commercial operation in July 1970. The location of the plant in relation to local metropolitan areas is depicted in Appendix A, Figure A-1.

2.2 Program Description and Background

The Annual Radiological Environmental Operating Report is published in accordance with Section 5.0 of the Offsite Dose Calculation Manual (ODCM, Ref. 1) and the Plant's Technical Specifications (Ref. 2). This report describes the REMP, and its implementation as required by the ODCM. The environmental surveillance data collected during this reporting period were compared with that generated in previous periods whenever possible to evaluate the environmental radiological impact of the R.E. Ginna Nuclear Power Plant. Results of the monitoring program for the pre-operational and previous operational periods through 2015 have been reported in a series of previously released documents.

The REMP is implemented to measure radioactivity in the aquatic and terrestrial pathways. The aquatic pathways include Lake Ontario fish, surface waters, groundwater, and lakeshore sediment. Measurement results of the samples representing these pathways contained only natural background radiation or low concentrations of Cs-137 resulting from past atmospheric nuclear weapons testing. Terrestrial pathways monitored included airborne particulate and radioiodine, milk, food products, and direct radiation.

2.3 Program Objectives

The objectives of the REMP for the R.E. Ginna Nuclear Power Plant are:

a. Measure and evaluate the effects of plant operation on the environment.

b. Monitor background radiation levels in the environs of the Ginna site.

c. Demonstrate compliance with the environmental conditions and requirements of applicable state and federal regulations, including the ODCM and 40 CFR 190.

d. Provide information by which the general public can evaluate environmental aspects of the operation of R.E. Ginna Nuclear Power Plant.

3. PROGRAM DESCRIPTION

3.1 Sample Collection and Analysis

The locations of the individual sampling stations are listed in Table A-1 and shown in Figures A-2 and A-3. All samples were collected and analyzed by Exelon personnel or its contractors in accordance with Ginna procedures (Ref. 3).

During 2016, 1360 samples were collected for analysis by gross beta counting and/or gamma spectroscopy. These included 88 surface water samples, 17 fish samples, 5 sediment samples, 636 air particulate samples, 317 air iodine samples, 26 vegetation samples, 38 milk samples, 69 groundwater samples, and 164 dosimeter measurements. Deviations from the REMP sampling schedule are described in section 3.5. This monitoring program satisfied the minimum number of samples required by the ODCM for all pathways.

R.E. Ginna Nuclear Power Plant's Chemistry personnel collected all REMP samples. Analysis was performed at either Ginna's onsite laboratory (groundwater samples), Environmental Dosimetry Company in Sterling Massachusetts (direct radiation samples), or Exelon Industrial Services – Ft. Smallwood Environmental Laboratory in Baltimore, Maryland (surface and drinking water, aquatic organisms, shoreline sediment, air particulate filters, air iodine, and vegetation samples). A summary of the content of the REMP and the results of the data collected for indicator and control locations are provided in Tables 1 and 2.

3.2 Data Interpretation

Many results in environmental monitoring occur at or below the minimum detectable activity (MDA). In this report, all results below the relevant MDA are reported as being "not detected." Typical MDA values are listed in Appendix B, Table B-10.

3.3 Quality Assurance Program

Appendix C provides a summary of Exelon Industrial Services (EIS) – Ft. Smallwood Environmental Laboratory's quality assurance program for 2016. It consists of Table C-1, which represents a compilation of the results of the EIS – Ft. Smallwood Environmental Laboratory's participation in an inter-comparison program with Environmental Resource Associates (ERA) located in Arvada, Colorado and Analytics, Inc. located in Atlanta, Georgia. Table C-2 compiles the results of the Exelon Industrial Services Ft. Smallwood Laboratory's participation in a split sample program with Teledyne Brown Engineering located in Knoxville, Tennessee. Table C-3 identifies a list of typical MDA's achieved by Teledyne Brown for Gamma Spectroscopy.

All the EIS – Ft. Smallwood Environmental Laboratory results contained in Table C-1 agree with the inter-comparison laboratory results within the range of $\pm 2\ \sigma$ between the analytical values or are in agreement with the ranges established in the NRC Resolution Test Criteria.

All the results contained in Table C-2 agree within the range of ±2 σ of each other with their respective Ft. Smallwood Environmental Laboratory original, replicate and/or Teledyne Brown Engineering's split laboratory samples.

3.4 Land Use Survey

In September 2016, Ginna staff conducted a Land Use Survey to identify the location of the nearest milk animal, the nearest residence, and the nearest garden greater than 500 square feet in each of the nine sectors within a five-mile radius of the power plant. The Land Use Survey is conducted in accordance with Ginna procedures (Ref. 4). The position of the nearest residence and garden and animals producing milk for human consumption in each sector is provided in Appendix D, Table D-1.

Over the past year, the following land use observations were made within a 5-mile radius of the power plant:

- The nearest residence remains in the SSE sector, approximately 610 meters from the reactor.
- The Monroe County Water Authority (MCWA) completed construction of a new municipal water facility which began operation in 2014 and remains operational.
- Single-family home construction was observed south of the plant on Ontario Center Road between Brick Church Road and Kenyon Road, Shoreline Subdivision, Summer Lake Subdivision, Morely Way, Lincoln Road, and Boston Road.
- Other single family home construction was observed sporadically within 5-miles of the plant.
- A new commercial plaza was constructed on the north side of Route 104 between Ontario Center Road and Knickerbocker Road.
- Commercial fishing information was collected from the New York State Department of Environmental Conservation (NYSDEC) which shows activity only in the Eastern basin of Lake Ontario. Commercial fishing operations have not changed in the last five-years.
- No new agricultural land use was identified.
- No new food producing facilities were identified.
- No new milk producing animals were identified.

3.5 Program Exceptions

The reportable items in the Annual Environmental Radiological Operating Report under procedure CHA-RETS-VARIATION are as follows:

- Maintenance was performed on the hour meter at Environmental Sample Station # 4 on 6/20/16 at which time they discovered the ground fault interrupter (GFI) had tripped. Ginna staff reset the GFI once maintenance on the sample station was complete. For the sample period of 6/13/16-6/20/16, the unit collected 81.5 m^3. The hour meter was out of service during this sampling period.

- On 6/28/16, a compensatory grab sample was taken at the Monroe County Water Authority (MCWA) low lift station (Greece, New York) due to the loss of water supply to the sampler. The grab sample represents the sample period from 6/20/16-6/28/16.

- On 11/14/16, The Monroe County Water Authority (MCWA) composite sampler was turned off by the municipality owners until the end of December 2016 due to chemical treatment operations. Compensatory weekly grab samples were taken at Slater Creek from 11/14/16-1/9/17.

3.6 Corrections to Previous Reports

The 2015 AREOR did not include a reportable deviation from REMP sampling that occurred in February, 2015:

- Due to hazardous environmental conditions and seasonal unavailability, Ginna personnel were not able to obtain the Deer Creek and Mill Creek supplemental surface water samples during February 2015. Sub-freezing conditions during the entire month of February did not allow for sampling to occur.

4. RESULTS AND DISCUSSIONS

All environmental samples collected during the year were analyzed in accordance with Exelon analytical procedures (Ref. 5). The analytical results for this reporting period are presented in Appendix B and the detectable activity results are also summarized in Table 2. For discussion purposes, the analytical results are divided into five categories: Aquatic Environment, the Atmospheric Environment, the Terrestrial Environment, Direct Radiation, and Groundwater.

4.1 Aquatic Environment

The aquatic environment surrounding the plant was monitored by analyzing samples of surface and drinking water, Lake Ontario fish, and shoreline sediment. These samples were obtained from various sampling locations near the plant.

4.1.a Surface and Drinking Water

Monthly composite samples are collected from Lake Ontario at an upstream control location (Monroe County Water Authority - Shoremont) and a downstream indicator location (Ontario Water District Plant - OWD) and analyzed for gross beta activity (Table B-1). A grab sample of Deer Creek is collected and analyzed monthly for gross beta activity (Table B-1).

In 2016, the gross beta averages for the upstream Lake Ontario monitoring locations (controls) and downstream Lake Ontario monitoring locations (indicators) were 2.05 pCi/Liter and 1.87 pCi/Liter, respectively. Gross beta analysis of the monthly composite samples showed no statistically significant difference in activity between the control and indicator locations that would indicate plant related activity higher than background.

The average gross beta concentration seen in the Mill Creek samples (control) and the Deer Creek (indicator) samples were 4.16 pCi/Liter and 3.80 pCi/Liter, respectively.

Gamma isotopic analysis is performed on each monthly composite sample. These are listed in Table B-1 and are separated by source of sample. During 2016, no sample results indicated detection of Gamma activity.

Tritium analysis was performed on all water samples on a monthly basis. Composites are made from the weekly samples and a portion filtered to remove interferences for analysis by beta scintillation. During 2016, no surface water or drinking water sample results indicated detectable tritium activity.

4.1.b Aquatic Organisms

Indicator fish are caught in the vicinity of the Discharge Canal and analyzed for radioactivity from liquid effluent releases from the plant. The fish are filleted to represent that portion which would normally be eaten. Additional fish are caught more than 15 miles away to be used as control samples and are prepared in the same manner.

At a minimum, four different edible species of fish are analyzed during each half-year from the indicator and background locations. Fish are caught by R.E. Ginna Nuclear Power Plant Chemistry personnel and are analyzed by gamma spectroscopy after being held for periods typically less than two weeks to keep the LLD value for the shorter half-life isotopes realistic. Detection limits could also be affected by small mass samples, (< 2000 grams), in some species. Gamma isotopic concentrations (pCi/kilogram wet) are listed in Table B-2.

During 2016, none of the indicator samples indicated activity other than naturally occurring radionuclides. There was no significant difference in the radiological activity in the indicator and control sampling locations.

4.1.c Shoreline Sediment

Samples of shoreline sediment are taken upstream (Town of Greece near Slater Creek) and downstream (Near the Ontario Water District) of R.E. Ginna Nuclear Power Plant.

Results of the gamma isotopic analysis for sediment are included in Table B-3. During 2016, all sediment samples indicated that gamma emitters were below detection limits. There was no difference in the radiological activity observed in the indicator and control sampling locations.

4.2 Atmospheric Environment

Radioactive particles in air are collected by drawing approximately one standard cubic foot per minute (SCFM) through a two inch diameter particulate filter. The volume of air sampled is measured by a dry gas meter and corrected for the pressure drop across the filter. The filters are changed weekly and allowed to decay for three days prior to counting to eliminate most of the natural radioactivity such as the short half-life decay products of radon. The decay period is used to give a more sensitive measurement of long-lived man-made radioactivity.

A ring of six sampling stations is located on the plant site from 180 to 440 meters from the reactor centerline near the point of the maximum annual average ground level concentration, one additional sampling location is located on-site at 770 meters, and two others offsite at approximately seven miles. In addition, there are three sampling stations located approximately seven to 16 miles from the site that serve as control stations. See Figure A-2 and Figure A-4.

4.2.a Air Iodine

Radioiodine cartridges are placed at six locations. These cartridges are changed and analyzed each week. No positive analytical results were found on any sample. A list of values for these cartridges is given in Table B-4.

4.2.b Air Particulate Filters

The major airborne species released from the plant are noble gases and tritium. Most of this activity is released in a gaseous form; however, some radioiodine is released as airborne particulate and some of the particulate activity is due to short lived noble gas decay products. Tables B-5 provides a list of gross beta analysis values for the on-site sample stations. Table B-6 is a list of gross beta analysis values for the off-site sample stations.

Based on weekly comparisons, there was no statistical difference between the control and indicator radioactive particulate concentrations. The average for the control samples (i.e., offsite sampling locations) was 0.021 pCi/m^3 and the averages for the indicator samples (i.e., onsite sampling locations) was 0.021 pCi/m^3 for the period of January to December 2016. Maximum weekly concentrations for all control stations and all indicator stations were 0.037 $pCi/m^3$and 0.045 pCi/m^3, respectively.

The particulate filters from each sampling location were saved and a 13 week composite was made. A gamma isotopic analysis was performed for each sampling location and corrected for decay. No positive analytical results were found on any sample. The results of these analyses are listed in Tables B-7.

4.3 Terrestrial Environment

Crops are grown on the plant property in a location with a highest off-site meteorological deposition parameter, and samples of the produce are collected at harvest time for analysis. Control samples are purchased from farms greater than 10 miles from the plant.

4.3.a Vegetation

There was no indication in the vegetation samples contained activity greater than naturally occurring background levels. There was no difference in the radiological activity observed in the indicator and control sampling locations. Gamma isotopic data is provided in Table B-8.

4.3.b Milk

There was one indicator dairy herd located within five miles from the plant in 2016. Milk samples are collected monthly during November through May from the indicator farm and biweekly during June through October. A control farm sample is taken for each monthly sample and once during each biweekly period. The milk is analyzed for Iodine-131 and also analyzed by gamma spectroscopy.

During 2016, no samples indicated I-131 activity above detection levels. There was no difference in the radiological activity observed in the indicator and control sampling locations. Table B-9 provides a listing of all samples collected and analytical results.

4.4 Direct Radiation

Dosimeters are placed as part of the environmental monitoring program. 41 dosimeter badges are currently placed in four rings around the plant. These rings range from less than 1,000 feet to 15 miles and have been dispersed to give indications in each of the nine land based sectors around the plant should an excessive release occur from the plant. Badges are changed and read after approximately three months exposure. Each direct radiation sampling location is described in Table A-1 and identified in Figure A-2.

Direct radiation readings at locations #7 and #13 are influenced by their close proximity to the site's Independent Spent Fuel Storage Installation (ISFSI) and will normally read slightly higher than other locations. Environmental Station 13, the closest sampling location to the ISFSI, received an average quarterly dose of 18.4 mRem during 2016. All onsite indicators averaged 12.9 mRem/qtr.

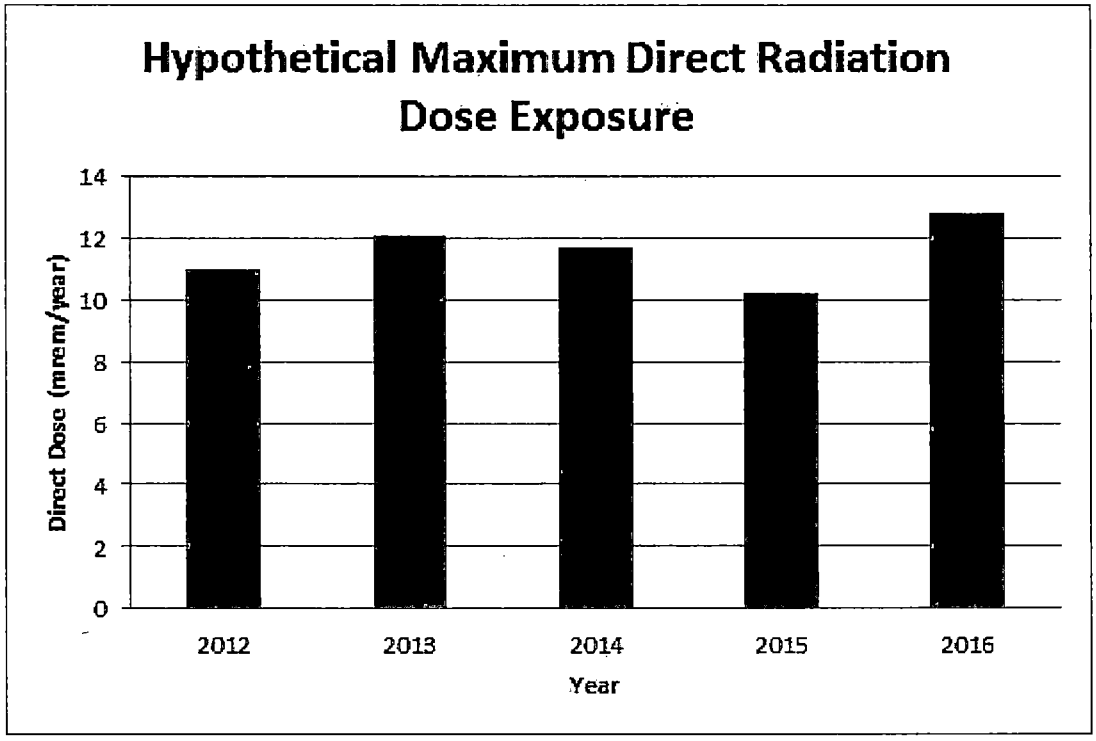
For the year of 2016, the average, minimum, and maximum exposure readings was as follows:

Monitoring Group	Average (mrem/qtr)	Min. (mrem/qtr)	Max (mrem/qtr)
Onsite Indicators	12.9	8.4	20.5
Site Boundary Indicators	12.8	9.4	15.9
Offsite Indicators	11.9	8.9	15.4
Control Locations	11.1	8.6	14.1

40 CFR 190 requires that the annual dose equivalent not exceed 25 millirem to the whole body of any member of the public. The average quarterly exposure observed at the control monitoring stations was used to determine the background level (equivalent to 11.1 millirems monthly or 44.4 millirem annually), while the highest total annual dosimeter reading at an individual site boundary environmental monitoring location (57.2 millirem) was observed at Environmental Monitoring Station #64. The difference in these values determines the maximum possible direct radiation dose exposure to an offsite member of the public. Accordingly, the hypothetical maximum direct radiation dose exposure to the public for 2016 was determined to be 12.8 millirem by subtraction of average background from the maximum annual indicator site.

Figure 1 presents the hypothetical maximum direct radiation dose exposure over the past five years.

Figure 1



4.5 Groundwater

In accordance with R.E. Ginna Nuclear Power Plant's Chemistry procedures, at a minimum, environmental groundwater monitoring wells are sampled quarterly. In 2016, Ginna staff collected and analyzed samples collected from a total of 14 groundwater monitoring wells:

- GW01: Warehouse Access Road (Control)
- GW03: Screenhouse West, South Well
- GW04: Screenhouse West, North Well
- GW05: Screenhouse East, South (15.5')
- GW06: Screenhouse East, Middle (20.0')
- GW07: Screenhouse East, North (24.0')
- GW08: All Volatiles Treatment Building
- GW10: Technical Support Center, South
- GW11: Contaminated Storage Building, SE (24.0')
- GW12: West of Orchard Access Road
- GW13: North of Independent Spent Fuel Storage Installation (ISFSI)
- GW14: South of Canister Preparation Building
- GW15: West of Manor House
- GW16: Southeast of Manor House

Groundwater samples are analyzed for tritium to a detection limit of 500 pCi/L, and for gamma emitting radionuclides to the environmental LLDs. Due to dry summer conditions, samples were not collected from GW-12, GW-13, and GW-16 during the third quarter sampling period. The analytical results for groundwater monitoring well samples collected during 2016 are presented in table B-13.

No positive tritium results were identified in any of the groundwater monitoring wells during 2016.

4.6 Summary and Conclusion

Operation of the R.E. Ginna Nuclear Power Plant produced radioactivity and ambient radiation levels significantly below the limits of the ODCM and 40 CFR 190. The analytical results from the Radiological Environmental Monitoring Program indicate the operation of the R.E. Ginna Nuclear Power Plant had no measurable radiological impact on the environment or significant build-up of plant-related radionuclides in the environment. The results also indicate operation of the plant did not result in a measurable radiation dose to the general population above natural background levels.

Additionally, the 2016 results are consistent with data for the past five years and exhibited no detectable increases or adverse trends.

5. REFERENCES

1. R.E. Ginna Nuclear Power Plant, Offsite Dose Calculation Manual (ODCM), Revision 30 (Effective Date: 09/11/2015).

2. R.E. Ginna Nuclear Power Plant, Technical Specification 5.6.2; Annual Radiological Environmental Operating Report.

3. Procedure CY-AA-170-100, Radiological Environmental Monitoring Program.

4. Procedure CH-ENV-LAND-USE, Land Use Census; Completed September 2016.

5. Exelon Industrial Services – Ft. Smallwood Environmental Laboratory Procedures Manual, General Services Department.

Table 1

Synopsis of R.E. Ginna Nuclear Power Plant Radiological Environmental Monitoring Program

Sample Type	Sampling Frequency[1]	Number of Locations	Number Collected	Analysis	Analysis Frequency[1]	Number Analyzed
Aquatic Environment						
Surface & Drinking Water	M/C	7	88 88 88	Gamma Gross Beta Tritium	MC/MG MC/MG M/Q	88 88 88
Fish[2]	A	4	17	Gamma	A	17
Shoreline Sediment	SA	3	5	Gamma	SA	5
Groundwater	M/Q	14	69 69	Tritium Gamma	M/Q M/Q	69 69
Atmospheric Environment						
Air Iodine[3]	W	6	317	I-131	W	317
Air Particulates[4]	W	12	636 48	Gross Beta Gamma	W QC	636 48
Direct Radiation Ambient Radiation	Q	41	164	TLD	Q	164
Terrestrial Environment						
Milk[5]	M/BW	2	38	Gamma	M/BW	38
Vegetation[6]	M	5	26	Gamma	M	26

[1] W=Weekly, BW=BiWeekly (15 days), M=Monthly (31 days), Q=Quarterly (92 days), SA=Semiannual, A=Annual, C=Composite
[2] Twice during fishing season including at least four species
[3] The collection device contains activated charcoal
[4] Beta counting is performed >= 24 hours following filter change. Gamma spectroscopy performed on quarterly composite of weekly samples
[5] Bi-Weekly during growing season.
[6] Annual at time of harvest. Samples include broad leaf vegetation

Table 2

Annual Summary of Radioactivity in the Environs of the R.E. Ginna Nuclear Power Plant

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection (LLD)	Indicator Locations Mean (F)/Range[1]	Location with Highest Annual Mean Name/Distance & Direction[2]	Highest Annual Mean (F) / Range[1]	Control Locations Mean (F)/Range
Aquatic Environment						
Surface & Drinking Water (pCi/L)	Gamma (88) Tritium (88)	2.3 (Cs-137) 500	-- (0/50) -- (0/50)	-- --	(12/12) (--)	-- (25/25) --
Surface & Drinking Water, (pCi/L)	Gross Beta (88)	0.5	2.32 (50/50) (0.85 - 5.95)	Mill Creek – SW	4.16 (12/12) (1.92 – 11.70)	3.06 (25/25) (1.25 - 11.70)
Sediment (pCi/kg)	Gamma (5)	17 (Cs-137)	-- (3/3) --	--	-- (3/3) --	-- (2/2) --
Fish (pCi/kg)	Gamma (17)	15 (Cs-137)	-- (9/9) (--)	--	-- (8/8) (--)	-- (8/8) --
Groundwater (pCi/L)	Tritium (69) Gamma (69)	500 18 (Cs-137)	-- (69/69) -- (69/69)	-- --	-- (12/12) -- (12/12)	-- (4/4) -- (4/4)
Direct Radiation						
Ambient Radiation (mR/91 days)	Dosimeters (164)	--	12.4 (128/128) (8.4-20.5)	Env. Station 13 0.77km SSW	18.4 (4/4) (14.6-20.5)	11.1 (36/36) (8.6-14.1)

Table 2

Annual Summary of Radioactivity in the Environs of the R.E. Ginna Nuclear Power Plant

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection (LLD)	Indicator Locations Mean (F)/Range[1]	Location with Highest Annual Mean Name/Distance & Direction[2]	Highest Annual Mean (F) / Range[1]	Control Locations Mean (F)/Range
Atmospheric Environment						
Air Iodine (10^{-2} pCi/m^3)	I-131 (310)	0.15	-- (264/264) (--)	---	-- (53/53) (--)	-- (53/53) (--)
Air Particulates (10^{-2} pCi/m^3)	Gross Beta (636)	0.5	2.1 (477/477) (1.0 – 4.5)	Env. Station 2 - 0.36 km E	2.4 (53/53) (1.4 – 4.5)	2.1 (159/159) (1.2 – 3.7)
Air Particulates (10^{-3} pCi/m^3)	Gamma (48)	--	-- (36/36) (--)	--	-- (4/4) (--)	-- (12/12) (--)
Terrestrial Environment						
Milk (pCi/L)	Gamma (38)	5 (Cs-137)	-- (19/19) (--)	--	-- (19/19) (--)	-- (19/19) (--)
Vegetation (pCi/L)	Gamma (26)	27 (Cs-137)	-- (18/18) --	--	-- (8/8) --	--(8/8) --

[1] Mean and range based upon detectable measurements only. Fraction (F) of detectable measurements at specified location is indicated in parentheses
[2] From the center point of the containment building.
-- No detectable activity at specified location.

APPENDIX A

REMP Sample Locations

Summary of Appendix A Content

Appendix A contains information concerning the environmental samples which were collected during this operating period.

Sample locations and specific information about individual locations for Ginna are provided in Table A-1.

Figure A-1 shows the location of the R.E. Ginna Nuclear Power Plant in relation to New York State and Lake Ontario. Figures A-2, A-3, and A-4 show the locations of the power plant sampling sites in relation to the plant site at different degrees of detail.

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TABLE A-1
Locations of Environmental Sampling Stations
for the R.E. Ginna Nuclear Plant

Station	Description	Distance		Direction
		Meters	Miles	Sector
	Air Samplers			
2	Manor House Yard	360	0.22	E
3	East Field	440	0.27	ESE
4	East of Training Center Parking Lot	320	0.20	SE
5	Creek Bridge	180	0.11	SSE
6	Onsite-SW side of plant parking lot	300	0.19	SW
7	Onsite-utility pole along West plant fence	240	0.15	WSW
8	Seabreeze	19840	12.33	WSW
9	Webster	11150	6.93	SW
10	Walworth	12730	7.91	S
11	Williamson	11540	7.17	ESE
12	Sodus Point	25170	15.64	E
13	Substation 13	770	0.48	SSW
	Direct Radiation			
2	Onsite-Manor House Yard	360	0.22	E
3	Onsite-In field approximately 200 ft SE of station #2	440	0.27	ESE
4	Onsite- East of Training Center Parking Lot	320	0.19	SE
5	Onsite-Between creek and plant entry road	180	0.11	SSE
6	Onsite-SW side of plant parking lot	300	0.19	SW
7	Onsite-utility pole along West plant fence	240	0.15	WSW
8	Topper Drive-Irondequoit, Seabreeze Substation #51	19840	12.33	WSW
9	Phillips Road-Webster, intersection with Highway #104, Substation #74	11150	6.93	SW
10	Atlantic Avenue-Walworth, Substation #230	12730	7.91	S
11	W. Main Street-Williamson, Substation #207	11540	7.17	ESE
12	12 Seaman Avenue-Sodus Point-Off Lake Road by Sewer district, Substation #209	25170	15.64	E
13	Onsite - South of Meteorological Tower	260	0.16	WNW
14	NW corner of field along lake shore	860	0.53	WNW
15	Field access road, west of orchard, approximately 3000' West of plant	920	0.57	W
16	SW Corner of orchard, approximately 3000' West of plant, approximately 200' North of Lake Road	1030	0.64	WSW
17	Utility pole in orchard, approximately 75" North of Lake Road	510	0.32	SSW
18	Substation 13A fence, North Side	730	0.45	SSW
19	On NW corner of house 100' East of plant access road	460	0.29	S
20	Approximately 150' West of Ontario Center Road and approximately 170' South of Lake Road	650	0.40	SSE

TABLE A-1
Locations of Environmental Sampling Stations
for the R.E. Ginna Nuclear Plant

Station	Description	Distance		Direction
		Meters	Miles	Sector
21	North side of Lake Road, approximately 200' East of Ontario Center Road	660	0.41	SE
22	North side of Lake Road, SE, property corner	920	0.57	SE
23	East property line, midway between Lake Road and Lake shore	780	0.49	ESE
24	Lake shore near NE corner of property	730	0.45	E
25	Substation #73, Klem Road, adjacent to 897 Klem Road	14000	8.70	WSW
26	Service Center, Plank Road, West of 250	14600	9.07	SW
27	Atlantic Avenue at Knollwood Drive utility pole, North side of road	14120	8.77	SSW
28	Substation #193, Marion, behind Stanton Ag. Service, North Main Street	17450	10.84	SE
29	Substation #208, Town Line Road (CR-118), 1000 ' North of Route 104	14050	8.73	ESE
30	District Office, Sodus, on pole, West side of bldg	20760	12.90	ESE
31	Lake Road, pole 20' North of road, 500' East of Salt Road	7330	4.56	W
32	Woodard Road at County Line Road, pole @ Northwest corner.	6070	3.77	WSW
33	County Line Road at RR tracks, pole approximately 100' East along tracks	7950	4.94	SW
34	Pole at Route 104, Lincoln Road, SW Corner.	6520	4.05	SSW
35	Transmission Right of Way, North of Clevenger Road on pole.	7490	4.65	SSW
36	Substation #205, Route 104, East of Ontario Center Road, North side of fence.	5480	3.41	S
37	Rail Road Avenue, pole at 2048	5770	3.59	SSE
38	Fisher Road at RR Tracks, pole East of road	6910	4.29	SE
39	Seeley Road, Pole South side 100' West of intersection with Stony Lonesome Road	6930	4.31	ESE
40	Lake Road at Stoney Lonesome Road, pole at SE corner	6440	4.00	E
63	Westside of warehouse access road	740	0.46	SW
64	Westside of direct road, adjacent to orchard	1190	0.74	W
	Fish			
	Lake Ontario Discharge Plume	2200	1.37	ENE
	Russell Station	25600	15.9	W

Produce (Vegetation)				
Indicator and background samples of various produce are collected from gardens grown on company property and purchased from farms >10 miles from the plant.				
Station	**Description**	**Distance**		**Direction**
		Meters	**Miles**	**Sector**
	Onsite Supplemental Garden (E)	610	0.38	E
	Onsite Supplemental Garden (ESE)	430	0.27	ESE
	Onsite Supplemental Garden (SSE)	660	0.41	SSE
Water				
	Shoremont/MCWA	27150	16.87	W
	Ontario Water District	2220	1.38	ENE
	Circ Water Intake	1070	0.66	N
	Circ Water Discharge	110	0.07	NNE
	Deer Creek	Points downstream of Outfall 006	Points downstream of Outfall 006	ESE
Sediment				
	Lake Ontario Discharge Plume	2200	1.37	ENE
	Russell Station	25600	15.91	W
	Bethnic	1070	0.66	N
Milk				
	Eaton Farm, Williamson (Indicator)	8240	5.12	ESE
	Schultz Farm, S. Sodus (Control)	19030	11.82	SE

Figure A-1

Map of New York State and Lake Ontario Showing Location of R.E. Ginna Nuclear Power Plant

Figure A-2

Onsite Sample Locations

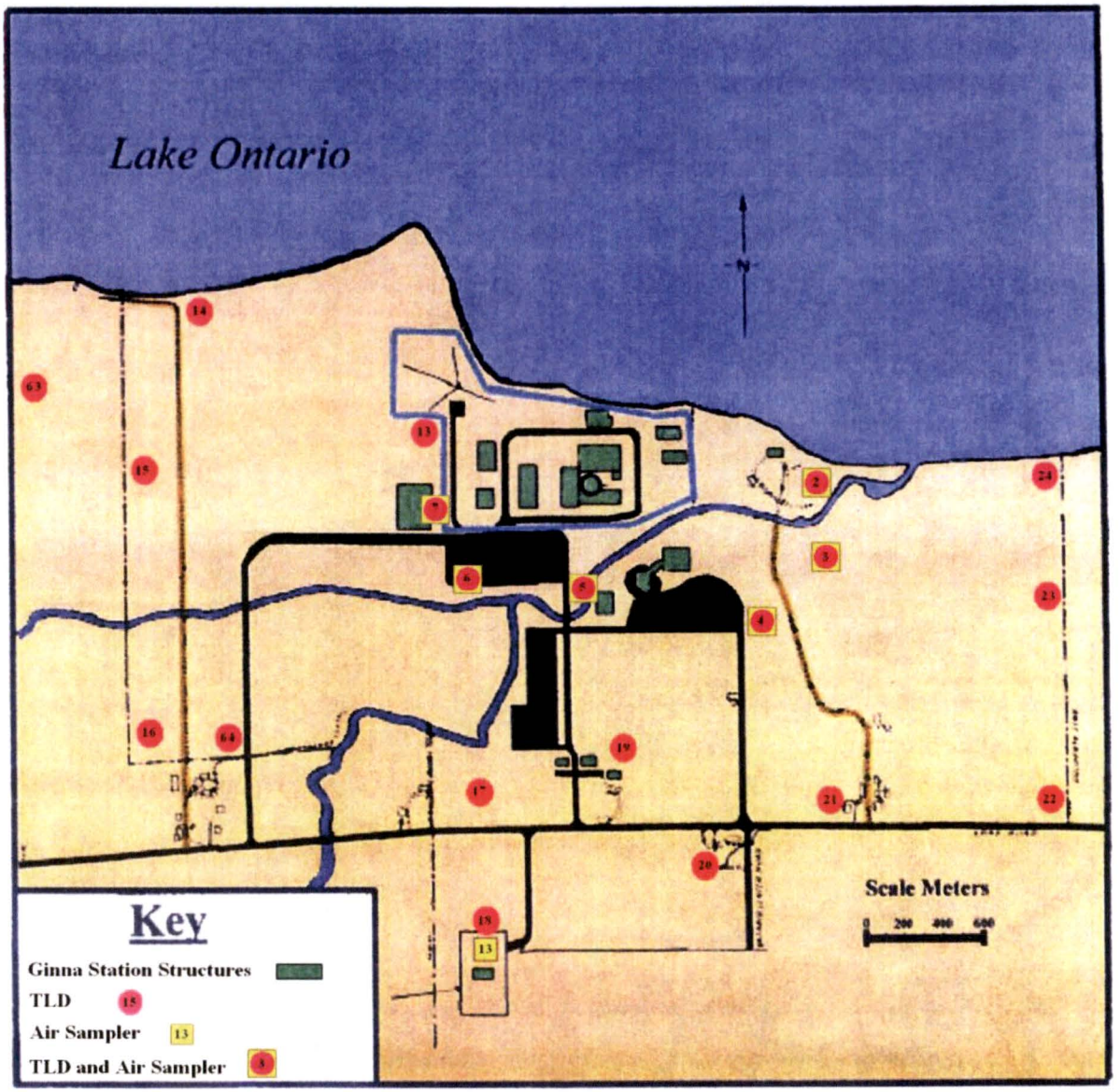


Figure A-3

Offsite Sample Locations (TLDs and Milk Farms within 5 Miles)

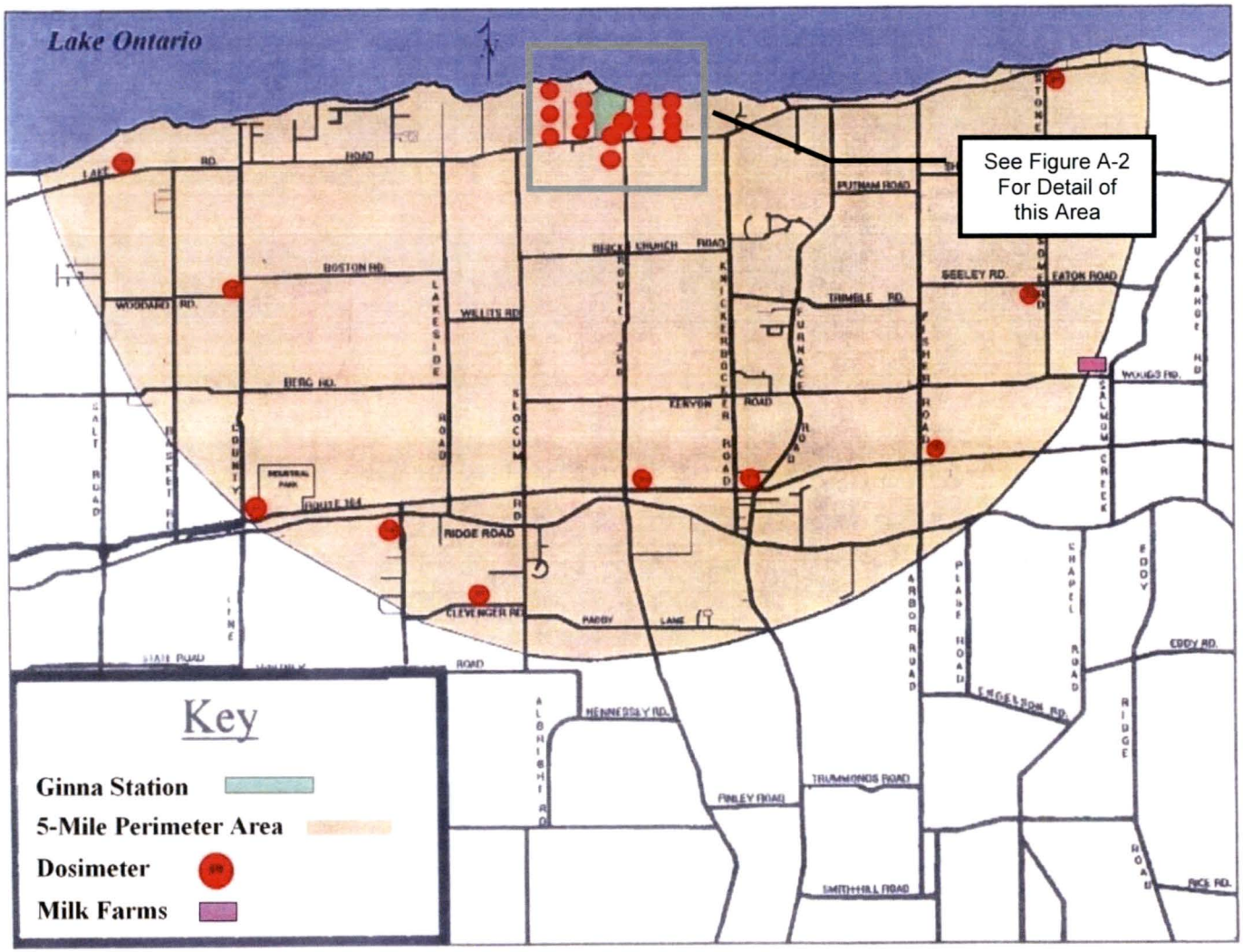
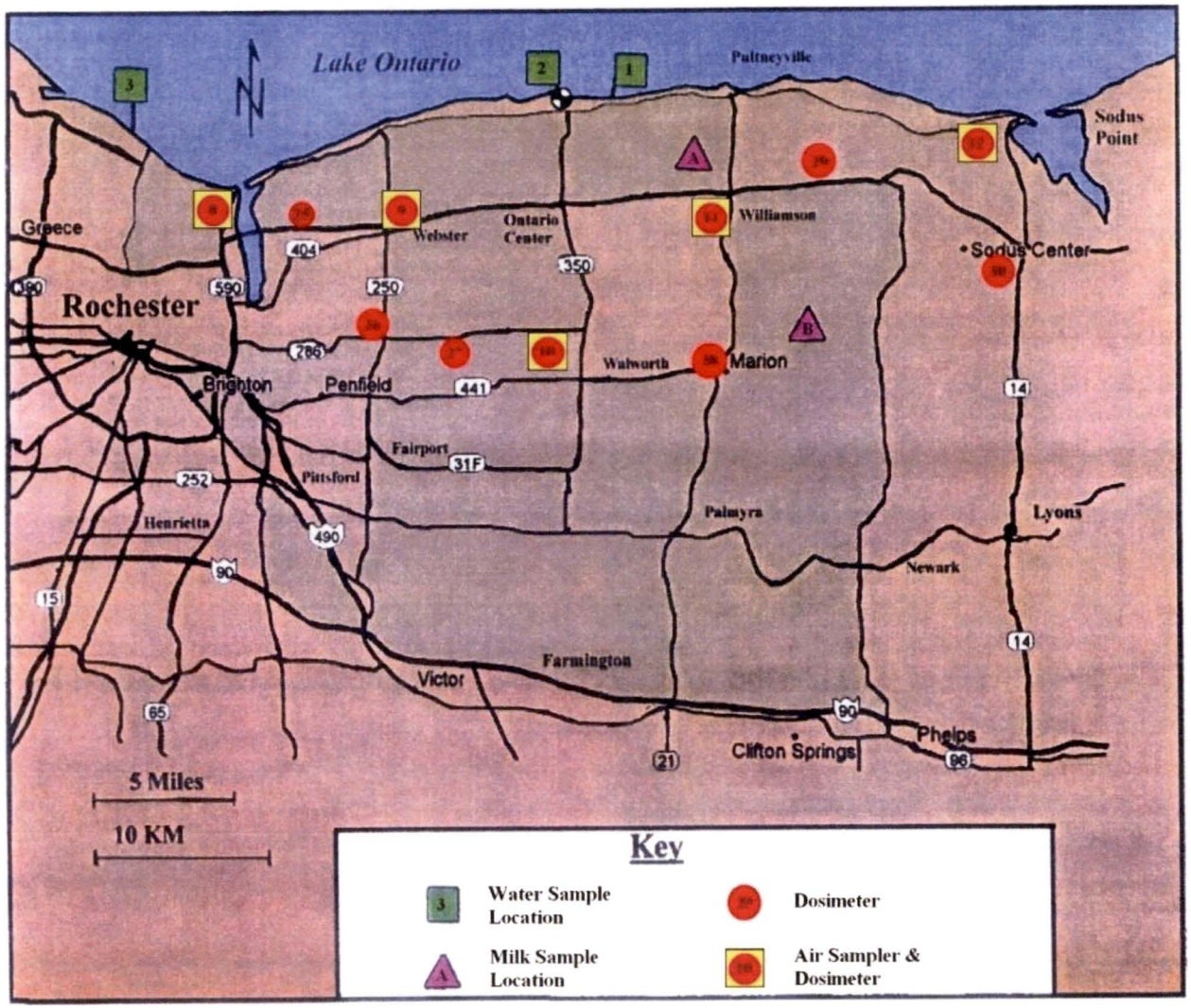


Figure A-4
Water Sample, Milk Farms and TLD Locations



APPENDIX B

REMP Analytical Results

Summary of Appendix B Content

Appendix B is a presentation of the analytical results for the R.E. Ginna Nuclear Power Plant radiological environmental monitoring programs.

TABLE OF CONTENTS - ANALYTICAL RESULTS

Table B-1

Concentration of Tritium, Gamma Emitters and Gross Beta in Surface and Drinking Water (Results in units of pCi/L +/- 2σ)

Sample Code	Sample Date	Cs-137	Tritium µCi/ml	Gamma Emitters[3]	Gross Beta
CIRC-IN Circulating Water Inlet - N	1/11/2016	< 15	< 7.87E-07	*	1.52 +/- 1.14
	2/8/2016	< 15	< 1.59E-06	*	2.83 +/- 1.50
	3/7/2016	< 15	< 7.88E-07	*	2.86 +/- 0.70
	4/4/2016	< 15	< 7.75E-07	*	2.02 +/- 0.68
	5/2/2016	< 15	< 7.65E-07	*	2.12 +/- 0.69
	5/31/2016	< 15	< 8.28E-07	*	1.44 +/- 0.62
	6/27/2016	< 15	< 8.16E-07	*	1.15 +/- 0.60
	7/25/2016	< 15	< 9.68E-07	*	1.76 +/- 0.64
	8/22/2016	< 15	< 8.20E-07	*	0.85 +/- 0.60
	9/19/2016	< 15	< 6.71E-07	*	1.45 +/- 0.64
	10/17/2016	< 15	< 8.18E-07	*	2.17 +/- 0.65
	11/14/2016	< 15	< 8.10E-07	*	1.44 +/- 0.60
	12/12/2016	< 15	< 7.87E-07	*	1.98 +/- 0.62
CIRC-OUT Circulating Water Outlet - N	1/11/2016	< 15	< 7.92E-07	*	2.39 +/- 1.44
	2/8/2016	< 15	< 1.57E-06	*	1.99 +/- 1.50
	3/7/2016	< 15	< 7.85E-07	*	2.72 +/- 0.69
	4/4/2016	< 15	< 7.72E-07	*	1.76 +/- 0.66
	5/2/2016	< 15	< 7.68E-07	*	2.54 +/- 0.72
	5/31/2016	< 15	< 8.31E-07	*	1.64 +/- 0.64
	6/27/2016	< 15	< 8.18E-07	*	1.65 +/- 0.53
	7/25/2016	< 15	< 9.73E-07	*	1.15 +/- 0.59
	8/22/2016	< 15	< 8.20E-07	*	1.65 +/- 0.65
	9/19/2016	< 15	< 6.71E-07	*	1.72 +/- 0.66
	10/17/2016	< 15	< 8.16E-07	*	1.74 +/- 0.62
	11/14/2016	< 15	< 8.13E-07	*	1.35 +/- 0.59
	12/12/2016	< 15	< 7.92E-07	*	3.00 +/- 0.69
DC Deer Creek - ESE	1/5/2016	< 15	< 8.01E-07	*	5.95 +/- 2.19
	2/1/2016	< 15	< 1.58E-06	*	5.35 +/- 2.05
	3/21/2016	< 15	< 3.95E-07	*	3.13 +/- 0.79
	4/11/2016	< 15	< 3.98E-07	*	3.14 +/- 0.84
	5/16/2016	< 15	< 7.74E-07	*	2.16 +/- 0.64
	6/13/2016	< 15	< 8.37E-07	*	2.83 +/- 0.64
	7/11/2016	< 15	< 8.26E-07	*	4.40 +/- 0.95
	8/17/2016	< 15	< 8.25E-07	*	2.34 +/- 0.75
	9/27/2016	< 15	< 8.23E-07	*	2.35 +/- 0.76[2]
	10/26/2016	< 15	< 8.17E-07	*	4.60 +/- 0.89
	11/8/2016	< 15	< 8.17E-07	*	5.23 +/- 0.90
	12/5/2016	< 15	< 8.16E-07	*	4.14 +/- 0.80

Table B-1

Concentration of Tritium, Gamma Emitters and Gross Beta in Surface and Drinking Water (Results in units of pCi/L +/- 2σ)

Sample Code	Sample Date	Cs-137	Tritium µCi/ml	Gamma Emitters[3]	Gross Beta
MCWA Monroe County Water/Shoremont, Greece – W[1]	1/11/2016	< 15	< 7.92E-07	*	1.87 +/- 1.40
	2/8/2016	< 15	< 1.57E-06	*	2.76 +/- 1.49
	3/7/2016	< 15	< 7.86E-07	*	1.78 +/- 0.63
	4/4/2016	< 15	< 7.72E-07	*	2.29 +/- 0.70
	5/2/2016	< 15	< 7.60E-07	*	2.46 +/- 0.71
	5/31/2016	< 15	< 8.29E-07	*	1.73 +/- 0.64
	6/28/2016	< 15	< 8.17E-07	*	1.27 +/- 0.60
	7/25/2016	< 15	< 8.20E-07	*	1.25 +/- 0.60
	8/22/2016	< 15	< 8.40E-07	*	1.30 +/- 0.63
	9/19/2016	< 15	< 6.71E-07	*	1.56 +/- 0.65
	10/17/2016	< 15	< 8.10E-07	*	1.76 +/- 0.62
	11/14/2016	< 15	< 8.15E-07	*	2.70 +/- 0.70
	12/12/2016	< 15	< 7.92E-07	*	3.96 +/- 0.82
ML Mill Creek – SW[1]	1/5/2016	< 15	< 7.99E-07	*	3.43 +/- 2.02
	2/1/2016	< 15	< 1.59E-06	*	4.69 +/- 1.97
	3/21/2016	< 15	< 3.98E-07	*	3.64 +/- 0.83
	4/11/2016	< 15	< 3.98E-07	*	3.47 +/- 0.86
	5/16/2016	< 15	< 7.73E-07	*	1.92 +/- 0.68
	6/13/2016	< 15	< 8.37E-08	*	2.76 +/- 0.74
	7/11/2016	< 15	< 8.27E-07	*	5.13 +/- 0.94
	8/17/2016	< 15	< 8.29E-07	*	11.75 +/- 1.25
	9/27/2016	< 15	< 8.20E-07	*	2.08 +/- 0.74[2]
	10/26/2016	< 15	< 8.19E-07	*	3.94 +/- 0.81
	11/8/2016	< 15	< 8.19E-07	*	3.99 +/- 0.81
	12/5/2016	< 15	< 8.17E-07	*	3.11 +/- 0.74
W Webster (Supplemental)	1/11/2016	< 15	< 7.89E-07	*	3.43 +/- 1.54
	2/8/2016	< 15	< 1.57E-06	*	2.04 +/- 1.45
	3/7/2016	< 15	< 7.88E-07	*	1.69 +/- 0.61
	4/4/2016	< 15	< 7.72E-07	*	1.94 +/- 0.68
	5/2/2016	< 15	< 7.67E-07	*	2.50 +/- 0.71
	5/31/2016	< 15	< 8.27E-07	*	1.29 +/- 0.62
	6/27/2016	< 15	< 8.18E-07	*	1.38 +/- 0.62
	7/25/2016	< 15	< 8.20E-07	*	1.50 +/- 0.63
	8/22/2016	< 15	< 8.19E-07	*	1.36 +/- 0.63
	9/19/2016	< 15	< 6.71E-07	*	1.81 +/- 0.66
	10/17/2016	< 15	< 6.71E-07	*	1.74 +/- 0.62
	11/14/2016	< 15	< 8.14E-07	*	1.85 +/- 0.63

Table B-1

Concentration of Tritium, Gamma Emitters and Gross Beta in Surface and Drinking Water (Results in units of pCi/L +/- 2σ)

Sample Code	Sample Date	Cs-137	Tritium µCi/ml	Gamma Emitters[3]	Gross Beta
OWD Ontario Water District - NE	1/11/2016	< 15	< 7.97E-07	*	1.11 +/- 1.37
	2/8/2016	< 15	< 1.59E-06	*	2.14 +/- 1.45
	3/7/2016	< 15	< 7.92E-07	*	1.78 +/- 0.63
	4/4/2016	< 15	< 7.70E-07	*	2.34 +/- 0.71
	5/2/2016	< 15	< 7.66E-07	*	2.06 +/- 0.69
	5/31/2016	< 15	< 8.25E-07	*	1.80 +/- 0.65
	6/27/2016	< 15	< 8.17E-07	*	1.64 +/- 0.52
	7/25/2016	< 15	< 8.16E-07	*	1.26 +/- 0.61
	8/22/2016	< 15	< 8.18E-07	*	1.70 +/- 0.66
	9/19/2016	< 15	< 6.71E-07	*	1.68 +/- 0.66
	10/17/2016	< 15	< 8.11E-07	*	2.37 +/- 0.67
	11/14/2016	< 15	< 8.13E-07	*	2.04 +/- 0.64
	12/12/2016	< 15	< 7.97E-07	*	2.04 +/- 0.62

[1] Control Location
[2] Sample collected from alternate location due to extreme drought conditions.
[3] All Non-Natural Gamma Emitters < MDA.

Table B-2

Concentration of Gamma Emitters in the Flesh of Edible Fish
(Results in units of pCi/kg (wet) +/- 2σ)

Sample Code	Sample Date	Sample Type	Gamma Emitters (Cs-137)
CONTROL[1]			
Local Sites in			
Control Sectors	5/12/2016	Bowfin	< 130
	5/12/2016	Carp	< 130
	5/12/2016	Red Horse	< 130
	5/12/2016	White Sucker Fish	< 130
EAST			
East Sector	5/11/2016	Rainbow Trout	< 130
Hamlin[1]			
Control	9/26/2016	Lake Trout	< 130
	9/26/2016	Brown Trout	< 130
	9/26/2016	Smallmouth Bass	< 130
	9/26/2016	Freshwater Drum	< 130
NORTH			
North Sector	3/11/2016	Brown Trout	< 130
	3/11/2016	Catfish	< 130
	5/5/2016	Brown Trout	< 130
	6/8/2016	Freshwater Drum	< 130
	10/7/2016	White Bass	< 130
	11/15/2016	Lake Trout	< 130
	11/17/2016	Freshwater Drum	< 130
	12/7/2016	Carp	< 130

[1] Control Locations include Greece, NY and Irondequoit, NY.

Table B-3

Concentration of Gamma Emitters in Sediment
(Results in units of pCi/kg (wet) +/- 2σ)

Sample Code	Sample Date	Gamma Emitters (Cs-137)
Shoreline		
EAST		
East Sector	5/9/2016	< 150
	8/1/2016	< 150
GREECE[1]		
Control	5/9/2016	< 150
	8/1/2016	< 150
NORTH	4/18/2016	< 150
North Sector		

[1] Control Location

Table B-4

Concentration of Iodine-131 in Filtered Air (Charcoal Cartridges)
(Results in units of 10^{-2} pCi/m^3 +/- 2σ)

Start Date	Stop Date	STATION-02 Manor House Yard	STATION-04 Training Center Parking Lot	STATION-07 West Fence Line	STATION-08[1] Seabreeze	STATION-09 Webster	STATION-11 Williamson
12/28/2015	1/4/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
1/4/2016	1/11/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
1/11/2016	1/18/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
1/18/2016	1/25/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
1/25/2016	2/1/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
2/1/2016	2/8/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
2/8/2016	2/15/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
2/15/2016	2/22/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
2/22/2016	2/29/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
2/29/2016	3/7/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
3/7/2016	3/14/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
3/14/2016	3/21/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
3/21/2016	3/28/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
3/28/2016	4/4/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
4/4/2016	4/11/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
4/11/2016	4/18/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
4/18/2016	4/25/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
4/25/2016	5/2/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
5/2/2016	5/9/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
5/9/2016	5/16/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
5/16/2016	5/23/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
5/23/2016	5/30/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
5/30/2016	6/6/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
6/6/2016	6/13/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
6/13/2016	6/20/2016	[2]	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
6/20/2016	6/27/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
6/27/2016	7/4/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
7/4/2016	7/11/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
7/11/2016	7/18/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
7/18/2016	7/25/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
7/25/2016	8/1/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
8/1/2016	8/8/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
8/8/2016	8/15/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
8/15/2016	8/22/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
8/22/2016	8/29/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
8/29/2016	9/5/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
9/5/2016	9/12/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
9/12/2016	9/19/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
9/19/2016	9/26/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
9/26/2016	10/3/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02

Table B-4

Concentration of Iodine-131 in Filtered Air (Charcoal Cartridges)
(Results in units of 10^{-2} pCi/m^3 +/- 2σ)

Start Date	Stop Date	STATION-02 Manor House Yard	STATION-04 Training Center Parking Lot	STATION-07 West Fence Line	STATION-08[1] Seabreeze	STATION-09 Webster	STATION-11 Williamson
10/3/2016	10/10/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
10/10/2016	10/17/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
10/17/2016	10/24/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
10/24/2016	10/31/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
10/31/2016	11/7/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
11/7/2016	11/14/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
11/14/2016	11/21/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
11/21/2016	11/28/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
11/28/2016	12/5/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
12/5/2016	12/12/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
12/12/2016	12/19/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
12/19/2016	12/26/2016	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02
12/26/2016	1/2/2017	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02	< 7.0E-02

[1] Control Location
[2] Sampler malfunction/low flow

Table B-5

Concentration of Beta Emitters in Air Particulates – Onsite Samples
(Results in units of 10^{-2} pCi/m^3 +/- 2σ Uncertainty)

Start Date	Stop Date	STATION-02 Manor House Yard	STATION-03 East Field	STATION-04 Training Center Parking Lot	STATION-05 Creek Bridge	STATION-06 Main Parking Lot	STATION-07 West Fence Line	STATION-13 Substation 13
12/28/2015	1/4/2016	2.2 +/- 0.1	1.7 +/- 0.1	1.9 +/- 0.1	1.6 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.2
1/4/2016	1/11/2016	3.3 +/- 0.2	2.9 +/- 0.2	3.2 +/- 0.2	2.8 +/- 0.1	2.8 +/- 0.1	3.1 +/- 0.2	3.0 +/- 0.2
1/11/2016	1/18/2016	3.2 +/- 0.2	2.6 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.1	2.1 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.2
1/18/2016	1/25/2016	1.9 +/- 0.1	1.5 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1	1.5 +/- 0.1	1.6 +/- 0.1	2.0 +/- 0.2
1/25/2016	2/1/2016	2.8 +/- 0.2	2.1 +/- 0.1	2.3 +/- 0.2	2.1 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.2
2/1/2016	2/8/2016	2.3 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.1	1.7 +/- 0.1	1.8 +/- 0.1	2.0 +/- 0.2
2/8/2016	2/15/2016	2.0 +/- 0.1	1.7 +/- 0.1	2.1 +/- 0.2	1.5 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1
2/15/2016	2/22/2016	2.2 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1	1.6 +/- 0.1	1.6 +/- 0.1	1.8 +/- 0.1	2.1 +/- 0.2
2/22/2016	2/29/2016	2.4 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	2.0 +/- 0.1	1.8 +/- 0.1
2/29/2016	3/7/2016	2.1 +/- 0.2	1.7 +/- 0.1	1.8 +/- 0.1	1.7 +/- 0.1	1.5 +/- 0.1	1.6 +/- 0.1	2.0 +/- 0.2
3/7/2016	3/14/2016	2.5 +/- 0.2	2.0 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	1.6 +/- 0.2
3/14/2016	3/21/2016	1.7 +/- 0.1	1.2 +/- 0.1	1.4 +/- 0.1	1.1 +/- 0.1	1.2 +/- 0.1	1.2 +/- 0.1	1.4 +/- 0.2
3/21/2016	3/28/2016	2.3 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.2
3/28/2016	4/4/2016	2.4 +/- 0.2	1.9 +/- 0.1	2.2 +/- 0.2	2.0 +/- 0.1	1.8 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.2
4/4/2016	4/11/2016	2.8 +/- 0.2	2.1 +/- 0.1	2.4 +/- 0.1	2.2 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.1	1.9 +/- 0.2
4/11/2016	4/18/2016	2.8 +/- 0.2	2.1 +/- 0.1	2.4 +/- 0.1	2.2 +/- 0.1	2.0 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.2
4/18/2016	4/25/2016	3.0 +/- 0.2	2.2 +/- 0.1	2.5 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.2
4/25/2016	5/2/2016	2.0 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1	1.5 +/- 0.1	1.4 +/- 0.1	1.6 +/- 0.1	1.5 +/- 0.2
5/2/2016	5/9/2016	1.5 +/- 0.1	1.1 +/- 0.1	1.4 +/- 0.1	1.0 +/- 0.1	1.1 +/- 0.1	1.1 +/- 0.1	1.5 +/- 0.2
5/9/2016	5/16/2016	1.9 +/- 0.1	1.4 +/- 0.1	1.7 +/- 0.1	1.3 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1	1.6 +/- 0.2
5/16/2016	5/23/2016	2.5 +/- 0.2	1.9 +/- 0.1	2.1 +/- 0.1	1.8 +/- 0.1	1.7 +/- 0.1	1.9 +/- 0.1	2.5 +/- 0.2
5/23/2016	5/30/2016	4.0 +/- 0.2	3.1 +/- 0.2	3.4 +/- 0.2	3.0 +/- 0.1	2.9 +/- 0.1	3.2 +/- 0.2	2.7 +/- 0.1
5/30/2016	6/6/2016	2.4 +/- 0.3	1.5 +/- 0.1	1.8 +/- 0.1	1.5 +/- 0.1	1.4 +/- 0.1	1.5 +/- 0.1	1.7 +/- 0.1

Table B-5

Concentration of Beta Emitters in Air Particulates – Onsite Samples
(Results in units of 10^{-2} pCi/m^3 +/- 2σ Uncertainty)

Start Date	Stop Date	STATION-02 Manor House Yard	STATION-03 East Field	STATION-04 Training Center Parking Lot	STATION-05 Creek Bridge	STATION-06 Main Parking Lot	STATION-07 West Fence Line	STATION-13 Substation 13
6/6/2016	6/13/2016	2.0 +/- 0.2	1.4 +/- 0.1	1.7 +/- 0.2	1.4 +/- 0.1	1.3 +/- 0.1	1.5 +/- 0.1	1.3 +/- 0.1
6/13/2016	6/20/2016	2.5 +/- 0.2	1.9 +/- 0.1	[1]	1.7 +/- 0.1	1.6 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1
6/20/2016	6/27/2016	2.7 +/- 0.2	2.1 +/- 0.1	2.2 +/- 0.2	2.0 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.1	1.8 +/- 0.1
6/27/2016	7/4/2016	2.2 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.2	2.8 +/- 0.2	3.0 +/- 0.2	1.7 +/- 0.1	2.0 +/- 0.1
7/4/2016	7/11/2016	3.2 +/- 0.2	3.1 +/- 0.2	3.6 +/- 0.2	2.8 +/- 0.2	3.1 +/- 0.2	3.7 +/- 0.3	2.5 +/- 0.1
7/11/2016	7/18/2016	1.9 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.2	1.8 +/- 0.1	1.8 +/- 0.1	2.1 +/- 0.2	1.9 +/- 0.1
7/18/2016	7/25/2016	2.3 +/- 0.1	2.4 +/- 0.1	2.6 +/- 0.2	2.2 +/- 0.1	2.1 +/- 0.1	2.4 +/- 0.2	2.1 +/- 0.1
7/25/2016	8/1/2016	1.8 +/- 0.1	1.7 +/- 0.1	2.0 +/- 0.2	1.7 +/- 0.1	1.7 +/- 0.1	2.0 +/- 0.2	1.7 +/- 0.1
8/1/2016	8/8/2016	2.3 +/- 0.1	2.2 +/- 0.1	2.4 +/- 0.2	2.1 +/- 0.1	2.2 +/- 0.1	2.6 +/- 0.2	2.2 +/- 0.1
8/8/2016	8/15/2016	2.2 +/- 0.2	2.3 +/- 0.2	2.6 +/- 0.2	2.3 +/- 0.1	2.4 +/- 0.1	2.7 +/- 0.3	2.2 +/- 0.1
8/15/2016	8/22/2016	2.5 +/- 0.1	2.4 +/- 0.1	2.4 +/- 0.2	2.4 +/- 0.1	2.3 +/- 0.1	2.7 +/- 0.2	2.3 +/- 0.1
8/22/2016	8/29/2016	2.6 +/- 0.1	2.6 +/- 0.1	2.7 +/- 0.2	2.7 +/- 0.1	2.7 +/- 0.1	2.9 +/- 0.2	2.6 +/- 0.1
8/29/2016	9/5/2016	2.5 +/- 0.1	2.3 +/- 0.1	2.6 +/- 0.2	2.3 +/- 0.1	2.2 +/- 0.1	2.6 +/- 0.2	2.6 +/- 0.1
9/5/2016	9/12/2016	2.9 +/- 0.2	2.8 +/- 0.2	3.2 +/- 0.2	2.9 +/- 0.2	2.9 +/- 0.2	3.1 +/- 0.3	2.3 +/- 0.1
9/12/2016	9/19/2016	2.4 +/- 0.1	2.4 +/- 0.1	2.4 +/- 0.2	2.2 +/- 0.1	2.3 +/- 0.1	2.5 +/- 0.2	2.5 +/- 0.1
9/19/2016	9/26/2016	2.6 +/- 0.1	2.5 +/- 0.1	2.6 +/- 0.2	2.6 +/- 0.1	2.6 +/- 0.1	3.0 +/- 0.2	2.1 +/- 0.1
9/26/2016	10/3/2016	1.9 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.2	1.8 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.2	1.7 +/- 0.1
10/3/2016	10/10/2016	1.9 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.2	2.1 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.2	1.9 +/- 0.1
10/10/2016	10/17/2016	2.7 +/- 0.1	2.7 +/- 0.1	2.9 +/- 0.2	2.6 +/- 0.1	2.6 +/- 0.1	3.0 +/- 0.2	2.7 +/- 0.1
10/17/2016	10/24/2016	1.8 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.2	1.8 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.2	1.5 +/- 0.1
10/24/2016	10/31/2016	1.4 +/- 0.1	1.4 +/- 0.1	1.7 +/- 0.2	1.6 +/- 0.1	1.5 +/- 0.1	1.3 +/- 0.2	1.4 +/- 0.1
10/31/2016	11/7/2016	2.9 +/- 0.1	3.0 +/- 0.2	2.8 +/- 0.2	2.8 +/- 0.1	3.0 +/- 0.1	3.1 +/- 0.2	2.6 +/- 0.1
11/7/2016	11/14/2016	2.0 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.2	2.0 +/- 0.1	2.2 +/- 0.1	2.5 +/- 0.2	2.3 +/- 0.1
11/14/2016	11/21/2016	4.5 +/- 0.2	4.0 +/- 0.2	4.4 +/- 0.2	3.6 +/- 0.1	2.9 +/- 0.1	3.6 +/- 0.2	4.4 +/- 0.2

Table B-5

Concentration of Beta Emitters in Air Particulates – Onsite Samples
(Results in units of 10^{-2} pCi/m^3 +/- 2σ Uncertainty)

Start Date	Stop Date	STATION-02 Manor House Yard	STATION-03 East Field	STATION-04 Training Center Parking Lot	STATION-05 Creek Bridge	STATION-06 Main Parking Lot	STATION-07 West Fence Line	STATION-13 Substation 13
11/21/2016	11/28/2016	1.8 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.2	2.1 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.2	2.3 +/- 0.1
11/28/2016	12/5/2016	2.1 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.2	2.1 +/- 0.1	1.7 +/- 0.1	2.5 +/- 0.2	1.6 +/- 0.1
12/5/2016	12/12/2016	2.0 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.2	1.9 +/- 0.1	1.8 +/- 0.1	2.1 +/- 0.2	2.0 +/- 0.1
12/12/2016	12/19/2016	2.6 +/- 0.2	3.2 +/- 0.3	2.2 +/- 0.2	2.2 +/- 0.1	2.4 +/- 0.1	2.8 +/- 0.2	2.3 +/- 0.1
12/19/2016	12/26/2016	2.8 +/- 0.1	2.7 +/- 0.1	2.6 +/- 0.2	2.5 +/- 0.1	2.5 +/- 0.1	2.8 +/- 0.2	2.5 +/- 0.1
12/26/2016	1/2/2017	1.8 +/- 0.1	1.9 +/- 0.1	1.6 +/- 0.2	1.9 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.2	1.6 +/- 0.1

[1]Sampler Malfunction/Low Flow. See Section 3.5 for additional information.

Table B-6

Concentration of Beta Emitters in Air Particulates - Offsite Samples
(Results in units of 10^{-2} pCi/m^3 +/- 2σ Uncertainty)

Start Date	Stop Date	STATION-08[1] Seabreeze	STATION-09 Webster	STATION-10[1] Walworth	STATION-11 Williamson	STATION-12[1] Sodus Point
12/28/2015	1/4/2016	2.1 +/- 0.2	1.7 +/- 0.1	1.8 +/- 0.1	1.5 +/- 0.1	1.8 +/- 0.1
1/4/2016	1/11/2016	2.9 +/- 0.2	2.6 +/- 0.1	3.0 +/- 0.1	2.8 +/- 0.1	2.8 +/- 0.1
1/11/2016	1/18/2016	2.3 +/- 0.2	2.0 +/- 0.1	2.3 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1
1/18/2016	1/25/2016	2.1 +/- 0.2	1.7 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1
1/25/2016	2/1/2016	1.9 +/- 0.2	1.9 +/- 0.1	2.1 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1
2/1/2016	2/8/2016	2.0 +/- 0.2	1.7 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1	1.7 +/- 0.1
2/8/2016	2/15/2016	1.6 +/- 0.2	1.2 +/- 0.1	1.4 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1
2/15/2016	2/22/2016	1.9 +/- 0.2	1.6 +/- 0.1	1.6 +/- 0.1	1.6 +/- 0.1	1.6 +/- 0.1
2/22/2016	2/29/2016	2.0 +/- 0.2	1.7 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1
2/29/2016	3/7/2016	1.9 +/- 0.2	1.8 +/- 0.1	1.8 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1
3/7/2016	3/14/2016	1.8 +/- 0.2	1.4 +/- 0.1	1.6 +/- 0.1	1.6 +/- 0.1	1.6 +/- 0.1
3/14/2016	3/21/2016	1.6 +/- 0.2	1.3 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1	1.2 +/- 0.1
3/21/2016	3/28/2016	2.0 +/- 0.2	1.8 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	1.7 +/- 0.1
3/28/2016	4/4/2016	2.3 +/- 0.2	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1
4/4/2016	4/11/2016	2.2 +/- 0.2	1.9 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1
4/11/2016	4/18/2016	2.6 +/- 0.2	2.3 +/- 0.1	2.2 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.1
4/18/2016	4/25/2016	2.2 +/- 0.2	2.0 +/- 0.1	2.2 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.1
4/25/2016	5/2/2016	1.7 +/- 0.2	1.5 +/- 0.1	1.4 +/- 0.1	1.4 +/- 0.1	1.3 +/- 0.1
5/2/2016	5/9/2016	1.7 +/- 0.2	1.5 +/- 0.1	1.3 +/- 0.1	1.6 +/- 0.1	1.3 +/- 0.1
5/9/2016	5/16/2016	1.7 +/- 0.2	1.4 +/- 0.1	1.3 +/- 0.1	1.6 +/- 0.1	1.3 +/- 0.1
5/16/2016	5/23/2016	2.3 +/- 0.2	1.8 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1
5/23/2016	5/30/2016	1.4 +/- 0.1	2.8 +/- 0.1	2.8 +/- 0.1	2.8 +/- 0.1	2.7 +/- 0.1
5/30/2016	6/6/2016	2.3 +/- 0.2	2.3 +/- 0.5	1.7 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1
6/6/2016	6/13/2016	1.7 +/- 0.2	1.4 +/- 0.1	1.4 +/- 0.1	1.4 +/- 0.1	1.4 +/- 0.1
6/13/2016	6/20/2016	2.2 +/- 0.2	2.0 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1
6/20/2016	6/27/2016	2.1 +/- 0.2	1.8 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	1.9 +/- 0.1
6/27/2016	7/4/2016	2.3 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1	2.2 +/- 0.1	2.1 +/- 0.1
7/4/2016	7/11/2016	3.0 +/- 0.2	2.6 +/- 0.2	3.0 +/- 0.2	2.9 +/- 0.2	2.7 +/- 0.2
7/11/2016	7/18/2016	2.3 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.1
7/18/2016	7/25/2016	2.7 +/- 0.2	2.3 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1	2.1 +/- 0.1
7/25/2016	8/1/2016	1.9 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1
8/1/2016	8/8/2016	2.6 +/- 0.1	2.2 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1
8/8/2016	8/15/2016	2.7 +/- 0.2	2.4 +/- 0.2	2.1 +/- 0.1	2.5 +/- 0.2	2.2 +/- 0.1
8/15/2016	8/22/2016	2.8 +/- 0.2	2.2 +/- 0.1	2.1 +/- 0.1	2.3 +/- 0.1	2.2 +/- 0.1
8/22/2016	8/29/2016	2.9 +/- 0.2	2.5 +/- 0.1	2.5 +/- 0.1	2.8 +/- 0.1	2.6 +/- 0.1
8/29/2016	9/5/2016	3.1 +/- 0.2	2.8 +/- 0.1	2.6 +/- 0.1	2.7 +/- 0.1	2.8 +/- 0.1
9/5/2016	9/12/2016	2.7 +/- 0.2	2.2 +/- 0.1	2.3 +/- 0.1	2.6 +/- 0.2	2.3 +/- 0.2
9/12/2016	9/19/2016	3.1 +/- 0.2	2.6 +/- 0.1	2.4 +/- 0.1	2.6 +/- 0.1	2.6 +/- 0.1
9/19/2016	9/26/2016	2.6 +/- 0.2	2.5 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.1	2.4 +/- 0.1

Table B-6

Concentration of Beta Emitters in Air Particulates - Offsite Samples (Results in units of 10^{-2} pCi/m^3 +/- 2σ Uncertainty)

Start Date	Stop Date	STATION-08[1] Seabreeze	STATION-09 Webster	STATION-10[1] Walworth	STATION-11 Williamson	STATION-12[1] Sodus Point
9/26/2016	10/3/2016	2.0 +/- 0.1	1.9 +/- 0.1	1.7 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1
10/3/2016	10/10/2016	2.2 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.1
10/10/2016	10/17/2016	3.4 +/- 0.2	2.9 +/- 0.1	2.6 +/- 0.1	2.9 +/- 0.1	2.8 +/- 0.1
10/17/2016	10/24/2016	1.7 +/- 0.1	1.5 +/- 0.1	1.3 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1
10/24/2016	10/31/2016	1.8 +/- 0.1	1.5 +/- 0.1	1.4 +/- 0.1	1.5 +/- 0.1	1.4 +/- 0.1
10/31/2016	11/7/2016	3.2 +/- 0.2	2.7 +/- 0.1	2.6 +/- 0.1	2.7 +/- 0.1	2.7 +/- 0.1
11/7/2016	11/14/2016	2.7 +/- 0.2	2.5 +/- 0.1	2.2 +/- 0.1	2.5 +/- 0.1	2.4 +/- 0.1
11/14/2016	11/21/2016	3.5 +/- 0.2	3.4 +/- 0.2	3.2 +/- 0.1	3.3 +/- 0.2	3.7 +/- 0.2
11/21/2016	11/28/2016	2.5 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1
11/28/2016	12/5/2016	1.9 +/- 0.1	1.8 +/- 0.1	1.6 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1
12/5/2016	12/12/2016	2.1 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1
12/12/2016	12/19/2016	2.2 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.1	2.6 +/- 0.1
12/19/2016	12/26/2016	2.7 +/- 0.1	2.4 +/- 0.1	2.4 +/- 0.1	2.3 +/- 0.1	2.9 +/- 0.1
12/26/2016	1/2/2017	1.8 +/- 0.1	1.6 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1

[1] Control Location

Table B-7

Concentration of Gamma Emitters in Air Particulates
(Results in units of 10^{-3} pCi/m^3 +/- 2σ)

Location	Description	Sample Date	Gamma Emitters	
			(Cs-137)	(I-131)
STATION-02	Manor House Yard	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-03	East Field	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-04	Training Center Parking Lot	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-05	Creek Bridge	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-06	Main Parking Lot	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-07	West Fence Line	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-08[1]	Seabreeze	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-09	Webster	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-10[1]	Walworth	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02

Table B-7 (Continued)

Concentration of Gamma Emitters in Air Particulates
(Results in units of 10^{-3} pCi/m^3 +/- 2σ)

Location	Description	Sample Date	Gamma Emitters	
			(Cs-137)	(I-131)
STATION-11	Williamson	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-12[1]	Sodus Point	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02
STATION-13	Substation 13	3/8/2016	<1.0E-02	<7.0E-02
		6/27/2016	<1.0E-02	<7.0E-02
		10/3/2016	<1.0E-02	<7.0E-02
		1/2/2017	<1.0E-02	<7.0E-02

[1] Control Location

Table B-8

Concentration of Gamma Emitters in Vegetation Samples
(Results in units of pCi/kg (wet) +/- 2σ)

Sample Code	Sample Date	Sample Type	Gamma Emitters (Cs-137)	(I-131)
CONTROL[1] Local Sites in Control Sectors	8/11/2016	Cucumbers	< 60	< 60
	8/11/2016	Greens	< 60	< 60
	8/11/2016	Squash	< 60	< 60
	8/11/2016	Tomato	< 60	< 60
	10/6/2016	Apples	< 60	< 60
	10/6/2016	Grapes	< 60	< 60
EAST East Sector	6/28/2016	Greens	< 60	< 60
	7/19/2016	Cucumbers	< 60	< 60
	7/19/2016	Squash	< 60	< 60
	8/3/2016	Tuber (potato)	< 60	< 60
	8/9/2016	Tomato	< 60	< 60
	9/14/2016	Grapes	< 60	< 60
	9/27/2016	Apples	< 60	< 60
ESE East South East Sector	7/11/2016	Greens	< 60	< 60
	7/29/2016	Tomato	< 60	< 60
	7/29/2016	Tuber (potato)	< 60	< 60
	8/17/2016	Squash	< 60	< 60
	9/14/2016	Grapes	< 60	< 60
	9/27/2016	Apples	< 60	< 60
HAMLIN[1] Control	8/11/2016	Onion (root)	< 60	< 60
	8/11/2016	Tuber (potato)	< 60	< 60
SSE South South East Garden	6/28/2016	Greens	< 60	< 60
	7/19/2016	Squash	< 60	< 60
	7/29/2016	Onion (root)	< 60	< 60
	8/9/2016	Tomato	< 60	< 60
	9/27/2016	Apples	< 60	< 60

[1] Control Location

Table B-9

Concentration of Gamma Emitters (including I-131) in Milk
(Results in units of pCi/Liter +/- 2σ

Sample Code	Sample Date	Gamma Emitters	
		Cs-137	(I-131)
EATON			
ESE Indicator	1/19/2016	< 15	< 1
	2/15/2016	< 15	< 1
	3/14/2016	< 15	< 1
	4/11/2016	< 15	< 1
	5/9/2016	< 15	< 1
	5/23/2016	< 15	< 1
	6/6/2016	< 15	< 1
	6/20/2016	< 15	< 1
	7/5/2016	< 15	< 1
	7/19/2016	< 15	< 1
	8/1/2016	< 15	< 1
	8/15/2016	< 15	< 1
	8/29/2016	< 15	< 1
	9/12/2016	< 15	< 1
	9/26/2016	< 15	< 1
	10/10/2016	< 15	< 1
	10/24/2016	< 15	< 1
	11/22/2016	< 15	< 1
	12/19/2016	< 15	< 1
SCHULTZ[1]			
South Sodus Control	1/19/2016	< 15	< 1
	2/15/2016	< 15	< 1
	3/14/2016	< 15	< 1
	4/11/2016	< 15	< 1
	5/9/2016	< 15	< 1
	5/23/2016	< 15	< 1
	6/6/2016	< 15	< 1
	6/20/2016	< 15	< 1
	7/5/2016	< 15	< 1
	7/19/2016	< 15	< 1
	8/1/2016	< 15	< 1
	8/15/2016	< 15	< 1
	8/29/2016	< 15	< 1
	9/12/2016	< 15	< 1
	9/26/2016	< 15	< 1
	10/10/2016	< 15	< 1
	10/24/2016	< 15	< 1
	11/22/2016	< 15	< 1
	12/19/2016	< 15	< 1

[1] Control Location

Table B-10

Typical MDA Ranges for Gamma Spectrometry

Selected Nuclides	Air Particulates (10^{-2} pCi/m^3)	Surface Water, Drinking Water (pCi/L)	Fish (pCi/kg) Wet	Ground-water (pCi/L)	Milk (pCi/L)	Oysters (pCi/kg)	Shoreline Sediment (pCi/kg) Dry	Soil (pCi/kg) Dry	Vegetation (pCi/kg) Wet
Na-22	0.1 - 0.3	3 - 5.2	13.7 - 29.3	3 - 5.2	5.7 - 8	5.3 - 23.8	24.2 - 83.7	26.9 - 91.3	14.2 - 46.7
K-40	2.0 - 04.0	33.5 - 56.8	86.2 - 202	34.6 - 62.3	38.8 - 66.7	41.4 - 188	143.8 - 810	156 - 840	93.4 - 380
Cr-51	1.0 - 4.0	23.2 - 35.1	77.2 - 400	26.1 - 38.6	32.2 - 47.8	31.7 - 143	539 – 1380	336 - 1423	77.2 - 320
Mn-54	0.1 - 0.2	2.8 - 4.4	13.2 - 21.1	2.8 - 4.6	4.1 - 5.9	6.8 - 31.6	31.6 - 74.1	24.6 - 81.5	10.5 - 38.5
Co-58	0.1 - 0.4	3 - 4.5	16 - 31.2	2.9 - 4.6	4.1 - 6	4.5 - 45.3	58.7 - 136	30.3 - 102	11.1 - 39.3
Fe-59	0.3 - 3.0	6.8 - 10.2	37.7 - 116	6.7 - 10.6	10.4 - 14.8	0.9 - 147	139 - 322	79.6 - 264	26.5 - 94.6
Co-60	0.1 - 0.2	3 - 4.8	15.1 - 24.3	2.9 - 4.9	4.9 - 7.2	8.3 - 33.6	27.6 - 73.8	24.5 - 78.7	13.3 - 41.1
Zn-65	0.2 - 0.5	6.2 - 9.7	37.1 - 55	6.3 - 11.6	10.7 - 15	20.2 - 71.2	69.2 - 207	74.7 - 226	29.3 - 92.1
Nb-95	0.1 - 0.7	3.3 - 4.9	13.7 - 46.8	3.5 - 5.4	4.3 - 6.2	4.4 - 19.7	73-124	48.8 - 178	11.7 - 44.6
Zr-95	0.2 - 0.5	5.2 - 7.7	20.8 - 50.5	5.1 - 8.1	7.2 - 10	7.1 - 31.7	0 - 1175	56.2 - 191	19.4 - 68.8
Ru-106	0.9 - 1.8	24 - 36.9	85.6 - 175	24.1 - 39.2	35.2 - 49.2	37.3 - 151	208 - 604	211 - 658	96.1 - 325
Ag-110m	0.1 - 0.2	2.6 - 4.1	10.1 - 20	2.7 - 4.2	3.9 - 5.3	4.3 - 17.4	23.3 - 70.7	28 - 83.3	11.2 - 35.2
I-131 [1]	0.1 – 1.4	0.5 – 0.6	0 - 3973	5.1 - 13	.3 - 1.4	5 - 37.8	644-1750	0 - 4829	6.9 - 110
Cs-134	0.1 - 0.6	2.7 - 3.9	11.7 - 16.6	2.7 - 4.3	3.7 - 5.2	10 – 14.4	39.1 - 58.2	37.2 - 73.7	13.9 - 34.2
Cs-137	0.1 - .3	3 - 4.4	13.1 - 19.7	2.8 - 4.7	4.3 - 6	10.1 – 15.6	37.6 - 62.6	38.2 - 85	15 - 38.2
Ba-140	0.7 - 8.0	4.5 - 12.3	0 - 578	6.5 - 11.1	5.1 - 10.1	6.7 - 37	0 - 108	77.3 - 1242	11.8 - 90.5
La-140	0.7 - 8.0	4.5 - 12.3	0 - 578	6.5 - 11.1	5.1 - 10.1	6.7 - 37	0 - 108	77.3 - 1242	11.8 - 90.5
Ce-144	0.1- 0.3	13.9 - 21.3	38.2 - 77.8	14.4 - 22.9	20.1 - 27	16.7 - 67.9	89.8 - 288	104.2 - 341	39.5 - 139

[1] This MDA range for I-131 on a charcoal cartridge is typically 4.16 x 10^{-3} to 3.40 x 10^{-2} pCi/m^3

Table B-11

Typical LLDs for Gamma Spectrometry

Selected Nuclides	Air Particulates 10^{-3} pCi/m3	Surface Water, Drinking Water pCi/L	Fish pCi/kg (wet)	Groundwater pCi/L	Oysters pCi/kg (wet)	Precipitation pCi/L	Soil pCi/kg (dry)	Vegetation pCi/kg (dry)
Na-22	2.9	2.9	22	2.9	22	2.9	24	35
Cr-51	12	17	88	17	88	17	110	162
Mn-54	2.1	2.4	17	2.4	17	2.4	18	27
Co-58	2	2.4	16	2.4	16	2.4	17	25
Fe-59	4.6	5.2	37	5.2	37	5.2	38	60
Co-60	2.7	2.8	22	2.8	22	2.8	21	33
Zn-65	2.8	5.6	23	5.6	23	5.6	54	66
Nb-95	1.9	2.2	15	2.2	15	2.2	18	25
Zr-95	3.3	3.8	27	3.8	27	3.8	29	44
Ru-106	17	20	135	20	135	20	146	223
Ag-110m	1.8	2.1	14	2.1	14	2.1	16	25
Te-129m	20	26	149	26	149	26	180	265
I-131*	1.5	2	11	2	11	2	14	20
Cs-134	1.9	2.2	15	2.2	15	2.2	20	24
Cs-137	1.8	2.3	15	2.3	15	2.3	17	27
Ba-140	6.1	7.3	48	7.3	48	7.3	54	80
La-140	3.4	4.1	26	4.1	26	4.1	25	41
Ce-144	5.5	12	43	12	43	12	75	101

* The LLD for I-131 measured on a charcoal cartridge is 2.0 x10^{-3} pCi/m^3

Table B-12
Direct Radiation
(Results in Units of mR/90 days +/- 1σ)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2	Onsite-Manor House Yard	11.2 ± 0.8	13.9 ± 0.7	13.4 ± 0.5	12.8 ± 0.8
3	Onsite-In field approximately 200 ft SE of station #2	11.3 ± 0.9	14.6 ± 0.9	14.8 ± 0.8	12.7 ± 0.7
4	Onsite-Training Center yard driveway circle	10.4 ± 0.6	13.3 ± 0.6	13.1 ± 0.6	11.3 ± 0.6
5	Onsite-Between creek and plant entry road	10.4 ± 0.6	14.3 ± 1.1	13.5 ± 0.5	12.4 ± 0.6
6	Onsite-SW side of plant parking lot	8.4 ± 0.5	11.5 ± 0.6	10.1 ± 0.7	10.1 ± 0.6
7	Onsite-utility pole along West plant fence	9.9 ± 0.5	13.1 ± 0.7	12.4 ± 0.5	10.7 ± 0.7
8 [1]	Topper Drive-Irondequoit, Seabreeze Substation #51	10.1 ± 0.6	12.8 ± 0.7	11.9 ± 0.5	11.2 ± 0.6
9	Phillips Road-Webster, intersection with Highway #104, Substation #74	9.5 ± 0.4	12.5 ± 0.9	11.7 ± 0.6	10.6 ± 0.5
10 [1]	Atlantic Avenue-Walworth, Substation #230	9.3 ± 0.4	11.3 ± 0.5	11.1 ± 0.8	10.4 ± 0.5
11	W. Main Street-Williamson, Substation #207	9.7 ± 0.6	12.1 ± 0.6	11.3 ± 0.4	11.1 ± 0.8
12 [1]	12 Seaman Avenue-Sodus Point-Off Lake Road by Sewer district, Substation #209	10.9 ± 0.5	14.1 ± 0.6	12.8 ± 0.5	11.4 ± 0.5
13	Onsite- South of Meteorological Tower	14.6 ± 0.5	18.6 ± 1.0	19.9 ± 0.9	20.5 ± 0.8
14	NW corner of field along lake shore	10.3 ± 0.5	13.9 ± 0.8	14.6 ± 0.5	12.9 ± 0.7
15	Field access road, west of orchard, approximately 3000' West of plant	11.8 ± 0.7	15.5 ± 0.7	14.5 ± 1.1	13.2 ± 0.6

TABLE B-12 (Continued)

Direct Radiation
(Results in Units of mR/90 days – 1σ)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
16	SW Corner of orchard, approximately 3000' West of plant, approximately 200' North of Lake Road	11.6 ± 0.7	14.7 ± 0.7	14.2 ± 0.8	13.1 ± 0.6
17	Utility pole in orchard, approximately 75" North of Lake Road	10.9 ± 0.5	14.2 ± 0.7	13.4 ± 0.5	12.2 ± 0.6
18	Approximately 30' North of NE corner of Substation 13A fence	9.2 ± 0.8	11.7 ± 0.7	11.3 ± 0.8	9.6 ± 0.4
19	On NW corner of house 100' East of plant access road	9.4 ± 0.4	11.8 ± 0.7	10.8 ± 0.4	10.5 ± 0.6
20	Approximately 150' West of Ontario Center Road and approximately 170' South of Lake Road	10.6 ± 0.5	13.6 ± 0.8	14.1 ± 0.4	12.7 ± 0.6
21	North side of Lake Road, approximately 200' East of Ontario Center Road	10.9 ± 0.6	14.1 ± 0.8	13.6 ± 0.9	12.7 ± 1.3
22	North side of Lake Road, SE, property owner	10.3 ± 0.5	12.3 ± 0.6	11.9 ± 0.4	11.1 ± 0.9
23	East property line, midway between Lake Road and Lake shore	11.3 ± 0.5	14.3 ± 0.6	13.9 ± 0.7	13.1 ± 0.9
24	Lake shore near NE corner of property	11.3 ± 0.5	14.2 ± 0.9	13.9 ± 0.6	13.0 ± 0.9
25 [1]	Substation #73, Klem Road, adjacent to 897 Klem Road	9.7 ± 0.5	12.8 ± 0.6	11.9 ± 0.4	10.8 ± 0.6
26 [1]	Service Center, Plank Road, West of 250	9.1 ± 0.5	11.4 ± 0.5	10.6 ± 0.5	9.6 ± 0.8
27 [1]	Atlantic Avenue at Knollwood Drive utility pole, North side of road	9.1 ± 0.5	13.1 ± 0.8	12.4 ± 0.5	11.0 ± 1.0
28 [1]	Substation #193, Marion, behind Stanton Ag. Service, North Main Street	9.2 ± 0.6	12.8 ± 0.9	12.1 ± 0.6	10.3 ± 0.5

TABLE B-12 (Continued)

Direct Radiation
(Results in Units of mR/90 days – 1σ)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
29 [1]	Substation #208, Town Line Road (CR-118), 1000 ' North of Route 104	9.8 ± 0.8	12.3 ± 1.0	12.0 ± 0.5	10.5 ± 0.5
30 [1]	District Office, Sodus, on pole, West side of bldg	8.6 ± 0.6	11.5 ± 0.7	10.7 ± 0.4	9.3 ± 0.5
31	Lake Road, pole 20' North of road, 500' East of Salt Road	11.4 ± 0.6	14.4 ± 0.6	15.4 ± 0.9	12.9 ± 0.7
32	Woodard Road at County Line Road, pole @ BW corner	9.9 ± 0.4	12.4 ± 0.7	12.4 ± 0.6	11.0 ± 0.5
33	County Line Road at RR tracks, pole approximately 100' East along tracks	8.9 ± 0.4	12.0 ± 0.6	11.9 ± 0.7	10.2 ± 0.6
34	Lincoln Road, pole midway between Ridge Road and Route 104	11.6 ± 0.6	14.6 ± 0.6	15.0 ± 0.5	12.9 ± 0.7
35	Transmission Right of Way, North of Clevenger Road on pole	11.2 ± 0.5	15.0 ± 0.8	15.4 ± 0.8	12.4 ± 0.9
36	Substation #205, Route 104, East of Ontario Center Road, North side of fence	9.8 ± 0.5	12.2 ± 0.6	11.9 ± 0.5	11.1 ± 0.6
37	Rail Road Avenue, pole at 2048	8.9 ± 0.5	12.2 ± 1.0	11.5 ± 0.4	9.9 ± 0.5
38	Fisher Road at RR Tracks, pole East of road	11.2 ± 0.7	13.4 ± 0.6	14.2 ± 1.0	12.3 ± 0.6
39	Seeley Road, Pole South side 100' West of intersection with Stony Lonesome Road	10.2 ± 0.6	13.2 ± 0.7	13.7 ± 0.5	12.0 ± 0.6
40	Lake Road at Stoney Lonesome Road, pole at SE corner	9.4 ± 0.6	12.0 ± 0.6	11.8 ± 0.5	10.6 ± 0.7
63	Westside of warehouse access road	10.7 ± 0.6	13.9 ± 0.8	14.6 ± 0.6	12.7 ± 0.8
64	Westside of direct road, adjacent to orchard	12.1 ± 0.6	15.9 ± 0.8	15.6 ± 0.5	13.6 ± 0.6

1 - Control Location

TABLE B-13

Groundwater Monitoring Wells

Location	Sample Date	Tritium (uCi/ml)	Gamma (uCi/ml)
GW01: Warehouse Access Road (Control)	3/18/2016	<5.00E-07	<2.00E-06
	6/24/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/22/2016	<5.00E-07	<2.00E-06
GW03: Screenhouse West, South Well	1/22/2016	<5.00E-07	<2.00E-06
	2/10/2016	<5.00E-07	<2.00E-06
	3/18/2016	<5.00E-07	<2.00E-06
	4/22/2016	<5.00E-07	<2.00E-06
	5/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	7/21/2016	<5.00E-07	<2.00E-06
	8/31/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	10/20/2016	<5.00E-07	<2.00E-06
	11/18/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06
GW04: Screenhouse West, North Well	3/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06
GW05: Screenhouse East, South (15.5')	3/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06
GW06: Screenhouse East, Middle (20.0')	3/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06
GW07: Screenhouse East, North (24.0')	3/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06

TABLE B-13 (Continued)

Groundwater Monitoring Wells

Location	Sample Date	Tritium (uCi/ml)	Gamma (uCi/ml)
GW08: All Volatiles Treatment Building	1/22/2016	<5.00E-07	<2.00E-06
	2/10/2016	<5.00E-07	<2.00E-06
	3/18/2016	<5.00E-07	<2.00E-06
	4/22/2016	<5.00E-07	<2.00E-06
	5/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	7/21/2016	<5.00E-07	<2.00E-06
	8/31/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	10/20/2016	<5.00E-07	<2.00E-06
	11/18/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06
GW10: Technical Support Center, South	3/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06
GW11: Southeast of Contaminated Service Building (CSB)	3/18/2016	<5.00E-07	<2.00E-06
	6/10/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/21/2016	<5.00E-07	<2.00E-06
GW12: West of Orchard Access Road	3/18/2016	<5.00E-07	<2.00E-06
	6/24/2016	<5.00E-07	<2.00E-06
	12/22/2016	<5.00E-07	<2.00E-06
GW13: North of Independent Spent Fuel Storage Installation (ISFSI)	3/18/2016	<5.00E-07	<2.00E-06
	6/24/2016	<5.00E-07	<2.00E-06
	12/22/2016	<5.00E-07	<2.00E-06
GW14: South of Canister Preparation Building	3/18/2016	<5.00E-07	<2.00E-06
	6/24/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/22/2016	<5.00E-07	<2.00E-06

TABLE B-13 (Continued)

Groundwater Monitoring Wells

Location	Sample Date	Tritium (uCi/ml)	Gamma (uCi/ml)
GW15: West of Manor House	3/18/2016	<5.00E-07	<2.00E-06
	6/24/2016	<5.00E-07	<2.00E-06
	9/9/2016	<5.00E-07	<2.00E-06
	12/22/2016	<5.00E-07	<2.00E-06
GW16: Southeast of Manor House	3/18/2016	<5.00E-07	<2.00E-06
	6/24/2016	<5.00E-07	<2.00E-06
	12/22/2016	<5.00E-07	<2.00E-06

APPENDIX C

Quality Assurance Program

Summary of Appendix C Content:

Appendix C is a summary of Exelon Industrial Services (EIS) Laboratory's quality assurance program. Table C-1 is a compilation of results from the inter-laboratory comparison program between EIS Laboratory, Environmental Resource Associates (ERA) located in Arvada, Colorado and Eckert and Ziegler Analytics Inc. located in Atlanta, Georgia. Table C-2, is a compilation of the results of the EIS laboratory's quality assurance analysis of laboratory duplicates and split samples with Teledyne Brown Engineering located in Knoxville, Tennessee. Table C-3, is a list of typical MDAs achieved by Teledyne Brown for Gamma Spectroscopy.

All the EIS Laboratory's results contained in Table C-1 generally agree with the inter-comparison laboratory's results within the range of ±2 σ of each other. In addition, all the sets of inter-comparison results in the table are in full agreement when they were further evaluated using the NRC Resolution Test Criteria [1]. The uncertainties for the Constellation Energy laboratory's results and Analytics' results are ±2σ while the ERA laboratory's uncertainty is based on USEPA guidelines [2].

All the results contained in Table C-2 agree within the range of ±2σ of each other with their respective EIS Laboratory original, replicate and/or Teledyne Brown Engineering's split laboratory samples. The comparisons of two samples involving Cs-137 results: bottom sediment sample at WBS4 collected on 6/14/16 and soil at SFS5 collected on 9/26/16 were in full agreement. The original and replicate analysis of the bottom sediment sample at WBS4 collected on 6/14/16 agrees within ±2 σ of each other. Low level Cs-137 was observed in the comparison set for SFS5 collected on 9/26/16 in the original, duplicate and split lab sample. Results are in agreement within ±2 σ of each other. Other samples whose nature generally preclude sample splitting are marked "**" in the Split Analysis column.

[1] NRC Inspection Manual, Inspection Procedure 84750, March 15, 1994
[2] National Standards for Water Proficiency Testing Studies Criteria Document, December 1998

TABLE OF CONTENTS - ANALYTICAL RESULTS

TABLE C-1

Results of Participation in Cross Check Program

Sample Date	Sample Type and Units	Isotope Observed	Reported Laboratory's Results	Cross Check Lab Results
3/17/2016	Air Iodine - pCi/m^3	I-131	76.0 +/- 7.0	88.3 +/- 1.5
3/17/2016	Milk - pCi/L	Co-60	259 +/- 9.0	244 +/- 4.1
		Zn-65	195 +/- 17.0	179 +/- 3.0
		I-131	89.0 +/- 24.0	82.2 +/- 1.4
		Cs-137	164 +/- 10.0	161 +/- 2.7
		Fe-59	145 +/- 13.0	131 +/- 2.2
		Cs-134	111 +/- 6.0	130 +/- 2.2
		Ce-141	104 +/- 10.0	98.4 +/- 1.6
		Cr-51	243 +/- 53.0	243 +/- 4.1
		Co-58	115 +/- 9.0	117 +/- 2.0
		Mn-54	127 +/- 9.0	117 +/- 2.0
3/17/2016	Water - pCi/L	Gross Beta	239 +/- 3.2	251 +/- 4.2
4/4/2016	Water - pCi/L	H-3	7748	7840
4/4/2016	Water - pCi/L	Ba-133	51.6 +/- 5.0	58.8
		Cs-137	77.5 +/- 7.0	78.4
		Cs-134	40.5 +/- 4.0	43.3
		Zn-65	234 +/- 19.0	214
		I-131	25.6 +/- 4.1	26.6
		Co-60	101 +/- 6.0	102
6/6/2016	Air Filter – pCi/m^3	Fe-59	93.0 +/- 11.0	85.7 +/- 1.4
		Co-58	94.0 +/- 10.0	100 +/- 1.7
		Co-60	125 +/- 9.0	121 +/- 2.0
		Zn-65	189 +/- 21.0	166 +/- 2.8
		Mn-54	92.0 +/- 9.0	88.3 +/- 1.5
		Cr-51	204 +/- 35.0	194 +/- 3.2
		Cs-137	82.0 +/- 9.0	84.8 +/- 1.4
		Ce-141	97.0 +/- 6.0	97.6 +/- 1.6
		Cs-134	99.0 +/- 6.0	123 +/- 2.1
6/6/2016	Water - pCi/L	Cr-51	299 +/- 90.0	292 +/- 48.7
		Ce-141	148 +/- 15.0	147 +/- 2.5
		Cs-137	129 +/- 14.0	128 +/- 2.1
		Cs-134	188 +/- 15.0	185 +/- 3.1
		Zn-65	265 +/- 33.0	249 +/- 4.2
		Co-60	191 +/- 14.0	183 +/- 3.1
		Co-58	148 +/- 16.0	151 +/- 2.5
		Fe-59	140 +/- 19.0	129 +/- 2.2
		Mn-54	139 +/- 16.0	133 +/- 2.2
		I-131	99.0 +/- 15	96.7 +/- 1.6
6/6/2016	Water – pCi/L	Gross Beta	237 +/- 3	249 +/- 4
7/11/2016	Water – pCi/L	H-3	12411	12400
9/15/2016	Air Filter - pCi/m^3	Gross Beta	64.2 +/- 2.0	67.2 +/- 1.1

TABLE C-1 - Continued

Results of Participation in Cross Check Program

Sample Date	Sample Type and Units	Isotope Observed	Reported Laboratory's Results	Cross Check Lab Results
9/19/2016	Air Filter - pCi/m^3	Zn-65	1202 +/- 46.0	1202
		Cs-134	470 +/- 16.0	614
		Cs-137	1077 +/- 28.0	1170
		Co-60	870 +/- 20.0	900
		Am-241	53.3 +/- 17.0	42.3
10/7/2016	Water - pCi/L	Co-60	67.7 +/- 6.0	64.5
		Zn-65	258 +/- 21.0	245
		Cs-134	82.0 +/- 7.0	81.8
		Cs-137	214 +/- 12.0	210
		Ba-133	52.8 +/- 6.0	54.9
10/7/2016	Water - pCi/L	I-131	27.7 +/- 7.0	26.3

TABLE C-2

Results of Quality Assurance Program

Sample Type and Location [2]	Sample Date	Type of Analysis	Result Units	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - A1	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.6 +/- 0.1	**
Air Filter - A2	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.5 +/- 0.1	**
Air Filter - A3	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.6 +/- 0.1	**
Air Filter - A4	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.5 +/- 0.1	**
Air Filter - A5	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.5 +/- 0.1	**
Air Filter - SFA1	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.6 +/- 0.1	**
Air Filter - SFA2	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.6 +/- 0.1	**
Air Filter - SFA3	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.7 +/- 0.1	**
Air Filter - SFA4	1/4/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.7 +/- 0.1	**
Air Iodine - A1	1/4/2016	I-131	pCi/m^3	<MDA	<MDA	**
Air Iodine - A2	1/4/2016	I-131	pCi/m^3	<MDA	<MDA	**
Air Iodine - A3	1/4/2016	I-131	pCi/m^3	<MDA	<MDA	**
Air Iodine - A4	1/4/2016	I-131	pCi/m^3	<MDA	<MDA	**
Air Iodine - A5	1/4/2016	I-131	pCi/m^3	<MDA	<MDA	**
Air Filter - A1	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - A2	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - A3	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - A4	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - A5	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - SFA1	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - SFA2	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - SFA3	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - SFA4	2/1/2016	Gamma	pCi/m^3	<MDA	<MDA	<MDA
Air Filter - A1	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.5 +/- 0.1	**
Air Filter - A2	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.4 +/- 0.1	**
Air Filter - A3	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.5 +/- 0.1	**
Air Filter - A4	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.5 +/- 0.1	**
Air Filter - A5	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.6 +/- 0.1	**
Air Filter - SFA1	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.6 +/- 0.1	**
Air Filter - SFA2	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.3 +/- 0.1	1.4 +/- 0.1	**
Air Filter - SFA3	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.5 +/- 0.1	**
Air Filter - SFA4	2/8/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.6 +/- 0.1	**

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location (2)	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Iodine - A1	2/8/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	2/8/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	2/8/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	2/8/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	2/8/2016	I-131	pCi/m^3	<MDA	<MDA
Air Filter - SFA1	3/14/2016	Gross Beta	10^{-2} pCi/m^3	1.7 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA2	3/14/2016	Gross Beta	10^{-2} pCi/m^3	1.7 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA3	3/14/2016	Gross Beta	10^{-2} pCi/m^3	1.7 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA4	3/14/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.7 +/- 0.1
Air Filter - A1	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.6 +/- 0.1
Air Filter - A2	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.6 +/- 0.1
Air Filter - A3	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.7 +/- 0.1
Air Filter - A4	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.6 +/- 0.1
Air Filter - A5	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.7 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA1	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.7 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA2	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.5 +/- 0.1
Air Filter - SFA3	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA4	3/28/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.7 +/- 0.1
Air Iodine - A1	3/29/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	3/29/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	3/29/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	3/29/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	3/29/2016	I-131	pCi/m^3	<MDA	<MDA
Oysters - IA3	3/29/2016	Gamma	pCi/kg	<MDA	<MDA
Oysters - IA6	3/29/2016	Gamma	pCi/kg	<MDA	<MDA
Bay Water - WA1	4/1/2016	Gamma	pCi/L	<MDA	<MDA
Bay Water - WA2	4/1/2016	Gamma	pCi/L	<MDA	<MDA
Air Filter - A1	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.9 +/- 0.1	1.8 +/- 0.1
Air Filter - A2	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.9 +/- 0.1	1.7 +/- 0.1
Air Filter - A3	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.9 +/- 0.1	1.8 +/- 0.1
Air Filter - A4	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.8 +/- 0.1	1.8 +/- 0.1
Air Filter - A5	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.9 +/- 0.1	2.0 +/- 0.1

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location (2)	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - SFA1	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.9 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA2	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.8 +/- 0.1	1.7 +/- 0.1
Air Filter - SFA3	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.9 +/- 0.1	1.9 +/- 0.1
Air Filter - SFA4	4/4/2016	Gross Beta	10^{-2} pCi/m^3	1.9 +/- 0.1	1.7 +/- 0.1
Shoreline Sediment - WB1	4/5/2016	Gamma	pCi/kg	<MDA	<MDA
Air Iodine - A1	4/18/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	4/18/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	4/18/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	4/18/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	4/18/2016	I-131	pCi/m^3	<MDA	<MDA
Air Filter - A1	5/9/2016	Gross Beta	10^{-2} pCi/m^3	0.9 +/- 0.1	0.8 +/- 0.1
Air Filter - A2	5/9/2016	Gross Beta	10^{-2} pCi/m^3	0.9 +/- 0.1	0.8 +/- 0.1
Air Filter - A3	5/9/2016	Gross Beta	10^{-2} pCi/m^3	0.9 +/- 0.1	0.9 +/- 0.1
Air Filter - A4	5/9/2016	Gross Beta	10^{-2} pCi/m^3	0.9 +/- 0.1	0.9 +/- 0.1
Air Filter - A5	5/9/2016	Gross Beta	10^{-2} pCi/m^3	1.1 +/- 0.1	0.9 +/- 0.1
Air Filter - SFA1	5/9/2016	Gross Beta	10^{-2} pCi/m^3	0.9 +/- 0.1	0.8 +/- 0.1
Air Filter - SFA2	5/9/2016	Gross Beta	10^{-2} pCi/m^3	1.0 +/- 0.1	0.9 +/- 0.1
Air Filter - SFA3	5/9/2016	Gross Beta	10^{-2} pCi/m^3	0.8 +/- 0.1	0.7 +/- 0.1
Air Filter - SFA4	5/9/2016	Gross Beta	10^{-2} pCi/m^3	0.8 +/- 0.1	0.8 +/- 0.1
Air Iodine - A1	5/9/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	5/9/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	5/9/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	5/9/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	5/9/2016	I-131	pCi/m^3	<MDA	<MDA
Air Filter - A1	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.4 +/- 0.1
Air Filter - A2	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.4 +/- 0.1
Air Filter - A3	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.3 +/- 0.1	1.4 +/- 0.1
Air Filter - A4	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.3 +/- 0.1
Air Filter - A5	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.5 +/- 0.1
Air Filter - SFA1	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.3 +/- 0.1	1.2 +/- 0.1
Air Filter - SFA2	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.3 +/- 0.1	1.2 +/- 0.1
Air Filter - SFA3	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.3 +/- 0.1	1.3 +/- 0.1
Air Filter - SFA4	6/6/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.3 +/- 0.1

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location [2]	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Iodine - A1	6/6/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	6/6/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	6/6/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	6/6/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	6/6/2016	I-131	pCi/m^3	<MDA	<MDA
Misc ground coverage - SFB1	6/7/2016	Gamma	pCi/kg	<MDA	**
Misc ground coverage - SFB2	6/7/2016	Gamma	pCi/kg	<MDA	**
Soil - SFS1	6/7/2016	Gamma	pCi/kg	<MDA	<MDA
Soil - SFS2	6/7/2016	Gamma	pCi/kg	<MDA	<MDA
Bottom sediment - WBS2	6/14/2016	Gamma	pCi/kg	<MDA	<MDA
Bottom sediment - WBS4 [1]	6/14/2016	Cs-137	pCi/kg	148.1 +/- 66.0	119.4 +/- 47.6
Oysters - IA3	6/14/2016	Gamma	pCi/kg	<MDA	<MDA
Oysters - IA6	6/14/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - A1	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - A2	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - A3	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - A4	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - A5	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - SFA1	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - SFA2	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - SFA3	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Air Filter - SFA4	6/27/2016	Gamma	pCi/kg	<MDA	<MDA
Brussels sprouts - IB1	06/28/16	Gamma	pCi/kg	<MDA	<MDA
Brussels sprouts - IB4	06/28/16	Gamma	pCi/kg	<MDA	<MDA
Brussels sprouts - IB7	06/28/16	Gamma	pCi/kg	<MDA	<MDA
Bay Water - WA2	7/1/2016	Gamma	pCi/L	<MDA	<MDA
Bay Water - WA1	7/1/2016	Gamma	pCi/L	<MDA	<MDA
Air Iodine - A1	7/4/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	7/4/2016	I-131	pCi/m^3	<MDA	<MDA

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location [2]	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Iodine - A3	7/4/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	7/4/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	7/4/2016	I-131	pCi/m^3	<MDA	<MDA
Collards - IB1	7/26/2016	Gamma	pCi/kg	<MDA	<MDA
Collards - IB4	7/26/2016	Gamma	pCi/kg	<MDA	<MDA
Collards - IB7	7/26/2016	Gamma	pCi/kg	<MDA	<MDA
Oysters - IA3	8/17/2016	Gamma	pCi/kg	<MDA	<MDA
Oysters - IA6	8/17/2016	Gamma	pCi/kg	<MDA	<MDA
Striped bass - IA1	8/17/2016	Gamma	pCi/kg	<MDA	<MDA
Striped bass - IA5	8/17/2016	Gamma	pCi/kg	<MDA	<MDA
Air Iodine - A1	8/22/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	8/22/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	8/22/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	8/22/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	8/22/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A1	9/5/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	9/5/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	9/5/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	9/5/2016	I-131	pCi/m^3	<MDA	<MDA
Misc ground coverage - SFB4	9/26/2016	Gamma	pCi/kg	<MDA	<MDA
Misc ground coverage - SFB5	9/26/2016	Gamma	pCi/kg	<MDA	<MDA
Soil - SFS4	9/26/2016	Gamma	pCi/kg	<MDA	<MDA
Soil - SFS5 [2]	9/26/2016	Cs-137	pCi/kg	73.0 +/- 26.7	64.7 +/- 25.4
Air Filter - A1	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.5 +/- 0.1
Air Filter - A2	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.6 +/- 0.1
Air Filter - A3	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.7 +/- 0.1	1.5 +/- 0.1
Air Filter - A4	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.6 +/- 0.1	1.6 +/- 0.1
Air Filter - A5	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.6 +/- 0.1
Air Filter - SFA1	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.3 +/- 0.1
Air Filter - SFA2	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.4 +/- 0.1
Air Filter - SFA3	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.4 +/- 0.1	1.3 +/- 0.1
Air Filter - SFA4	10/10/2016	Gross Beta	10^{-2} pCi/m^3	1.5 +/- 0.1	1.3 +/- 0.1
Air Iodine - A1	10/10/2016	I-131	pCi/m^3	<MDA	<MDA

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location (2)	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Iodine - A2	10/10/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	10/10/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	10/10/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	10/10/2016	I-131	pCi/m^3	<MDA	<MDA
Oysters - IA3	10/20/2016	Gamma	pCi/kg	<MDA	<MDA
Oysters - IA6	10/20/2016	Gamma	pCi/kg	<MDA	<MDA
Shoreline sediment - WB1	10/25/2016	Gamma	pCi/kg	<MDA	<MDA
Bay Water - WA1	10/31/2016	Gamma	pCi/L	<MDA	<MDA
Bay Water - WA2	10/31/2016	Gamma	pCi/L	<MDA	<MDA
Air Iodine - A1	11/7/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	11/7/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	11/7/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	11/7/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	11/7/2016	I-131	pCi/m^3	<MDA	<MDA
Air Filter - A1	11/21/2016	Gross Beta	10^{-2} pCi/m^3	3.8 +/- 0.2	4.0 +/- 0.2
Air Filter - A2	11/21/2016	Gross Beta	10^{-2} pCi/m^3	3.8 +/- 0.2	3.7 +/- 0.2
Air Filter - A3	11/21/2016	Gross Beta	10^{-2} pCi/m^3	3.3 +/- 0.2	3.4 +/- 0.2
Air Filter - A4	11/21/2016	Gross Beta	10^{-2} pCi/m^3	4.0 +/- 0.2	3.8 +/- 0.2
Air Filter - A5	11/21/2016	Gross Beta	10^{-2} pCi/m^3	38.0 +/- 0.5	3.6 +/- 0.2
Air Filter - SFA1	11/21/2016	Gross Beta	10^{-2} pCi/m^3	3.7 +/- 0.2	3.7 +/- 0.2
Air Filter - SFA2	11/21/2016	Gross Beta	10^{-2} pCi/m^3	4.0 +/- 0.2	4.0 +/- 0.2
Air Filter - SFA3	11/21/2016	Gross Beta	10^{-2} pCi/m^3	3.7 +/- 0.2	3.7 +/- 0.2
Air Filter - SFA4	11/21/2016	Gross Beta	10^{-2} pCi/m^3	3.5 +/- 0.2	3.5 +/- 0.2
Bay Water - WA1	12/2/2016	Gamma	pCi/L	<MDA	<MDA
Bay Water - WA2	12/2/2016	Gamma	pCi/L	<MDA	<MDA
Air Filter - A1	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.0 +/- 0.1	2.1 +/- 0.1
Air Filter - A2	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.0 +/- 0.1	2.2 +/- 0.1
Air Filter - A3	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.0 +/- 0.1	2.2 +/- 0.1
Air Filter - A4	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.2 +/- 0.1	2.4 +/- 0.1
Air Filter - A5	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.0 +/- 0.1	2.2 +/- 0.1
Air Filter - SFA1	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.1 +/- 0.1	2.3 +/- 0.1
Air Filter - SFA2	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.0 +/- 0.1	2.3 +/- 0.1
Air Filter - SFA3	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.0 +/- 0.1	2.0 +/- 0.1
Air Filter - SFA4	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.1 +/- 0.1	2.2 +/- 0.1

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location [2]	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - A1	12/5/2016	Gross Beta	10^{-2} pCi/m^3	2.0 +/- 0.1	2.1 +/- 0.1
Air Iodine - A1	12/5/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A2	12/5/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A3	12/5/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A4	12/5/2016	I-131	pCi/m^3	<MDA	<MDA
Air Iodine - A5	12/5/2016	I-131	pCi/m^3	<MDA	<MDA

[1] See discussion at the beginning of the Appendix
[2] Results reported for Air samples I-131 and Beta are in 10^{-2} pCi/m3. All Vegetation and Soil, Oysters and Fish are in pCi/Kg. All water and milk are in pCi/L, TLD are in mR/90 Day
** The nature of these samples precluded splitting them with an independent laboratory.
# All Non-natural Gamma Emitters are <MDA

Table C-3

Teledyne Brown Engineering's Typical MDAs for Gamma Spectrometry

Selected Nuclides	Bay Water pCi/l	Fish pCi/kg	Shellfish pCi/kg	Sediment pCi/kg	Vegetation pCi/kg	Particulates 10^{-3}pCi/m^3
H-3	175	--	--	--	--	--
Na-22	1	8	3	12	6	5
Cr-51	12	105	4	104	50	63
Mn-54	1	9	3	12	5	4
Co-58	1	9	4	9	4	5
Fe-59	3	28	9	24	10	12
Co-60	1	9	4	12	5	6
Zn-65	2	20	8	25	10	9
Nb-95	1	12	7	14	6	9
Zr-95	2	18	8	20	9	9
Ru-106	9	75	30	90	41	40
Ag-110m	1	10	10	10	5	4
Te-129m	16	131	60	162	79	95
I-131	4	65	30	35	22	74
Cs-134	1	8	4	10	5	4
Cs-137	1	9	4	10	5	4
BaLa-140	3	32	15	25	14	36
Ce-144	7	40	16	54	26	18

APPENDIX D

Land Use Survey

Summary of Appendix D Content:

Appendix D contains the results of a Land Use Survey conducted around R.E. Ginna Nuclear Power Plant during this operating period. A discussion of the results is included in Section 3.4 of this report.

TABLE OF CONTENTS - LAND USE SURVEY

TABLE D-1

Land Use Survey Distances

Sector (Direction in Degrees)	Distance to Nearest Residence	Distance to Nearest Garden (Latitude N, Longitude W)	Distance to Milk Producing Animals (Latitude N, Longitude W)
E (94)	1170 m	610 m Onsite Supplemental Garden (43.27727, 77.30140)	N/A
ESE (111)	1660 m	430 m Onsite Garden (43.27627, 77.30389)	N/A
ESE (119)	840 m	N/A	8240 m (43.24196, 77.21978)
SSE (145)	610 m	660 m Onsite Supplemental Garden (43.27278, 77.30413)	N/A
S	1500 m	N/A	N/A
SSW	620 m	N/A	N/A
SW	740 m	N/A	N/A
WSW	1470 m	N/A	N/A
W	2420 m	N/A	N/A

Discussion

A Land Use Survey was conducted to identify, within a distance of five miles, the location of the nearest milk animal, the nearest residence, and the nearest garden greater than 500 square feet in each of the nine sectors over land. A detailed description of the Land Use Survey is given in a separate attachment. The position of the nearest residence and garden and animals producing milk for human consumption in each sector out to five miles is given in the above Table D-1.

Changes from Previous Years:

- Development of single family homes occurred over the past year.
- No new agricultural land use was noted.
- No new food producing facilities were noted.

Milk Animal Locations

- Gerber Farm – 450 Boston Road, Ontario NY
- Eaton Farms – 6747 Salmon Creek Road, Williamson NY
- No new milk producing animals were identified in the 2016 survey.