Enclosure (2)

Annual Radiological Environmental Operating Report: January 1, 2010 - December 31, 2010

CENG

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ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT: JANUARY 1, 2010 – DECEMBER 31, 2010

MAY 2011

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

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. EXECUTIVE SUMMARY

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

Operation of the R.E. Ginna Nuclear Power Plant produced radioactivity and ambient radiation levels significantly below the limits of the Offsite Dose Calculation Manual (ODCM) and 40 CFR 190. The analytical results from the 2010 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 2010 results are consistent with data for the past five years and exhibited no detectable increases or adverse trends.

2. INTRODUCTION

2.1 Station Description

The R.E. Ginna Nuclear Power Plant (Ginna), owned by Constellation Energy Nuclear Group, LLC (CENG), 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 2009 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, Lake Ontario water, and Deer Creek water. 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 CENG personnel or its contractors in accordance with Ginna procedures (Ref. 3).

During 2010, 1270 samples were collected for analysis by gross beta counting and/or gamma spectroscopy. These included 64 surface water samples, 17 fish samples, 5 sediment samples, 634 air particulate samples, 317 air iodine samples, 160 dosimeter measurements, 38 milk samples, and 35 vegetation samples. Deviations from the REMP sampling schedule are described in section 3.5. The minimum number of samples required by the ODCM was collected 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), Stanford Dosimetry in Sterling Massachusetts (direct radiation samples), or Constellation Energy's 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 "less than" the MDA value. Typical MDA values are listed in Appendix B, Table B-10.

3.3 Quality Assurance Program

Appendix C provides a summary of Constellation Energy Ft. Smallwood Laboratory's quality assurance program for 2010. It consists of Table C-1, which represents a compilation of the results of the Constellation Energy Ft. Smallwood Laboratory's participation in an intercomparison program with Environmental Resource Associates (ERA) located in Arvada, Colorado and Analytics, Inc. located in Atlanta, Georgia. Table C-2 complies the results of the Constellation Energy Ft. Smallwood Laboratory's participation in a split sample program with Teledyne Brown Engineering located in Knoxville, Tennessee. All Constellation Energy Ft. Smallwood Laboratory's results contained in Tables C-1 and C-2 agree with the intercomparison laboratory's results within the range of $\pm 2\ \sigma$ of each other.

Table C-3 identifies a list of typical MDA's achieved by Teledyne Brown for Gamma Spectroscopy.

3.4 Land Use Survey

In September 2010, a Land Use Survey was conducted to identify the location of the nearest milk animal, the nearest residence, and the nearest garden greater than 50 square meters in each of the nine sectors within a 5-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-3.

The following land use changes were occurred over the past year within a 5-mile radius of the power plant:

- The closest dwelling in the SE sector is located on Ginna property. The tenant has vacated the house at this location and will no longer be available for occupancy by a member of the public. Accordingly, the distance to nearest residence in the SE sector has been revised.
- The Monroe County Water Authority (MCWA) has begun construction of a new municipal water treatment facility on Lake Road between Salt Road and Basket Road. While this facility not yet in service, its construction will be tracked and added to the REMP upon completion.
- The construction of new single family homes was observed sporadically.
- 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:

1. February 23, 2010: The air sampler at Environmental Monitoring Station #5 was found off. The ground fault interrupter (GFI) was successfully reset. Approximately 142 cubic meters of air was collected by this air sampler during the sampling period. The volume of air collected during this period meets the minimum sample volume requirements.
2. April 27, 2010: The air sampler at Environmental Monitoring Station #3 was found off. The GFI was successfully reset. Approximately 19 cubic meters of air was collected by this air sampler during the sampling period.
3. May 11, 2010: The air sampler at Environmental Monitoring Station #9 was found off. The GFI was successfully reset. Approximately 181 cubic meters of air was collected by this air sampler during the sampling period. The volume of air collected during this period meets the minimum sample volume requirements.
4. June 8, 2010: The surface water sample source at the Monroe County Water Authority's (MCWA's) Low Lift Station in Greece, NY was temporarily drained for maintenance and zebra mussel debris removal. Accordingly, a weekly composite surface water sample

could not be taken. In lieu of the weekly composite sample, a grab sample was collected nearby in Lake Ontario at the mouth of Slater Creek.

5. June 14, 2010: The dosimeter at Environmental Monitoring Station #42 was found on the ground facing upward. The dosimeter was determined to be undamaged and was reattached in a more secure manner.
6. July 15, 2010: Milk samples were returned to Ginna by UPS following an apparent shipping error. New milk samples were obtained on July 15, 2010 and successfully shipped along with the initially collected July 13, 2010 samples to vendor laboratory for analysis. The July 15, 2010 samples were collected outside the allowable 15 day collection period specified in the ODCM.
7. July 27, 2010: Following an intense rain event, the charcoal air filter at Environmental Monitoring Station #8 was found in a water-saturated condition. The filter represents the July 19, 2010 through July 26, 2010 sampling period.
8. July 27, 2010: The air sampler at Environmental Monitoring Station #2 was found off. The GFI was successfully reset. Approximately 19 cubic meters of air were collected by this air sampler during the sampling period.
9. September 13, 2010: The air sampler at Environmental Monitoring Station #9 was found off. The GFI initially could not be reset and required maintenance. Approximately 254 cubic meters of air was collected by this air sampler during the sampling period. The volume of air collected during this period meets the minimum sample volume requirements.

3.6 Corrections to Previous Reports

A typographical error was identified in the 2008 Annual Radioactive Effluent Operating Report. On page 3, the May 12, 2008 Program Exemption references Environmental Monitoring Station #1 rather than Environmental Monitoring Station #11. The text should read as follows:

2. May 12, 2008: The air sampler at **Environmental Monitoring Station #11** was found off. The ground (GFI) was successfully reset. Approximately 60 cubic meters of air were collected by this air sampler during the May 2008 sampling period for this air sampler.

   [Bold text added for emphasis]

4. RESULTS AND DISCUSSIONS

All environmental samples collected during the year were analyzed in accordance with Constellation Energy 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 four 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, aquatic organisms, and shoreline sediment. These samples were obtained from various sampling locations near the plant.

4.1.a Surface and Drinking Water

Samples are collected weekly from Lake Ontario, upstream (Russell Station or Monroe County Water Authority - Shoremont) and downstream (Ontario Water District Plant - OWD), composited monthly, and analyzed for gross beta activity (Table B-1). There was no statistically significant difference between the upstream and downstream sample concentrations. The 2010 gross beta averages for the upstream and downstream samples were 2.05 pCi/liter and 2.02 pCi/liter, respectively. Gamma isotopic analysis of the monthly composite samples showed no statistically significant difference in activity between the upstream and downstream samples.

Weekly samples are taken from the plant circulating water intake (Circ In) and discharge canal (Circ Out), and composited monthly. The 2010 averages were 2.06 pCi/liter and 2.03 pCi/liter for the intake and discharge canal respectively. Gamma isotopic analysis of the monthly composite samples showed no statistically significant difference in activity between the Circ In and Circ Out samples.

Samples of Deer Creek, which transects the site from west to east, are collected and analyzed monthly. The average gross beta concentration seen in the Deer Creek samples was 4.54 PCi/liter. Historically, Deer Creek gross beta values are typically higher than other surface water samples due to Radon progeny in the soils from which the creek recharges and over which the creek flows.

Gamma isotopic analysis including I-131 is performed on each monthly composite sample. These are listed in Table B-1 and are separated by source of sample. No anomalous results were noted. The analysis allows the determination of Iodine-131 activity of < 1 pCi/liter. Any positive counts and the 1 sigma error are reported. During 2010, no sample results indicated detection of I-131 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 2010, no surface water or drinking water sample results indicated tritium activity.

In June 2010, Hydroqual, Inc. completed an evaluation titled "R.E. Ginna Nuclear Power Plant Tracer Dilution Study for the Town of Ontario Muncipal Drinking Water Intake." This report was initiated as part of an effort to update the dilution factors used for conservative substances originating from the R. E. Ginna Nuclear Power Plant (Ginna) cooling water discharge and travelling to the Town of Ontario Water District's municipal drinking water intake structure (Ontario Water District Intake, hereafter), located approximately 1.3 miles northeast of Ginna. Hydroqual's computer model included numerous inputs that potentially effect dilution, including lake water elevation, three dimensional current, diffusion, and temperature variations. Annual average dilution factors at the Ontario Water District Intake were determined to be approximately 1:320 and 1:360 at the surface and bottom, respectively. All monthly average dilution factors at the bottom of the lake were determined to be greater than or equal to 1:200. Conservatively, Ginna implemented an annual effluent dilution factor of 1:200 for the Town of Ontario Muncipal Drinking Water Intake in its ODCM.

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 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 environmental staff and are analyzed by gamma spectroscopy after being held for periods of less than one week 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 2010, none of the indicator samples indicated activity other than naturally occurring radionuclides. Trace levels of Cesium-137 consistent with background levels was identified in one sample collected at a control location. There was no significant differences 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, along with benthic sediment from Lake Ontario. During 2010, there was no indication in the samples of any activity other than naturally occurring radionuclides and trace levels of Cesium-137 consistent with background levels.

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 150 to 420 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 690 meters, and two others offsite at approximately 7 miles. In addition, there are three sampling stations located approximately 7 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 sampler 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 0.0220 pCi/m^3 and the averages for the indicator samples (i.e., onsite sampling locations) was 0.0214 pCi/m^3 for the period of January to December 2010. Maximum weekly concentrations for all control stations and all indicator stations were 0.043 and 0.041 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 ten miles from the plant.

4.3.a Vegetation

There was no indication in the samples of any activity other than naturally occurring radionuclides and trace levels of Cesium-137 consistent with background levels. 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 2010. 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 for major fission products.

All positive counts and the ±1 sigma error are reported. During 2010, no samples indicated I-131 activity that exceeded the LLD for the analysis. Samples from both the indicator and control farms indicated trace Cesium-137 activity at or near detection limits with high uncertainty. There was no significant differences in the Cesium-137 activity in the indicator farm in comparison to the control farm.

Table B-9 provides a listing of all samples collected during 2010 with analytical results.

4.4 Direct Radiation

In 2010, two new direction radiation sampling locations were added to the REMP program to monitor fence-line direct radiation levels to the west and southwest of the plant, Environmental Sampling Locations 63 and 64. These sampling locations, which began monitoring during the third quarter of 2010, were added as a result of the newly constructed Independent Spent Fuel Storage Installation (ISFSI) located west-northwest of the plant. Ginna's ISFSI loading began receiving spent fuel in July 2010. Each of these sampling locations is described in Table A-1 and identified in Figure A-2.

A review of the analytical results shows that Environmental Sampling Stations 7, 13, and 14 (i.e., those dosimeters located closest to the ISFSI) received an average quarterly dose of 13.3 milli-

Rem (mRem/qtr) before the ISFSI had received fuel (i.e., the first half of 2010). Environmental Sampling Stations 7, 13, and 14 received an average quarterly dose of 13.0 mRem/qtr after the ISFSI had received fuel (i.e., the second half of 2010). Environmental Station 13, the closest sampling location to the ISFSI, received an average dose of 12.4 mRem/quarter during the first half of 2010 and an average of 12.8 mRem/qtr during the second half of 2010. All onsite indicators averaged 13.0 mRem/qtr. There are no significant differences in the direct radiation received from those dosimeters closest to the ISFSI and other onsite and boundary sampling locations.

Dosimeters with a sensitivity of 5 millirem/quarter are placed as part of the environmental monitoring program. Thirty-nine 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 3 months exposure. Direct radiation readings at locations #7 and #13 are influenced by close proximity to radioactive equipment storage areas and will normally read slightly higher than other locations.

For the year of 2010, the average, minimum, and maximum exposure readings was as follows:

Monitoring Group	Average (mrem/qtr)	Min. (mrem/qtr)	Max (mrem/qtr)
Onsite Indicators	13.0	9.5	16.5
Site Boundary Indicators	13.0	9.9	16.5
Offsite Indicators	12.1	9.0	15.4
Control Locations	11.5	9.5	13.4

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 46.0 millirem annually), while the highest total annual dosimeter reading at an individual site boundary environmental monitoring location (56.4 millirem observed at Environmental Monitoring Station 15). The difference in these values determines the maximum direct radiation dose exposure to an offsite member of the public. Accordingly, the hypothetical maximum direct radiation dose exposure to the public for 2010 was determined to be 10.4 millirem.

Table B-12 provides dosimeter readings at each location for each quarter.

4.5 Groundwater

In August 2010, Ginna completed an effort to upgrade its groundwater monitoring wells. The following actions were performed:

- All groundwater monitoring wells were upgraded to include standpipes, bollards, and locking caps.

- Five monitoring wells that are improperly performing and/or degraded were abandoned (3 wells at AVT, 1 well at the Technical Support Center, 1 at Butler Building). The groundwater monitoring wells were closed in accordance with New York State Department of Environmental Conservation (NYSDEC) regulation.

At the conclusions of the project, Ginna had 9 groundwater monitoring wells in its REMP:

- GW01: Warehouse Access Road (Control)
- 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
- GW09: Technical Support Center, North
- GW10: Technical Support Center, South
- GW11: Contaminated Storage Building, SE (24.0')

In accordance with R.E. Ginna Nuclear Power Plant's Chemistry procedures, environmental groundwater monitoring wells are sampled quarterly. Groundwater samples are analyzed for tritium to a detection limit of 500 pCi/L. In 2010, no radioactivity was detected in groundwater samples.

Results of the groundwater monitoring well sampling are presented in Table B-13.

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 2010 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 2010 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, Revisions 24 (Effective Date: 03/20/2009), 25 (Effective Date: 08/12/2010) and 26 (Effective Date: 12/10/2010).

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

3. R.E. Ginna Nuclear Power Plant has numerous technical procedures associated with the implementation of the REMP. However, procedure CNG-EV-1.01-1000, Radiological Environmental Monitoring Program (REMP), outlines all administrative functions and management requirements associated with the REMP.

4. Land Use Survey is conducted annually in accordance with R.E. Ginna Nuclear Power Plant Procedure CH-ENV-LAND-USE, Land Use Census; completed September 2010.

5. Constellation Energy Ft. Smallwood Environmental Laboratory Procedures Manual, General Services Department.

Table 1

Synopsis of 2010 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 Water, Drinking Water	MC	5	64	Gamma Gross Beta	MC MC	64 64
Bottom Sediment	A	1	1	Gamma	A	1
Fish[2]	A	4	17	Gamma	SA	17
Shoreline Sediment	SA	2	4	Gamma	SA	4
Atmospheric Environment						
Air Iodine[3]	W	6	317	I-131	W	317
Air Particulates[4]	W	12	634	Gross Beta Gamma	W QC	634 48
Direct Radiation						
Ambient Radiation	Q	41	160	TLD	Q	160
Terrestrial Environment						
Milk[5]	M/BW	2	38	Gamma	M/BW	38
Vegetation[6]	A	11	35	Gamma	A	35

[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 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 Water, Drinking Water (pCi/L)	Gamma (36) Cs-137	--	3 (2/52) (2-3)	Deer Creek - E 0.26 km ESE	3 (1/13) (3)	-- (0/12) --
Surface Water, Drinking Water (pCi/L)	Gross Beta (36)	0.5	2.7 (52/52) (1.2-6.0)	Deer Creek - E 0.26 km ESE	4.5 (12/12) (3.1-6.0)	2.1 (13/13) (1.3-2.9)
Sediment (pCi/kg)	Gamma (5) Cs-137	--	69 (1/3) --	North Sector 1.07 km N	69 (1/1) --	-- (0/2) --
Fish (pCi/kg)	Gamma (17) Cs-137	--	-- (0/9) --	Hamlin - Control 52.5 km W	14 (1/8) --	14 (1/8) --
Atmospheric Environment						
Air Iodine (10^{-2} pCi/m^3)	I-131 (317)	--	-- (264/264) --	--	--	-- (53/53) --
Air Particulates (10^{-2} pCi/m^3)	Gross Beta (634)	0.5	2.2 (475/475) (0.9-4.1)	Seabreeze (Control) STATION-08 19.8 km WSW	2.3 (53/53) (1.0-4.1)	2.2 (159/159) (0.9-4.3)
Air Particulates (10^{-3} pCi/m^3)	Gamma (48)	--	-- (0/36) --	--	-- (0/4) --	-- (0/12) --

Table 2

Annual Summary of Radioactivity in the Environs of the 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
Direct Radiation						
Ambient Radiation (mR/91 days)	Dosimeters (160)	--	12.7(124/124) (9.0-16.5)	Env. Station 64 1.19 km W	14.7(2/2) (12.8-16.5)	11.5 (36/36) (9.5-13.4)
Terrestrial Environment						
Milk (pCi/L)	Gamma (38) Cs-137	--	4 (2/19) (3-4)	ESE Indicator EATON 8.27 km ESE	4 (2/19) (3-5)	4 (2/19) (3-5)
Vegetation (pCi/L)	Gamma (35) Cs-137	--	6 (1/25) --	South Garden 1.6 km S	9 (1/1) --	--(0/10) --

[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.

In the spring of 2010, an effort was undertaken to review the direction and distances noted in the ODCM. Compass directions and distances were more accurately measured using three independent technologies: a hand-held global position system (GPS), Google Earth software application, and mathematical equations. When discrepancies were discovered, the ODCM was revised to reflect the more accurate conditions. None of the existing REMP sampling locations were relocated as a result of the ODCM change. Sample locations and specific information about individual locations for the Ginna is 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.

TABLE OF CONTENTS - SAMPLING LOCATIONS

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	690	0.43	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	0.20	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		Distance
		Meters	Meters	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	1.4	ENE

	Russell Station	25600	15.9	W
Produce (Vegetation)				
Indicator and background samples of lettuce, apples, tomatoes, and cabbage are collected from gardens grown on company property and purchased from farms >10 miles from the plant.				
Station	**Description**	**Distance**		**Direction**
		Meters	**Miles**	**Sector**
Water				
	Shoremont/MCWA	27160	16.9	W
	Ontario Water District	2200	1.4	ENE
	Circ Water Intake	420	0.3	N
	Circ Water Discharge	130	0.1	NNE
	Deer Creek	260	0.2	ESE
Sediment				
	Lake Ontario Discharge Plume	2200	1.4	ENE
	Russell Station	25600	15.9	W
	Bethnic	1070	0.7	N
Milk				
	Eaton Farm, Williamson (Indicator)	8270	5.1	ESE
	Schultz Farm, S. Sodus (Control)	21000	13.0	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

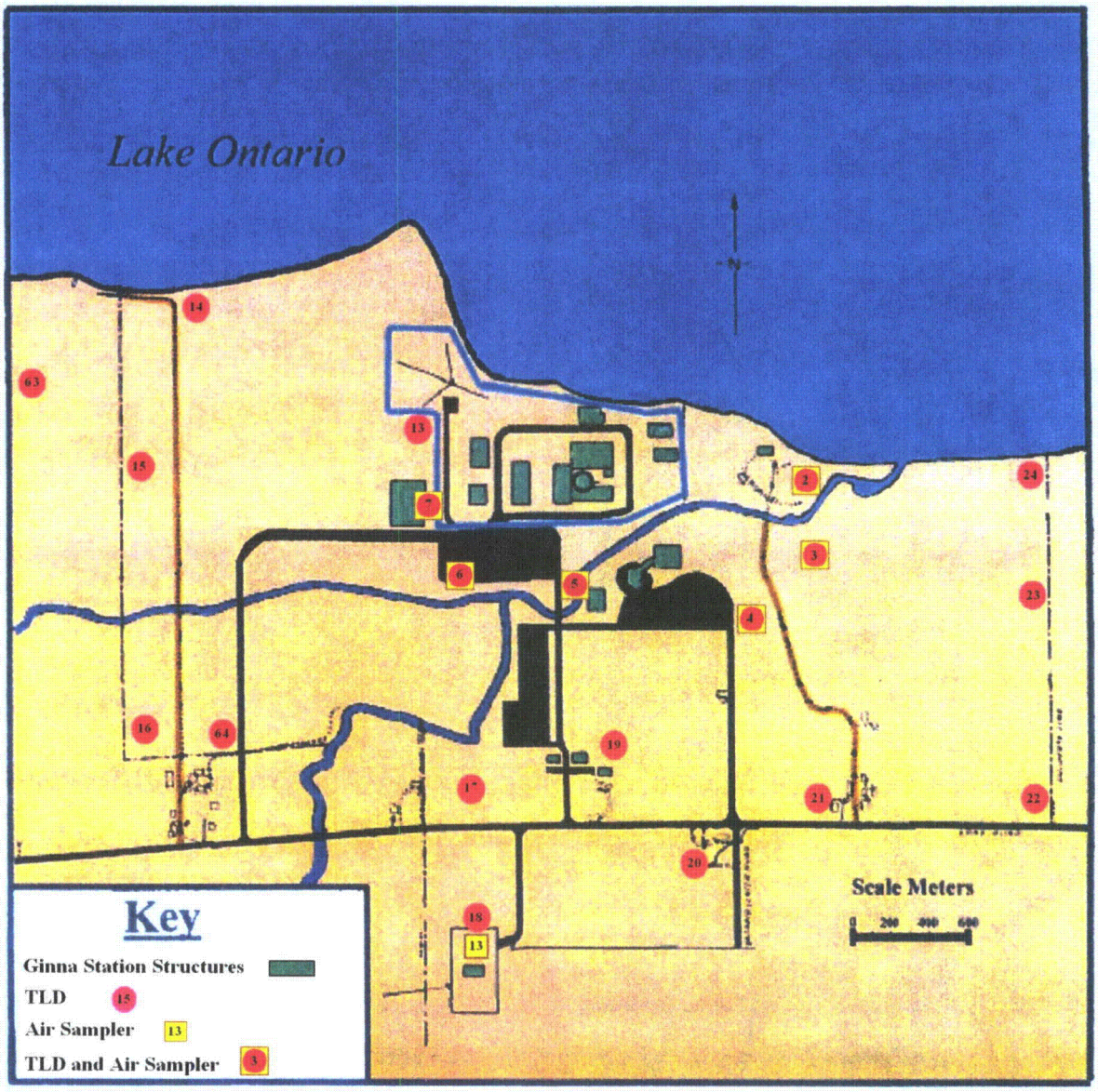


Figure A-3

Offsite Sample Locations (TLDs and milk farms within 5 miles)

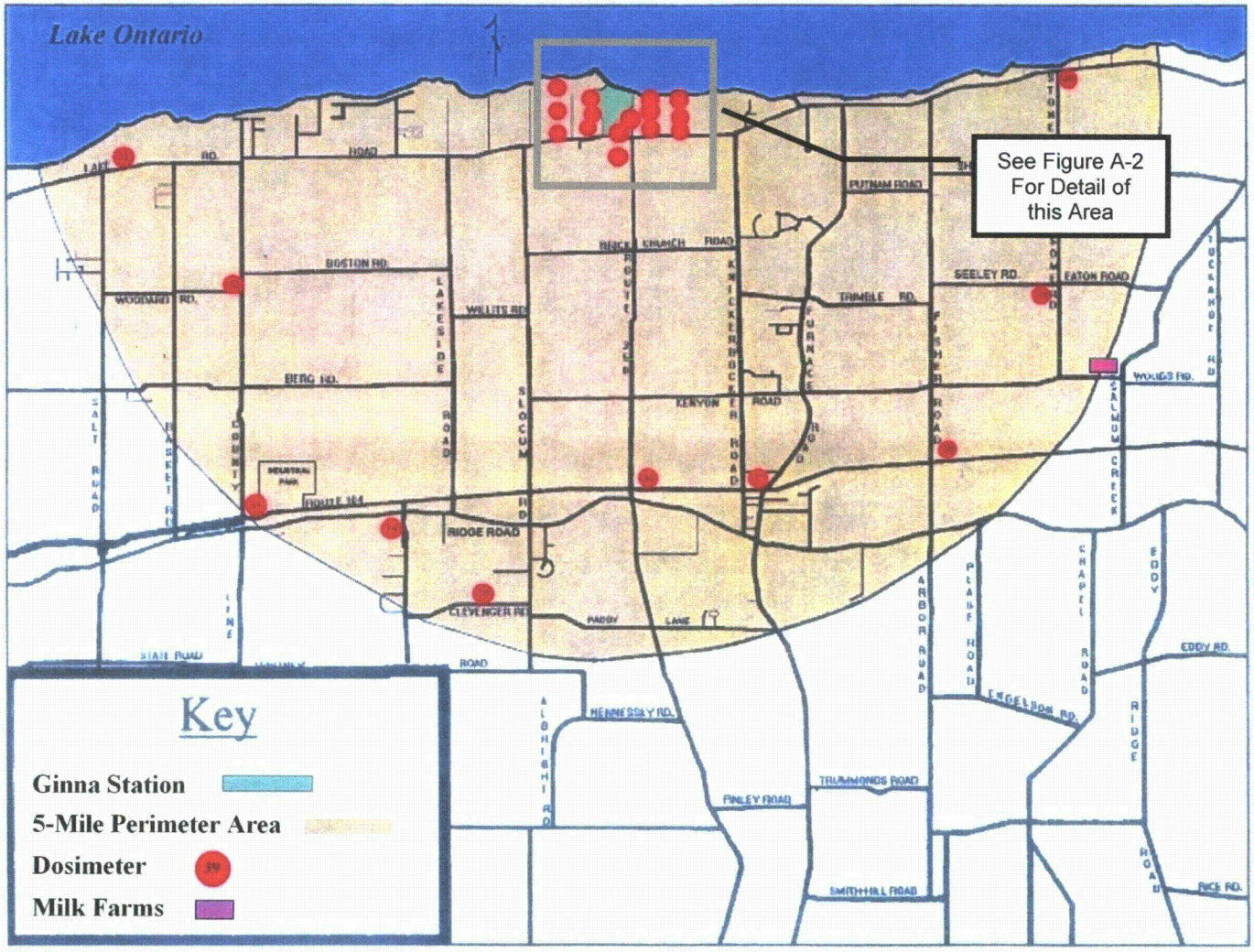
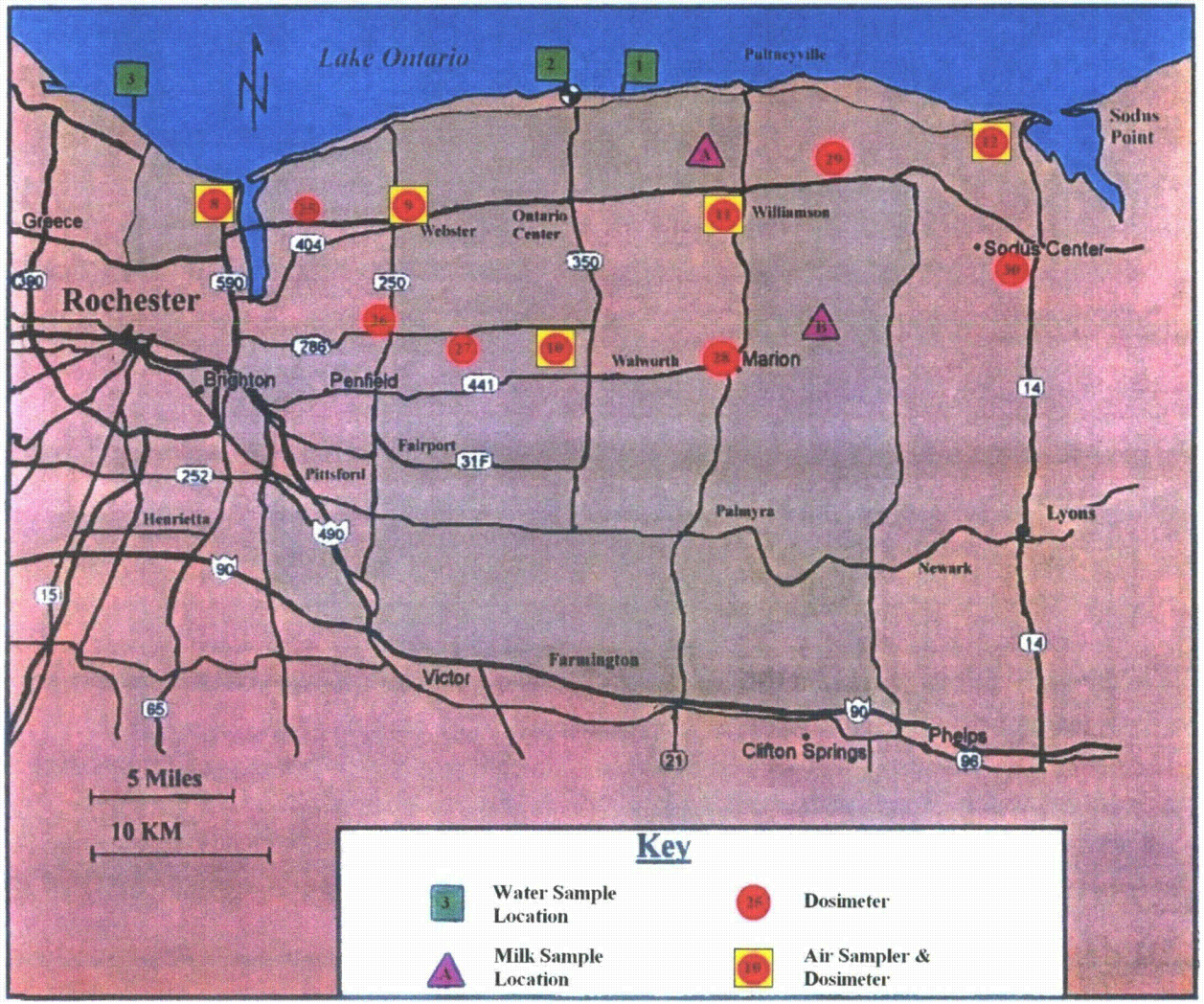


Figure A-4
Water Sample, Milk Farms and TLD Locations



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	Gamma Emitters	Gross Beta
CIRC-IN Circulating Water Inlet - N	1/19/2010		*	1.62 +/- 0.51
	2/15/2010		*	1.52 +/- 0.57
	3/16/2010		*	2.33 +/- 0.57
	4/13/2010		*	2.24 +/- 0.56
	5/11/2010		*	1.83 +/- 0.54
	6/8/2010		*	1.73 +/- 0.57
	7/7/2010		*	2.03 +/- 0.57
	8/3/2010		*	2.41 +/- 0.59
	8/31/2010		*	2.00 +/- 0.54
	9/28/2010		*	2.15 +/- 0.56
	10/27/2010		*	1.70 +/- 0.52
	11/23/2010		*	2.40 +/- 0.54
	12/21/2010		*	2.82 +/- 0.56
CIRC-OUT Circulating Water Outlet - N	1/19/2010	2 +/- 1	*	2.24 +/- 0.54
	2/15/2010		*	1.43 +/- 0.56
	3/16/2010		*	2.17 +/- 0.55
	4/13/2010		*	2.01 +/- 0.57
	5/11/2010		*	1.86 +/- 0.55
	6/8/2010		*	1.97 +/- 0.56
	7/7/2010		*	1.90 +/- 0.55
	8/3/2010		*	2.30 +/- 0.58
	8/31/2010		*	1.93 +/- 0.53
	9/28/2010		*	2.23 +/- 0.55
	10/27/2010		*	2.18 +/- 0.53
	11/23/2010		*	2.33 +/- 0.54
	12/21/2010		*	1.77 +/- 0.51
DC Deer Creek - E	1/18/2010		*	4.35 +/- 0.74
	2/8/2010		*	3.54 +/- 0.82
	3/1/2010		*	4.56 +/- 0.86
	4/26/2010		*	3.07 +/- 0.73
	5/24/2010		*	3.50 +/- 0.77
	6/15/2010		*	3.28 +/- 0.72
	7/19/2010		*	6.01 +/- 1.01
	8/17/2010		*	4.95 +/- 0.85
	9/14/2010		*	4.65 +/- 0.93
	10/12/2010	3 +/- 2	*	5.77 +/- 0.85
	11/8/2010		*	6.04 +/- 0.88
	12/6/2010		*	4.77 +/- 0.75

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	Gamma Emitters	Gross Beta
MCWA Monroe County Water/Shoremont, Greece – W[1]	1/18/2010		*	2.05 +/- 0.53
	2/16/2010		*	1.32 +/- 0.54
	3/15/2010		*	1.62 +/- 0.52
	4/12/2010		*	1.92 +/- 0.28
	5/10/2010		*	1.77 +/- 0.54
	6/7/2010		*	2.94 +/- 0.63
	7/6/2010		*	2.80 +/- 0.59
	8/2/2010		*	2.11 +/- 0.55
	8/30/2010		*	2.34 +/- 0.55
	9/25/2010		*	1.69 +/- 0.52
	10/25/2010		*	2.13 +/- 0.53
	11/22/2010		*	2.25 +/- 0.57
	12/20/2010		*	1.75 +/- 0.50
OWD Ontario Water District - NE	1/18/2010		*	2.09 +/- 0.53
	2/16/2010		*	1.21 +/- 0.55
	3/16/2010		*	2.24 +/- 0.55
	4/12/2010		*	1.60 +/- 0.53
	5/10/2010		*	2.06 +/- 0.56
	6/7/2010		*	2.05 +/- 0.55
	7/6/2010		*	2.76 +/- 0.59
	8/2/2010		*	1.73 +/- 0.53
	8/31/2010		*	1.94 +/- 0.53
	9/27/2010		*	2.20 +/- 0.54
	10/25/2010		*	2.02 +/- 0.52
	11/22/2010		*	2.07 +/- 0.53
	12/21/2010		*	2.32 +/- 0.53

[1] Control Location

* All Non-Natural Gamma Emitters, including I-131, and tritium less than 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	Cs-137	Gamma Emitters
EAST				
East Sector	4/6/2010	Rainbow Trout		*
	5/19/2010	White Sucker Fish		*
GREECE[1]				
Control	9/18/2010	Bowfin		*
	9/18/2010	Brown Bullhead		*
HAMLIN[1]				
Control	4/14/2010	Carp		*
	4/14/2010	Rainbow Trout		*
	4/14/2010	Red Horse		*
	4/14/2010	White Sucker Fish		*
	8/11/2010	Brown Trout	14 +/- 6	*
	8/11/2010	Chinook Salmon		*
NORTH				
North Sector	5/26/2010	Carp		*
	5/26/2010	Freshwater Drum		*
	11/2/2010	Smallmouth Bass		*
	11/11/2010	Freshwater Drum		*
	11/16/2010	Chinook Salmon		*
	11/16/2010	Gizzard Shad		*
	11/18/2010	Lake Trout		*

[1] Control Location
* All Non-Natural Gamma Emitters <MDA

Table B-3

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

Sample Code	Sample Date	Cs-137	Gamma Emitters
Shoreline			
EAST			
East Sector	04/12/2010	*	*
	08/09/2010	*	
GREECE[1]			
Control	04/12/2010	*	*
	08/09/2010	*	*
Benthic			
NORTH	04/03/2010	69 +/- 31	*

[1] Control Location
* All Non-Natural Gamma Emitters <MDA

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
12/28/2009	1/4/2010	*	*	*	*	*	*
1/4/2010	1/11/2010	*	*	*	*	*	*
1/11/2010	1/18/2010	*	*	*	*	*	*
1/18/2010	1/25/2010	*	*	*	*	*	*
1/25/2010	2/1/2010	*	*	*	*	*	*
2/1/2010	2/8/2010	*	*	*	*	*	*
2/8/2010	2/15/2010	*	*	*	*	*	*
2/15/2010	2/22/2010	*	*	*	*	*	*
2/22/2010	3/1/2010	*	*	*	*	*	*
3/1/2010	3/8/2010	*	*	*	*	*	*
3/8/2010	3/15/2010	*	*	*	*	*	*
3/15/2010	3/22/2010	*	*	*	*	*	*
3/22/2010	3/29/2010	*	*	*	*	*	*
3/29/2010	4/5/2010	*	*	*	*	*	*
4/5/2010	4/12/2010	*	*	*	*	*	*
4/12/2010	4/19/2010	*	*	*	*	*	*
4/19/2010	4/26/2010	*	*	*	*	*	*
4/26/2010	5/3/2010	*	*	*	*	*	*
5/3/2010	5/10/2010	*	*	*	*	*	*
5/10/2010	5/17/2010	*	*	*	*	*	*
5/17/2010	5/24/2010	*	*	*	*	*	*
5/24/2010	5/31/2010	*	*	*	*	*	*
5/31/2010	6/7/2010	*	*	*	*	*	*
6/7/2010	6/14/2010	*	*	*	*	*	*
6/14/2010	6/21/2010	*	*	*	*	*	*
6/21/2010	6/28/2010	*	*	*	*	*	*
6/28/2010	7/5/2010	*	*	*	*	*	*
7/5/2010	7/12/2010	*	*	*	*	*	*
7/12/2010	7/19/2010	*	*	*	*	*	*
7/19/2010	7/26/2010	[2]	*	*	*	*	*
7/26/2010	8/2/2010	*	*	*	*	*	*
8/2/2010	8/9/2010	*	*	*	*	*	*
8/9/2010	8/16/2010	*	*	*	*	*	*
8/16/2010	8/23/2010	*	*	*	*	*	*
8/23/2010	8/30/2010	*	*	*	*	*	*

[1] Control Location
[2] Sampler malfunction, low flow.
* <MDA (I-131)

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
8/30/2010	9/6/2010	*	*	*	*	*	*
9/6/2010	9/13/2010	*	*	*	*	*	*
9/13/2010	9/20/2010	*	*	*	*	*	*
9/20/2010	9/27/2010	*	*	*	*	*	*
9/27/2010	10/4/2010	*	*	*	*	*	*
10/4/2010	10/11/2010	*	*	*	*	*	*
10/11/2010	10/18/2010	*	*	*	*	*	*
10/18/2010	10/25/2010	*	*	*	*	*	*
10/25/2010	11/1/2010	*	*	*	*	*	*
11/1/2010	11/8/2010	*	*	*	*	*	*
11/8/2010	11/15/2010	*	*	*	*	*	*
11/15/2010	11/22/2010	*	*	*	*	*	*
11/22/2010	11/29/2010	*	*	*	*	*	*
11/29/2010	12/6/2010	*	*	*	*	*	*
12/6/2010	12/13/2010	*	*	*	*	*	*
12/13/2010	12/20/2010	*	*	*	*	*	*
12/20/2010	12/27/2010	*	*	*	*	*	*
12/27/2010	1/3/2011	*	*	*	*	*	*

[1] Control Location
[2] Sampler malfunction/low flow
* <MDA (I-131)

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
12/28/2009	1/4/2010	2.1 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	1.7 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	2.3 +/- 0.2
1/4/2010	1/11/2010	1.3 +/- 0.1	1.2 +/- 0.1	1.1 +/- 0.1	1.2 +/- 0.1	1.3 +/- 0.1	1.2 +/- 0.1	1.3 +/- 0.2
1/11/2010	1/18/2010	4.0 +/- 0.2	3.8 +/- 0.2	3.3 +/- 0.2	3.6 +/- 0.1	3.9 +/- 0.2	4.0 +/- 0.2	4.1 +/- 0.3
1/18/2010	1/25/2010	2.8 +/- 0.1	2.6 +/- 0.1	2.7 +/- 0.1	2.5 +/- 0.1	2.7 +/- 0.1	2.8 +/- 0.1	2.8 +/- 0.2
1/25/2010	2/1/2010	2.2 +/- 0.1	2.2 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1	2.5 +/- 0.1	2.4 +/- 0.2
2/1/2010	2/8/2010	2.1 +/- 0.1	2.1 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.1	2.0 +/- 0.2
2/8/2010	2/15/2010	1.2 +/- 0.1	1.6 +/- 0.1	1.4 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1	1.6 +/- 0.2
2/15/2010	2/22/2010	1.1 +/- 0.1	1.0 +/- 0.1	1.2 +/- 0.1	1.5 +/- 0.4	1.2 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.2
2/22/2010	3/1/2010	1.0 +/- 0.1	1.1 +/- 0.1	1.1 +/- 0.1	1.0 +/- 0.1	1.1 +/- 0.1	1.2 +/- 0.1	1.2 +/- 0.2
3/1/2010	3/8/2010	2.4 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.1	2.7 +/- 0.1	2.6 +/- 0.2
3/8/2010	3/15/2010	3.1 +/- 0.2	3.0 +/- 0.1	3.1 +/- 0.2	3.0 +/- 0.1	3.0 +/- 0.1	2.9 +/- 0.1	2.8 +/- 0.2
3/15/2010	3/22/2010	2.5 +/- 0.1	2.4 +/- 0.1	2.4 +/- 0.1	2.2 +/- 0.1	2.4 +/- 0.1	2.5 +/- 0.1	2.4 +/- 0.2
3/22/2010	3/29/2010	2.3 +/- 0.1	2.4 +/- 0.1	2.3 +/- 0.1	2.2 +/- 0.1	2.5 +/- 0.2	2.6 +/- 0.2	2.5 +/- 0.2
3/29/2010	4/5/2010	2.1 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1	2.1 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.1	2.5 +/- 0.2
4/5/2010	4/12/2010	1.8 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.2
4/12/2010	4/19/2010	2.0 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.2
4/19/2010	4/26/2010	2.0 +/- 0.1	[1]	2.2 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.2
4/26/2010	5/3/2010	1.9 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	2.2 +/- 0.1	1.9 +/- 0.2
5/3/2010	5/10/2010	1.5 +/- 0.1	1.4 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1	1.5 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.2
5/10/2010	5/17/2010	1.4 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1	1.6 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1	1.7 +/- 0.2
5/17/2010	5/24/2010	2.3 +/- 0.1	2.4 +/- 0.1	2.3 +/- 0.1	2.5 +/- 0.1	2.4 +/- 0.1	2.5 +/- 0.1	2.6 +/- 0.2
5/24/2010	5/31/2010	1.8 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.1	2.3 +/- 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
5/31/2010	6/7/2010	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.2	1.9 +/- 0.2	2.0 +/- 0.1	2.3 +/- 0.3
6/7/2010	6/14/2010	1.1 +/- 0.1	1.2 +/- 0.1	1.2 +/- 0.1	1.3 +/- 0.1	1.2 +/- 0.1	1.2 +/- 0.1	1.3 +/- 0.2
6/14/2010	6/21/2010	2.0 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.1	2.4 +/- 0.1	2.0 +/- 0.1
6/21/2010	6/28/2010	2.0 +/- 0.1	2.3 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.2	2.4 +/- 0.2	2.0 +/- 0.1
6/28/2010	7/5/2010	1.7 +/- 0.1	1.9 +/- 0.1	1.7 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1	1.8 +/- 0.1
7/5/2010	7/12/2010	2.9 +/- 0.1	3.8 +/- 0.2	3.6 +/- 0.2	4.0 +/- 0.2	3.7 +/- 0.2	3.7 +/- 0.2	3.8 +/- 0.2
7/12/2010	7/19/2010	2.7 +/- 0.1	2.8 +/- 0.1	2.8 +/- 0.2	3.0 +/- 0.2	2.9 +/- 0.2	2.8 +/- 0.1	2.8 +/- 0.1
7/19/2010	7/26/2010	[2]	2.2 +/- 0.1	2.1 +/- 0.1	2.5 +/- 0.1	2.3 +/- 0.1	2.1 +/- 0.1	2.2 +/- 0.1
7/26/2010	8/2/2010	2.0 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1
8/2/2010	8/9/2010	3.0 +/- 0.2	3.2 +/- 0.2	2.9 +/- 0.2	3.3 +/- 0.2	3.0 +/- 0.2	3.3 +/- 0.2	2.9 +/- 0.1
8/9/2010	8/16/2010	2.7 +/- 0.1	2.8 +/- 0.1	3.0 +/- 0.2	3.1 +/- 0.2	2.8 +/- 0.1	2.9 +/- 0.1	2.9 +/- 0.1
8/16/2010	8/23/2010	2.3 +/- 0.1	2.3 +/- 0.1	2.0 +/- 0.1	1.7 +/- 0.1	3.1 +/- 0.2	2.6 +/- 0.1	2.4 +/- 0.1
8/23/2010	8/30/2010	2.1 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.2	2.3 +/- 0.1	2.2 +/- 0.1	2.0 +/- 0.1
8/30/2010	9/6/2010	3.6 +/- 0.2	3.5 +/- 0.2	3.7 +/- 0.2	3.9 +/- 0.2	3.7 +/- 0.2	3.8 +/- 0.2	3.6 +/- 0.1
9/6/2010	9/13/2010	1.7 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1	1.8 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1	1.6 +/- 0.1
9/13/2010	9/20/2010	1.6 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1	1.7 +/- 0.1	1.6 +/- 0.1	1.6 +/- 0.1
9/20/2010	9/27/2010	2.3 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.1	2.5 +/- 0.2	2.5 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.1
9/27/2010	10/4/2010	1.1 +/- 0.1	1.2 +/- 0.1	1.1 +/- 0.1	1.3 +/- 0.1	1.2 +/- 0.1	1.1 +/- 0.1	1.1 +/- 0.1
10/4/2010	10/11/2010	1.8 +/- 0.1	1.6 +/- 0.1	1.7 +/- 0.1	2.0 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1
10/11/2010	10/18/2010	1.3 +/- 0.1	1.4 +/- 0.1	1.5 +/- 0.1	1.7 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1	1.3 +/- 0.1
10/18/2010	10/25/2010	2.6 +/- 0.1	2.7 +/- 0.1	2.8 +/- 0.1	2.9 +/- 0.2	3.0 +/- 0.1	2.9 +/- 0.1	2.6 +/- 0.1
10/25/2010	11/1/2010	1.7 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1	1.8 +/- 0.1	1.8 +/- 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
11/1/2010	11/8/2010	1.3 +/- 0.1	1.3 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1	1.3 +/- 0.1
11/8/2010	11/15/2010	2.4 +/- 0.1	2.4 +/- 0.1	2.5 +/- 0.1	3.0 +/- 0.2	2.6 +/- 0.1	2.4 +/- 0.1	2.5 +/- 0.1
11/15/2010	11/22/2010	2.5 +/- 0.1	2.6 +/- 0.1	2.8 +/- 0.1	3.0 +/- 0.2	2.9 +/- 0.1	2.9 +/- 0.1	2.8 +/- 0.1
11/22/2010	11/29/2010	2.6 +/- 0.1	2.5 +/- 0.1	2.7 +/- 0.1	2.8 +/- 0.2	2.8 +/- 0.1	2.5 +/- 0.1	2.6 +/- 0.1
11/29/2010	12/6/2010	1.4 +/- 0.1	1.4 +/- 0.1	1.4 +/- 0.1	1.6 +/- 0.1	1.3 +/- 0.1	1.3 +/- 0.1	1.4 +/- 0.1
12/6/2010	12/13/2010	2.1 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1	2.2 +/- 0.1	2.5 +/- 0.1	2.1 +/- 0.1	2.3 +/- 0.1
12/13/2010	12/20/2010	2.0 +/- 0.1	1.9 +/- 0.1	2.2 +/- 0.1	2.4 +/- 0.2	2.4 +/- 0.1	2.4 +/- 0.1	2.4 +/- 0.1
12/20/2010	12/27/2010	1.1 +/- 0.1	1.0 +/- 0.1	1.0 +/- 0.1	1.2 +/- 0.1	1.0 +/- 0.1	1.0 +/- 0.1	0.9 +/- 0.1
12/27/2010	1/3/2011	3.5 +/- 0.2	3.5 +/- 0.2	3.7 +/- 0.2	3.8 +/- 0.2	3.7 +/- 0.2	3.5 +/- 0.2	3.4 +/- 0.2

[1] Inadequate sample collected for analysis.

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
12/28/2009	1/4/2010	2.0 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1
1/4/2010	1/11/2010	1.1 +/- 0.1	1.1 +/- 0.1	1.1 +/- 0.1	1.2 +/- 0.1	1.2 +/- 0.1
1/11/2010	1/18/2010	3.7 +/- 0.2	3.2 +/- 0.2	3.4 +/- 0.1	3.8 +/- 0.2	3.8 +/- 0.2
1/18/2010	1/25/2010	2.7 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.1	2.6 +/- 0.1	2.6 +/- 0.1
1/25/2010	2/1/2010	2.3 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1	2.5 +/- 0.1	2.3 +/- 0.1
2/1/2010	2/8/2010	1.9 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.1
2/8/2010	2/15/2010	1.4 +/- 0.1	1.5 +/- 0.1	1.4 +/- 0.1	1.5 +/- 0.1	1.6 +/- 0.1
2/15/2010	2/22/2010	1.2 +/- 0.1	1.1 +/- 0.1	1.2 +/- 0.1	1.1 +/- 0.1	1.2 +/- 0.1
2/22/2010	3/1/2010	1.2 +/- 0.1	1.1 +/- 0.1	1.0 +/- 0.1	1.0 +/- 0.1	0.9 +/- 0.1
3/1/2010	3/8/2010	2.5 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1	2.4 +/- 0.1	2.3 +/- 0.1
3/8/2010	3/15/2010	3.3 +/- 0.2	2.9 +/- 0.1	3.2 +/- 0.1	2.9 +/- 0.1	2.5 +/- 0.1
3/15/2010	3/22/2010	2.3 +/- 0.1	2.2 +/- 0.1	2.2 +/- 0.1	2.4 +/- 0.1	2.2 +/- 0.1
3/22/2010	3/29/2010	2.5 +/- 0.1	2.3 +/- 0.1	2.5 +/- 0.1	2.5 +/- 0.2	2.4 +/- 0.1
3/29/2010	4/5/2010	2.5 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1	2.3 +/- 0.1	2.0 +/- 0.1
4/5/2010	4/12/2010	2.0 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.1	2.0 +/- 0.1	1.8 +/- 0.1
4/12/2010	4/19/2010	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1
4/19/2010	4/26/2010	2.1 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.1
4/26/2010	5/3/2010	1.8 +/- 0.1	1.8 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.1	1.8 +/- 0.1
5/3/2010	5/10/2010	1.7 +/- 0.1	[2]	1.4 +/- 0.1	1.7 +/- 0.2	1.4 +/- 0.1
5/10/2010	5/17/2010	1.6 +/- 0.1	1.5 +/- 0.1	1.5 +/- 0.1	1.7 +/- 0.2	1.4 +/- 0.1
5/17/2010	5/24/2010	2.4 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.2	2.2 +/- 0.1
5/24/2010	5/31/2010	2.2 +/- 0.1	2.0 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.2	2.1 +/- 0.1
5/31/2010	6/7/2010	2.1 +/- 0.2	1.9 +/- 0.1	1.9 +/- 0.1	1.9 +/- 0.2	2.0 +/- 0.2
6/7/2010	6/14/2010	1.3 +/- 0.1	1.2 +/- 0.1	1.2 +/- 0.1	1.2 +/- 0.2	1.1 +/- 0.1
6/14/2010	6/21/2010	2.3 +/- 0.1	1.9 +/- 0.1	2.0 +/- 0.1	2.3 +/- 0.2	2.0 +/- 0.1
6/21/2010	6/28/2010	2.3 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.1	2.4 +/- 0.2	2.3 +/- 0.2
6/28/2010	7/5/2010	2.0 +/- 0.1	1.8 +/- 0.1	1.7 +/- 0.1	1.8 +/- 0.2	1.8 +/- 0.1
7/5/2010	7/12/2010	3.8 +/- 0.2	3.6 +/- 0.2	3.6 +/- 0.2	4.0 +/- 0.3	3.7 +/- 0.2
7/12/2010	7/19/2010	3.0 +/- 0.2	2.7 +/- 0.1	2.9 +/- 0.1	3.0 +/- 0.2	2.8 +/- 0.2
7/19/2010	7/26/2010	2.4 +/- 0.1	2.3 +/- 0.1	2.2 +/- 0.1	2.3 +/- 0.2	2.2 +/- 0.1
7/26/2010	8/2/2010	2.3 +/- 0.1	2.0 +/- 0.1	2.1 +/- 0.1	2.3 +/- 0.2	2.2 +/- 0.1
8/2/2010	8/9/2010	3.3 +/- 0.2	3.0 +/- 0.2	3.0 +/- 0.1	3.2 +/- 0.2	3.1 +/- 0.2
8/9/2010	8/16/2010	3.2 +/- 0.2	3.1 +/- 0.2	2.9 +/- 0.1	3.0 +/- 0.2	2.8 +/- 0.2
8/16/2010	8/23/2010	2.8 +/- 0.1	2.3 +/- 0.1	2.1 +/- 0.1	3.8 +/- 0.2	2.7 +/- 0.1
8/23/2010	8/30/2010	2.3 +/- 0.2	1.8 +/- 0.1	2.1 +/- 0.2	2.1 +/- 0.2	2.0 +/- 0.2

[1] Control Location
[2] Inadequate sample collected for analysis.

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
8/30/2010	9/6/2010	4.1 +/- 0.2	3.6 +/- 0.1	4.3 +/- 0.3	3.9 +/- 0.2	3.9 +/- 0.2
9/6/2010	9/13/2010	1.8 +/- 0.1	1.9 +/- 0.2	1.8 +/- 0.2	1.6 +/- 0.2	1.7 +/- 0.1
9/13/2010	9/20/2010	1.9 +/- 0.1	1.5 +/- 0.1	1.7 +/- 0.2	1.7 +/- 0.2	1.5 +/- 0.1
9/20/2010	9/27/2010	2.8 +/- 0.1	2.4 +/- 0.1	2.8 +/- 0.2	2.6 +/- 0.2	2.4 +/- 0.1
9/27/2010	10/4/2010	1.2 +/- 0.1	1.1 +/- 0.1	1.3 +/- 0.2	1.3 +/- 0.2	1.0 +/- 0.1
10/4/2010	10/11/2010	2.0 +/- 0.1	1.9 +/- 0.1	2.1 +/- 0.2	1.9 +/- 0.2	1.8 +/- 0.1
10/11/2010	10/18/2010	1.5 +/- 0.1	1.3 +/- 0.1	1.8 +/- 0.2	1.4 +/- 0.2	1.5 +/- 0.1
10/18/2010	10/25/2010	2.9 +/- 0.1	2.6 +/- 0.1	3.0 +/- 0.2	3.1 +/- 0.2	2.9 +/- 0.2
10/25/2010	11/1/2010	1.9 +/- 0.1	1.7 +/- 0.1	2.0 +/- 0.2	1.8 +/- 0.2	1.9 +/- 0.1
11/1/2010	11/8/2010	1.4 +/- 0.1	1.3 +/- 0.1	1.5 +/- 0.2	1.4 +/- 0.2	1.3 +/- 0.1
11/8/2010	11/15/2010	2.8 +/- 0.1	2.5 +/- 0.1	2.8 +/- 0.2	2.7 +/- 0.2	2.6 +/- 0.1
11/15/2010	11/22/2010	2.9 +/- 0.1	2.7 +/- 0.1	3.0 +/- 0.2	2.9 +/- 0.2	2.8 +/- 0.2
11/22/2010	11/29/2010	2.9 +/- 0.1	2.5 +/- 0.1	2.7 +/- 0.2	2.5 +/- 0.2	2.8 +/- 0.2
11/29/2010	12/6/2010	1.4 +/- 0.1	1.4 +/- 0.1	1.5 +/- 0.2	1.5 +/- 0.2	1.7 +/- 0.1
12/6/2010	12/13/2010	2.0 +/- 0.1	1.7 +/- 0.1	2.3 +/- 0.2	2.3 +/- 0.2	2.3 +/- 0.1
12/13/2010	12/20/2010	2.3 +/- 0.1	2.0 +/- 0.1	2.4 +/- 0.2	2.4 +/- 0.2	2.4 +/- 0.2
12/20/2010	12/27/2010	1.0 +/- 0.1	1.0 +/- 0.1	1.2 +/- 0.2	1.1 +/- 0.1	1.1 +/- 0.1
12/27/2010	1/3/2011	3.4 +/- 0.2	3.0 +/- 0.2	3.6 +/- 0.3	3.7 +/- 0.2	3.8 +/- 0.2

[1] Control Location
[2] Inadequate sample collected for analysis.

Table B-7

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

Sample 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
03/30/2010	*	*	*	*	*	*
06/28/2010	*	*	*	*	*	*
09/27/2010	*	*	*	*	*	*
01/03/2011	*	*	*	*	*	*

Sample Date	STATION-08[1] Seabreeze	STATION-09 Webster	STATION-10[1] Walworth	STATION-11 Williamson	STATION-12[1] Sodus Point	STATION-13 Substation 13
03/30/2010	*	*	*	*	*	*
06/28/2010	*	*	*	*	*	*
09/27/2010	*	*	*	*	*	*
01/03/2011	*	*	*	*	*	*

* All Non-Natural Gamma Emitters <MDA
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	Cs-137	Gamma Emitters
CONTROL[1]				
Local Sites in				
Control Sectors	8/19/2010	Greens		*
	10/5/2010	Grapes		*
EAST				
East Sector	6/23/2010	Greens		*
	7/19/2010	Squash		*
	7/26/2010	Cucumbers		*
	8/16/2010	Tomato		*
	9/30/2010	Cabbage		*
ESE				
East South East				
Sector	7/8/2010	Raspberries		*
	7/12/2010	Greens		*
	7/19/2010	Cucumbers		*
	7/19/2010	Squash		*
	7/26/2010	Blackberries		*
	8/24/2010	Grapes		*
	8/30/2010	Tomato		*
	9/30/2010	Cabbage		*
HAMLIN[1]				
Control	7/8/2010	Squash		*
	10/5/2010	Apples		*
	10/5/2010	Cabbage		*
HILTON[1]				
Control	8/19/2010	Cucumbers		*
	8/19/2010	Tomato		*
LIMA[1]				
Control	8/19/2010	Corn		*
LYNDONVILLE[1]				
Control	7/8/2010	Raspberries		*
	8/19/2010	Blackberries		*
SE				
South East				
Garden	8/24/2010	Grapes		*
	9/30/2010	Apples		*
SOUTH				
South Garden	9/9/2010	Apples		*

Table B-8

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

Sample Code	Sample Date	Sample Type	Cs-137	Gamma Emitters
SSE South South East Garden				
	6/21/2010	Greens		*
	7/13/2010	Squash		*
	8/2/2010	Cucumbers		*
	8/9/2010	Corn		*
	8/16/2010	Tomato		*
	9/30/2010	Apples		*
	9/30/2010	Cabbage	9 +/- 5	*
SW South West Sector	7/8/2010	Raspberries		*
	10/8/2010	Apples		*

[1] Control Location
* All Non-Natural Gamma Emitters <MDA

Table B-9

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

Sample Code	Sample Date	Cs-137	Gamma Emitters
EATON			
ESE Indicator	1/26/2010	[1]	*
	2/23/2010	[1]	*
	3/23/2010	3 +/- 2	*
	4/20/2010	[1]	*
	5/18/2010	[1]	*
	6/2/2010	[1]	*
	6/15/2010	[1]	*
	6/29/2010	[1]	*
	7/13/2010	[1]	*
	7/27/2010	[1]	*
	8/10/2010	[1]	*
	8/24/2010	[1]	*
	9/8/2010	[1]	*
	9/21/2010	[1]	*
	10/5/2010	[1]	*
	10/19/2010	4 +/- 2	*
	11/2/2010	[1]	*
	11/30/2010	[1]	*
	12/28/2010	[1]	*
SCHULTZ[2]			
South Sodus Control	1/26/2010	[1]	*
	2/23/2010	[1]	*
	3/23/2010	[1]	*
	4/20/2010	[1]	*
	5/18/2010	3 +/- 2	*
	6/2/2010	5 +/- 3	*
	6/15/2010	[1]	*
	6/29/2010	[1]	*
	7/13/2010	[1]	*
	7/27/2010	[1]	*
	8/10/2010	[1]	*
	8/24/2010	[1]	*
	9/8/2010	[1]	*
	9/21/2010	[1]	*
	10/5/2010	[1]	*
	10/19/2010	[1]	*
	11/2/2010	[1]	*
	11/30/2010	[1]	*
	12/28/2010	[1]	*

[1] This isotope <MDA
[2] Control Location
* All Non-Natural Gamma Emitters <MDA

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	Ground-water	Milk	Oysters (pCi/kg)	Shoreline Sediment	Soil (pCi/kg)	Vegetation (pCi/L)
Na-22	0 - 0	3 - 7	25 - 43	3 - 7	4 - 8	16 - 33	36 - 86	34 - 98	14 - 55
K-40	0 - .1	32 - 73	193 - 327	35 - 84	37 - 69	134 - 234	375 - 699	257 - 838	136 - 412
Cr-51	.1 - 1	23 - 45	348 - 710	25 - 42	18 - 45	148 - 314	433 - 1481	290 - 1048	78 - 291
Mn-54	0 - 0	3 - 6	20 - 30	3 - 6	2 - 6	14 - 24	36 - 69	31 - 82	11 - 40
Co-58	0 - 0	3 - 6	27 - 46	3 - 6	2 - 6	16 - 27	41 - 97	35 - 98	11 - 40
Fe-59	0 - .1	6 - 13	92 - 160	6 - 13	6 - 15	45 - 81	88 - 341	84 - 248	28 - 98
Co-60	0 - 0	3 - 7	23 - 36	3 - 7	3 - 8	16 - 27	34 - 74	33 - 90	14 - 49
Zn-65	0 - 0	6 - 14	54 - 91	7 - 14	6 - 16	35 - 65	107 - 196	82 - 230	30 - 100
Nb-95	0 - .1	3 - 6	45- 83	3 - 6	3 - 6	23 - 44	67 - 183	42 - 144	12 - 43
Zr-95	0 - 0	5 - 10	51 - 83	5 - 10	5 - 10	29 - 56	76 - 183	60.8 - 175	18 - 70
Ru-106	0 - 0	23 - 51	153 - 260	23 – 56	25 - 51	107 - 195	269 - 543	248 - 675	91 - 330
Ag-110m	0 - 0	3 - 6	19 - 30	3 - 6	3 - 6	12 - 23	30 - 62	29 - 98	10 - 37
I-131	[1]	0 - 7	119 - 13898	3.7 - 6.5	.4 - .8	112 - 440	69 - 11396	0 - 1650	15 - 62
Cs-134	0 - 0	2 - 5	16 - 26	3 - 6	2 - 5	11 - 21	30 - 65	39 - 85	9 - 37
Cs-137	0 - 0	3 – 6	16 - 30	3 - 6	2 - 6	12 - 23	35 - 60	34 - 73	11 - 41
Ba-140	0 - 194	6 - 12	91 - 1396	5 - 10	4 - 10	79 - 260	3 - 2360	49 - 709	18 - 80
La-140	0 - 194	6 - 12	91 - 1396	5 - 10	4 - 10	79 - 260	3 - 2360	49 - 709	18 - 80
Ce-144	0 - 0	14 - 29	51 - 101	16 - 29	16 - 29	38 - 62	149 - 223	120 - 322	40 - 142

[1] This MDA range for I-131 on a silver zeolite cartridge is typically 4.16 x 10^-3 to 3.40 x 10^-2

Table B-11

Typical LLDs for Gamma Spectrometry

Selected Nuclides	Air Particulates 10-3 pCi/m3	Surface 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 silver zeolite cartridge is 2.0 x10^-3 pCI/m^3

Table B-12

Direct Radiation
(Results in Units of mR/90 days +/- 2σ)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2	Onsite-Manor House Yard	14.8 ± 0.9	12.5 ± 0.68	14.5 ± 0.8	11.8 ± 0.7
3	Onsite-In field approximately 200 ft SE of station #2	14.6 ± 0.8	12.8 ± 0.61	15.1 ± 0.6	12.1 ± 0.8
4	Onsite-Training Center yard driveway circle	13.7 ± 0.8	12.1 ± 0.83	13.9 ± 0.6	10.8 ± 0.8
5	Onsite-Between creek and plant entry road	15.2 ± 0.8	13.4 ± 0.69	15.8 ± 0.7	12.8 ± 0.9
6	Onsite-SW side of plant parking lot	12.4 ± 0.7	10.0 ± 0.58	12.2 ± 1.0	9.5 ± 0.7
7	Onsite-utility pole along West plant fence	15.8 ± 0.7	13.2 ± 0.50	14.0 ± 0.7	12.0 ± 1.5
8 [1]	Topper Drive-Irondequoit, Seabreeze Substation #51	12.7 ± 0.7	10.7 ± 0.48	13.2 ± 0.5	10.0 ± 0.7
9	Phillips Road-Webster, intersection with Highway #104, Substation #74	13.5 ± 0.7	11.2 ± 0.66	12.3 ± 1.3	10.2 ± 0.8
10 [1]	Atlantic Avenue-Walworth, Substation #230	11.9 ± 1.0	9.9 ± 0.52	11.7 ± 0.6	9.7 ± 0.9
11	W. Main Street-Williamson, Substation #207	12.6 ± 0.9	10.3 ± 0.65	12.3 ± 0.7	9.7 ± 0.7
12 [1]	12 Seaman Avenue-Sodus Point-Off Lake Road by Sewer district, Substation #209	13.0 ± 0.8	11.6 ± 0.48	13.4 ± 0.9	10.9 ± 1.0
13	Onsite- South of Meteorological Tower	13.5 ± 0.7	11.3 ± 0.48	13.6 ± 0.6	11.9 ± 0.8
14	NW corner of field along lake shore	14.0 ± 0.9	12.2 ± 0.48	14.7 ± 0.6	11.7 ± 0.8
15	Field access road, west of orchard, approximately 3000' West of plant	14.9 ± 0.9	13.6 ± 0.52	15.4 ± 0.6	12.5 ± 0.9

TABLE B-12 (Continued)

Direct Radiation
(Results in Units of mR/90 days ± 2σ)

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	14.6 ± 0.7	12.5 ± 0.49	15.6 ± 0.6	11.3 ± 0.8
17	Utility pole in orchard, approximately 75" North of Lake Road	13.4 ± 0.7	11.9 ± 0.54	14.3 ± 0.9	11.1 ± 0.9
18	Approximately 30' North of NE corner of Substation 13A fence	11.2 ± 0.6	10.4 ± 0.45	12.6 ± 0.5	9.0 ± 0.7
19	On NW corner of house 100' East of plant access road	11.9 ± 0.6	11.1 ± 0.60	12.1 ± 0.6	9.9 ± 0.8
20	Approximately 150' West of Ontario Center Road and approximately 170' South of Lake Road	14.4 ± 0.7	12.0 ± 0.71	14.1 ± 1.1	11.1 ± 1.2
21	North side of Lake Road, approximately 200' East of Ontario Center Road	14.0 ± 0.7	11.6 ± 0.46	14.6 ± 0.9	11.2 ± 0.9
22	North side of Lake Road, SE, property owner	13.1 ± 1.3	10.8 ± 0.59	12.3 ± 0.6	10.4 ± 0.9
23	East property line, midway between Lake Road and Lake shore	14.6 ± 0.8	12.0 ± 0.46	14.6 ± 0.6	11.7 ± 0.9
24	Lake shore near NE corner of property	14.1 ± 1.1	12.7 ± 0.58	14.5 ± 0.7	12.5 ± 0.8
25 [1]	Substation #73, Klem Road, adjacent to 897 Klem Road	13.4 ± 0.8	10.7 ± 0.57	12.6 ± 0.7	9.8 ± 0.7
26 [1]	Service Center, Plank Road, West of 250	12.9 ± 0.8	10.9 ± 0.43	13.0 ± 0.5	10.0 ± 0.8
27 [1]	Atlantic Avenue at Knollwood Drive utility pole, North side of road	12.7 ± 0.8	11.3 ± 0.58	13.4 ± 0.6	11.2 ± 0.8

TABLE B-12 (Continued)

Direct Radiation
(Results in Units of mR/90 days ± 2σ)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
28 [1]	Substation #193, Marion, behind Stanton Ag. Service, North Main Street	12.3 ± 0.7	10.5 ± 0.58	12.7 ± 0.6	9.7 ± 0.9
29 [1]	Substation #208, Town Line Road (CR-118), 1000 ' North of Route 104	11.8 ± 1.1	10.3 ± 0.67	12.1 ± 0.5	10.3 ± 0.7
30 [1]	District Office, Sodus, on pole, West side of bldg	11.6 ± 1.0	9.5 ± 0.54	12.2 ± 0.5	9.6 ± 0.8
31	Lake Road, pole 20' North of road, 500' East of Salt Road	14.2 ± 0.9	12.2 ± 0.50	14.9 ± 0.5	12.3 ± 1.0
32	Woodard Road at County Line Road, pole @ BW corner	13.2 ± 0.9	10.8 ± 0.62	13.3 ± 0.6	10.7 ± 0.9
33	County Line Road at RR tracks, pole approximately 100' East along tracks	11.9 ± 0.7	10.5 ± 0.45	12.7 ± 0.5	10.5 ± 0.7
34	Lincoln Road, pole midway between Ridge Road and Route 104	14.8 ± 0.8	13.3 ± 0.82	15.3 ± 0.7	13.0 ± 0.8
35	Transmission Right of Way, North of Clevenger Road on pole	13.6 ± 0.7	12.5 ± 0.65	15.4 ± 0.6	11.9 ± 0.8
36	Substation #205, Route 104, East of Ontario Center Road, North side of fence	13.2 ± 0.8	10.8 ± 0.71	13.5 ± 0.5	9.9 ± 0.7
37	Rail Road Avenue, pole at 2048	11.6 ± 0.7	9.5 ± 0.51	12.1 ± 1.2	9.3 ± 0.7
38	Fisher Road at RR Tracks, pole East of road	13.1 ± 0.8	12.5 ± 0.81	14.1 ± 0.7	11.2 ± 0.9
39	Seeley Road, Pole South side 100' West of intersection with Stony Lonesome Road	13.8 ± 0.8	12.4 ± 0.53	14.7 ± 0.9	11.6 ± 0.9
40	Lake Road at Stoney Lonesome Road, pole at SE corner	12.7 ± 0.7	10.3 ± 0.48	12.2 ± 0.6	9.5 ± 0.7

TABLE B-12 (Continued)

Direct Radiation
(Results in Units of mR/90 days ± 2σ)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
63 [2]	Westside of warehouse access road	NA	NA	13.9 ± 0.6	12.0 ± 0.8
64[2]	Westside of direct road, adjacent to orchard	NA	NA	16.5 ± 0.8	12.8 ± 1.0

1 - Control Location
2 – Dosimeters were placed at these locations at beginning of the third quarter 2010.

TABLE B-13

Groundwater Monitoring Wells

Location	Sample Date	Tritium
GW01: Warehouse Access Road (Control)	09/23/10	*
	12/10/10	*
GW02: Butler Building	03/17/10	*
	06/08/10	*
GW04: Screenhouse West, North Well	03/31/10	*
	05/12/10	*
	06/08/10	*
	07/14/10	*
	09/23/10	*
	10/15/10	*
	10/10/10	*
	12/10/10	*
GW05: Screenhouse East, South (15.5')	03/17/10	*
	04/13/10	*
	06/08/10	*
	09/23/10	*
	12/10/10	*
GW06: Screenhouse East, Middle (20.0')	03/17/10	*
	04/13/10	*
	05/12/10	*
	06/08/10	*
	07/14/10	*
	08/17/10	*
	09/23/10	*
	12/10/10	*
GW07: Screenhouse East, North (24.0')	03/17/10	*
	04/13/10	*
	06/08/10	*
	09/23/10	*
	12/10/10	*
GW08: All Volatiles Treatment Building	09/23/10	*
	10/15/10	*
	11/10/10	*
	12/10/10	*
GW09: Technical Support Center, North	09/24/10	*
	12/10/10	*
GW10: Technical Support Center, South	09/24/10	*
	12/10/10	*
GW11: Contaminated Service Building, SE (24.0')	03/17/10	*
	06/08/10	*
	06/11/10	*
	06/19/10	*
	09/23/10	*
	12/10/10	*

* - Activity less than MDA (Tritium)

APPENDIX C

Quality Assurance Program

Summary of Appendix C Content:

Appendix C is a summary of Constellation Energy Laboratory's quality assurance program for 2010. It consists of Table C-1 which is a compilation of the results of the Constellation Energy Laboratory's participation in an intercomparison program with Environmental Resource Associates (ERA) located in Arvada, Colorado and Analytics, Inc. located in Atlanta, Georgia. It also includes Table C-2 which is a compilation of the results of the Constellation Energy Laboratory's participation in a split sample program with Teledyne Brown Engineering located in Knoxville, Tennessee and Table C-3 which is a list of typical MDA's achieved by Teledyne Brown for Gamma Spectroscopy.

All the Constellation Energy Laboratory's results contained in Table C-1 generally agree with the intercomparison laboratorys' results within the range of ±2 σ of each other. In addition, all the sets of intercomparison 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 ±2 σ of each other with their respective Constellation Energy Laboratory original, replicate and/or Teledyne Brown Engineering's split laboratory samples, except for the comparisons of one soil sample and a bottom sediment sample involving Cs-137 results. The original analysis of the soil sample from SFS2 collected on 5/28/2010 and bottom sediment sample from WBS2 collected on 10/20/10 do not agree within the range of ±2σ of their respective QC comparison soil samples analyzed. These minor discrepancies, occurring very close to or below the analyses MDA's, are most probably due to counting statistics and/or the non-homogeneous nature of the sample-splitting process. Other samples whose nature generally precludes 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 Programs

Sample Date	Sample Type and Units	Isotope Observed	Reported Laboratory's Results	Cross Check Lab Results
03/18/10	Air Iodine– pCi Charcoal	I-131	107.0 +/- 6.0	88.5 +/- 1.4
03/18/10	Milk– pCi/L	Co-58	131.0 +/- 11.7	143.0 +/- 2.4
		Co-60	166.0 +/- 9.8	183.0 +/- 3.1
		Zn-65	225.0 +/- 26.8	254.0 +/- 4.2
		I-131	66.0 +/- 12.3	74.0 +/- 1.2
		Cs-134	142.0 +/- 6.8	178.0 +/- 3.0
		Cs-137	146.0 +/- 11.2	158.0 +/- 2.6
		Ce-141	227.0 +/- 13.7	261.0 +/- 4.4
		Cr-51	326.0 +/- 76.9	361.0 +/- 6.0
		Mn-54	189.0 +/- 13.7	207.0 +/- 3.5
		Fe-59	129.0 +/- 15.8	137.0 +/- 2.3
03/18/10	Water – pCi/L	Gross Beta	266 +/- 3.08	293 +/- 4.89
04/05/10	Water – pCi/L	Co-60	85.0 +/- 6.3	84.5
		Ba-133	53.9 +/- 7.0	65.9
		Cs-137	139.0 +/- 10.2	146.0
		Cs-134	64.3 +/- 5.0	71.6
		Zn-65	202.0 +/- 7.0	186.0
06/17/10	Air particulates on filter – pCi	Mn-54	119.0 +/- 8.5	111.0 +/- 1.9
		Cr-51	254.0 +/- 31.9	222.0 +/- 3.7
		Ce-141	80.0 +/- 5.0	72.0 +/- 1.2
		Cs-137	103.0 +/- 8.0	98.0 +/- 1.6
		Cs-134	67.0 +/- 6.0	82.2 +/- 1.4
		Zn-65	146.0 +/- 16.0	135.0 +/- 2.3
		Co-60	133.0 +/- 7.0	129.0 +/- 2.2
		Co-58	66.5 +/- 6.4	66.1 +/- 1.1
		Fe-59	89.0 +/- 9.0	77.6 +/- 1.3
06/17/10	Water – pCi/L	Fe-59	182.0 +/- 17.9	173.0 +/- 2.9
		Cs-134	157.0 +/- 7.0	183.0 +/- 3.1
		Cs-137	221.0 +/- 13.6	218.0 +/- 3.7
		Ce-141	154.0 +/- 14.2	161.0 +/- 2.7
		Cr-51	459.0 +/- 88.0	494.0 +/- 8.3
		Mn-54	247.0 +/- 14.5	246.0 +/- 4.1
		I-131	75.9 +/- 16.4	78.9 +/- 1.3
		Co-58	137.0 +/- 12.2	147.0 +/- 2.5
		Co-60	292.0 +/- 12.1	286.0 +/- 4.8
		Zn-65	314.0 +/- 29.0	300.0 +/- 5.0

TABLE C-1 - Continued

Results of Quality Assurance Program

Sample Date	Sample Type and Units	Isotope Observed	Reported Laboratory's Results	Cross Check Lab Results
06/17/10	Water – 10^{-2}pCi/L	Gross Beta	237.0 +/- 3.0	266.0 +/- 4.4
06/17/10	Water – pCi/L	H3	256	256
07/06/10	Water – pCi/L	Zn-65	110.0 +/- 9.1	110.0
		Co-60	73.1 +/- 3.6	72.8
		I-131	27.9 +/- 6.0	28.4
		Cs-137	203.0 +/- 7.0	210.0
		Cs-134	81.0 +/- 3.0	88.3
		Ba-133	88.7 +/- 4.6	89.1
07/06/10	Water – 10^{-2}pCi/L	Gross Beta	45.4 +/- 1.8	56.4
07/06/10	Water – uCi/L	H3	1.55	1.55
10/04/10	Water – pCi/L	I-131	29.1 +/- 5.0	27.5
12/09/10	Water – pCi/L	Gross Beta	117 +/- 2.00	122 +/- 2.04
12/09/10	Air Iodine– pCi Charcoal	I-131	97.0 +/- 8.00	84.2 +/- 1.41
12/09/10	Milk– pCi/L	Co-58	94.0 +/- 16.0	90.2 +/- 1.51
		Co-60	321 +/- 19.0	301 +/- 5.02
		Fe-59	165 +/- 25.0	131 +/- 2.19
		I-131	101 +/- 24.0	96.9 +/- 1.62
		Cs-134	140 +/- 11.0	157 +/- 2.62
		Cs-137	188 +/- 21.0	186 +/- 3.11
		Cr-51	490 +/- 123	456 +/- 7.61
		Mn-54	126 +/- 17.0	120.0 +/- 2.00
		Zn-65	193 +/- 36.0	174 +/- 2.91
12/09/10	Air particulates on filter – pCi	Mn-54	129 +/- 9.00	114 +/- 1.91
		Cr-51	505 +/- 52.0	435 +/- 7.26
		Cs-137	190 +/- 10.0	178 +/- 2.97
		Cs-134	130 +/- 8.00	150 +/- 2.50
		Zn-65	202 +/- 21.0	166 +/- 2.77
		Co-60	304 +/- 11.0	287 +/- 4.79
		Co-58	89.0 +/- 9.00	86.1 +/- 1.44
		Fe-59	147 +/- 13.0	125 +/- 2.09

TABLE C-2

Results of Quality Assurance Program

Sample Type and Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - A1	01/11/10	Gross Beta	1.9 +/- 0.2	1.5 +/- 0.2	**
Air Filter - A2	01/11/10	Gross Beta	1.5 +/- 0.2	1.5 +/- 0.2	**
Air Filter - A3	01/11/10	Gross Beta	2.1 +/- 0.3	1.9 +/- 0.3	**
Air Filter - A4	01/11/10	Gross Beta	2.4 +/- 0.4	2.5 +/- 0.4	**
Air Filter - A5	01/11/10	Gross Beta	1.8 +/- 0.2	1.7 +/- 0.1	**
Air Filter - SFA1	01/11/10	Gross Beta	1.7 +/- 0.1	1.7 +/- 0.1	**
Air Filter - SFA2	01/11/10	Gross Beta	1.9 +/- 0.2	1.7 +/- 0.2	**
Air Filter - SFA3	01/11/10	Gross Beta	2.1 +/- 0.3	2.3 +/- 0.3	**
Air Filter - SFA4	01/11/10	Gross Beta	2.0 +/- 0.3	2.0 +/- 0.3	**
Air Iodine - A1	01/11/10	I-131	<MDA	<MDA	**
Air Iodine - A2	01/11/10	I-131	<MDA	<MDA	**
Air Filter - A1	03/01/10	Gross Beta	1.1 +/- 0.2	1.1 +/- 0.2	**
Air Filter - A2	03/01/10	Gross Beta	1.0 +/- 0.2	1.1 +/- 0.2	**
Air Filter - A3	03/01/10	Gross Beta	1.1 +/- 0.2	1.1 +/- 0.2	**
Air Filter - A4	03/01/10	Gross Beta	1.7 +/- 0.3	1.7 +/- 0.3	**
Air Filter - A5	03/01/10	Gross Beta	1.3 +/- 0.1	1.4 +/- 0.1	**
Air Filter - SFA1	03/01/10	Gross Beta	1.0 +/- 0.1	1.0 +/- 0.1	**
Air Filter - SFA2	03/01/10	Gross Beta	1.3 +/- 0.1	1.2 +/- 0.1	**
Air Filter - SFA3	03/01/10	Gross Beta	1.1 +/- 0.3	1.3 +/- 0.3	**
Air Filter - SFA4	03/01/10	Gross Beta	1.4 +/- 0.2	1.3 +/- 0.2	**
Air Iodine - A3	03/01/10	I-131	<MDA	<MDA	**
Air Iodine - A4	03/01/10	I-131	<MDA	<MDA	**
Air Filter - A1	03/08/10	Gross Beta	1.6 +/- 0.2	1.5 +/- 0.2	**
Air Filter - A2	03/08/10	Gross Beta	1.4 +/- 0.2	1.6 +/- 0.2	**
Air Filter - A3	03/08/10	Gross Beta	1.3 +/- 0.2	1.4 +/- 0.2	**
Air Filter - A4	03/08/10	Gross Beta	2.1 +/- 0.3	2.3 +/- 0.3	**
Air Filter - A5	03/08/10	Gross Beta	1.3 +/- 0.1	1.2 +/- 0.1	**
Air Filter - SFA1	03/08/10	Gross Beta	1.3 +/- 0.1	1.2 +/- 0.1	**
Air Filter - SFA2	03/08/10	Gross Beta	1.2 +/- 0.1	1.2 +/- 0.1	**

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - SFA3	03/08/10	Gross Beta	1.6 +/- 0.2	1.5 +/- 0.3	**
Air Filter - SFA4	03/08/10	Gross Beta	1.4 +/- 0.2	1.5 +/- 0.2	**
Air Iodine - A1	03/08/10	I-131	<MDA	<MDA	**
Air Iodine - A2	03/08/10	I-131	<MDA	<MDA	**
Oysters - IA3	03/23/10	Gamma	<MDA	<MDA	**
Air Filters – A1	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – A2	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – A3	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – A4	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – A5	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – SFA1	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – SFA2	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – SFA3	05/03/10	Gamma	<MDA	**	<MDA
Air Filters – SFA4	05/03/10	Gamma	<MDA	**	<MDA
Air Iodine - LB	05/17/10	I-131	<MDA	<MDA	**
Air Iodine - TI	05/17/10	I-131	<MDA	<MDA	**
Vegetation – SFB1	05/28/10	Gamma	<MDA	<MDA	<MDA
Vegetation – SFB2	05/28/10	Gamma	<MDA	<MDA	<MDA
Vegetation – SFB3	05/28/10	Gamma	<MDA	<MDA	<MDA
Soil – SFS1	05/28/10	Cs-137	<MDA	<MDA	<MDA
Soil – SFS2	05/28/10	Cs-137	662 +/- 35	92.3 +/- 29.4	43.1 +/- 29.4
Soil – SFS3	05/28/10	Cs-137	137 +/- 55	152 +/- 40.3	115 +/- 43.1
Air Filter - A1	06/07/10	Gross Beta	1.8 +/- 0.1	1.8 +/- 0.1	**
Air Filter - A2	06/07/10	Gross Beta	1.7 +/- 0.3	1.7 +/- 0.3	**

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - A3	06/07/10	Gross Beta	1.5 +/- 0.3	1.5 +/- 0.3	**
Air Filter - A4	06/07/10	Gross Beta	1.4 +/- 0.2	1.5 +/- 0.2	**
Air Filter - A5	06/07/10	Gross Beta	1.6 +/- 0.1	1.6 +/- 0.1	**
Air Filter - SFA1	06/07/10	Gross Beta	1.9 +/- 0.1	1.9 +/- 0.1	**
Air Filter - SFA2	06/07/10	Gross Beta	1.9 +/- 0.2	1.8 +/- 0.2	**
Air Filter - SFA3	06/07/10	Gross Beta	1.6 +/- 0.2	1.6 +/- 0.2	**
Air Filter - SFA4	06/07/10	Gross Beta	1.1 +/- 0.2	1.1 +/- 0.2	**
Air Iodine – A2	06/14/10	I-131	<MDA	<MDA	**
Air Iodine – A3	06/14/10	I-131	<MDA	<MDA	**
Air Filter - A1	07/05/10	Gross Beta	1.3 +/- 0.1	1.3 +/- 0.1	**
Air Filter - A2	07/05/10	Gross Beta	1.4 +/- 0.2	1.3 +/- 0.2	**
Air Filter - A3	07/05/10	Gross Beta	1.4 +/- 0.3	1.2 +/- 0.3	**
Air Filter - A4	07/05/10	Gross Beta	1.1 +/- 0.2	1.1 +/- 0.2	**
Air Filter - A5	07/05/10	Gross Beta	1.3 +/- 0.1	1.2 +/- 0.1	**
Air Filter - SFA1	07/05/10	Gross Beta	1.4 +/- 0.1	1.4 +/- 0.1	**
Air Filter - SFA2	07/05/10	Gross Beta	1.1 +/- 0.1	1.0 +/- 0.1	**
Air Filter - SFA3	07/05/10	Gross Beta	1.4 +/- 0.2	1.0 +/- 0.2	**
Air Filter - SFA4	07/05/10	Gross Beta	1.1 +/- 0.2	1.1 +/- 0.2	**
Shoreline Sediment – WB1	07/08/10	Gamma	<MDA	**	<MDA
DR05	07/08/10	TLD	11.50 +/- 0.97	10.90 +/- 1.51	**
DR06	07/08/10	TLD	9.44 +/- 0.92	9.99 +/- 0.53	**
DR07	07/08/10	TLD	10.01 +/- 1.12	10.30 +/- 1.37	**
DR08	07/08/10	TLD	14.24 +/- 0.75	13.96 +/- 2.10	**
DR09	07/08/10	TLD	11.10 +/- 1.32	11.19 +/- 1.21	**
DR10	07/08/10	TLD	9.86 +/- 1.00	10.41 +/- 1.07	**
DR11	07/08/10	TLD	10.37 +/- 1.34	10.34 +/- 1.41	**
DR29	07/08/10	TLD	14.44 +/- 1.78	14.55 +/- 1.81	**
DR31	07/08/10	TLD	15.64 +/- 0.85	15.04 +/- 1.24	**
SFDR14	07/08/10	TLD	13.95 +/- 1.66	14.84 +/- 1.83	**

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
SFDR15	07/08/10	TLD	18.79 +/- 3.57	18.60 +/- 2.07	**
Air Iodine – A5	07/26/10	I-131	<MDA	<MDA	**
Air Iodine – SFA1	07/26/10	I-131	<MDA	<MDA	**
Air Iodine – SFA2	07/26/10	I-131	<MDA	<MDA	**
Oysters – IA3	08/18/10	Gamma	<MDA	<MDA	<MDA
Oysters – IA6	08/18/10	Gamma	<MDA	<MDA	<MDA
Fish – IA4	08/18/10	Gamma	<MDA	<MDA	**
Water– WA2	8/30/10	Gamma	<MDA	<MDA	<MDA
Vegetation–IB3	08/31/10	Gamma	<MDA	<MDA	<MDA
Vegetation – IB4	08/31/10	Gamma	<MDA	<MDA	<MDA
Vegetation – IB7	08/31/10	Gamma	<MDA	<MDA	<MDA
Air Iodine – A1	08/31/10	I-131	<MDA	<MDA	**
Air Iodine – A4	08/31/10	I-131	<MDA	<MDA	**
Air Filter - A1	08/30/10	Gross Beta	2.3 +/- 0.1	2.3 +/- 0.1	**
Air Filter - A2	08/30/10	Gross Beta	1.6 +/- 0.2	1.6 +/- 0.2	**
Air Filter - A3	08/30/10	Gross Beta	1.4 +/- 0.3	1.3 +/- 0.3	**
Air Filter - A4	08/30/10	Gross Beta	1.8 +/- 0.2	1.9 +/- 0.2	**
Air Filter - A5	08/30/10	Gross Beta	2.1 +/- 0.1	2.2 +/- 0.1	**
Air Filter - SFA1	08/30/10	Gross Beta	6.7 +/- 0.4	6.9+/- 0.4	**
Air Filter - SFA2	08/30/10	Gross Beta	2.1 +/- 0.1	2.1 +/- 0.1	**
Air Filter - SFA3	08/30/10	Gross Beta	2.1 +/- 0.2	2.2 +/- 0.2	**
Air Filter - SFA4	08/30/10	Gross Beta	2.0 +/- 0.2	1.8 +/- 0.2	**
Air Iodine – A5	09/06/10	I-131	<MDA	<MDA	**
Air Iodine – SF1	09/06/10	I-131	<MDA	<MDA	**
Bottom Sediment – WBS2	10/20/10	Gamma	<MDA	<MDA	**

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - A1	09/07/10	Gross Beta	4.1 +/- 0.2	4.1 +/- 0.2	**
Air Filter - A2	09/07/10	Gross Beta	2.3 +/- 0.2	2.7 +/- 0.3	**
Air Filter - A3	09/07/10	Gross Beta	3.0 +/- 0.3	3.2 +/- 0.4	**
Air Filter - A4	09/07/10	Gross Beta	3.3 +/- 0.3	3.3 +/- 0.3	**
Air Filter - A5	09/07/10	Gross Beta	3.6 +/- 0.2	3.6 +/- 0.2	**
Air Filter - SFA1	09/07/10	Gross Beta	4.2 +/- 0.1	4.0 +/- 0.2	**
Air Filter - SFA2	09/07/10	Gross Beta	3.8 +/- 0.2	3.7 +/- 0.2	**
Air Filter - SFA3	09/07/10	Gross Beta	3.9 +/- 0.3	3.6 +/- 0.3	**
Air Filter - SFA4	09/07/10	Gross Beta	3.3 +/- 0.3	3.0 +/- 0.3	**
Air Filters – A1	09/27/10	Gamma	<MDA	<MDA	<MDA
Air Filters – A2	09/27/10	Gamma	<MDA	<MDA	<MDA
Air Filters – A3	09/27/10	Gamma	<MDA	<MDA	<MDA
Air Filters – A4	09/27/10	Gamma	<MDA	**	<MDA
Air Filters – A5	09/27/10	Gamma	<MDA	**	<MDA
Air Filters – SFA1	09/27/10	Gamma	<MDA	**	<MDA
Air Filters – SFA2	09/27/10	Gamma	<MDA	**	<MDA
Air Filters – SFA3	09/27/10	Gamma	<MDA	<MDA	<MDA
Air Filters – SFA4	09/27/10	Gamma	<MDA	<MDA	<MDA
DR05	10/07/10	TLD	12.47 +/- 0.95	12.94 +/- 1.93	**
DR06	10/07/10	TLD	10.69 +/- 0.76	11.11 +/- 0.94	**
DR07	10/07/10	TLD	10.46 +/- 1.16	11.63 +/- 0.39	**
DR08	10/07/10	TLD	15.83 +/- 1.56	16.71 +/- 1.92	**
DR09	10/07/10	TLD	11.90 +/- 0.77	12.36 +/- 1.20	**
DR10	10/07/10	TLD	10.98 +/- 0.97	11.85 +/- 1.35	**
DR11	10/07/10	TLD	11.17 +/- 0.74	11.57 +/- 1.20	**
DR29	10/07/10	TLD	15.17 +/- 1.35	15.63 +/- 1.18	**
DR31	10/07/10	TLD	15.75 +/- 0.93	16.75 +/- 1.40	**
SFDR14	10/07/10	TLD	16.61 +/- 1.87	16.96 +/- 1.32	**
SFDR15	10/07/10	TLD	21.09 +/- 5.39	22.13 +/- 5.45	**
Air Filter - A1	10/11/10	Gross Beta	3.5 +/- 0.2	3.5 +/- 0.2	**
Air Filter - A2	10/11/10	Gross Beta	2.7 +/- 0.2	2.6 +/- 0.2	**

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - A3	10/11/10	Gross Beta	3.3 +/- 0.3	3.0 +/- 0.3	**
Air Filter - A4	10/11/10	Gross Beta	2.8 +/- 0.2	2.4 +/- 0.2	**
Air Filter - A5	10/11/10	Gross Beta	3.0 +/- 0.2	3.1 +/- 0.2	**
Air Filter - SFA1	10/11/10	Gross Beta	3.6 +/- 0.2	3.4 +/- 0.2	**
Air Filter - SFA2	10/11/10	Gross Beta	3.0 +/- 0.2	2.9 +/- 0.2	**
Air Filter - SFA3	10/11/10	Gross Beta	3.5 +/- 0.3	3.2 +/- 0.3	**
Air Filter - SFA4	10/11/10	Gross Beta	2.8 +/- 0.2	2.8 +/- 0.2	**
Bottom Sediment – WBS2	10/20/10	Cs-137	<MDA	**	121 +/- 6
Bottom Sediment – WBS4	10/20/10	Gamma	<MDA	**	<MDA
Fish - N	11/13/10	Gamma	<MDA	**	<MDA
Fish - N	11/13/10	Gamma	<MDA	**	<MDA
Intake – WA1	12/02/10	Gamma	<MDA	<MDA	
Discharge – WA2	12/02/10	Gamma	<MDA	<MDA	
Shoreline Sediment - WB1	12/07/10	Gamma	<MDA	<MDA	<MDA
Soil – SFS2	12/07/10	Gamma	<MDA	<MDA	**
Soil – SFS3	12/07/10	Gamma	<MDA	<MDA	**
Air Iodine – A1	12/13/10	I-131	<MDA	<MDA	**
Air Iodine – A5	12/13/10	I-131	<MDA	<MDA	**
Air Filter - A1	12/20/10	Gross Beta	2.7 +/- 0.2	2.6 +/- 0.2	**
Air Filter - A2	12/20/10	Gross Beta	2.4+/- 0.3	2.3 +/- 0.3	**
Air Filter - A3	12/20/10	Gross Beta	2.8 +/- 0.3	2.6 +/- 0.3	**
Air Filter - A4	12/20/10	Gross Beta	2.8 +/- 0.3	3.0 +/- 0.3	**
Air Filter - A5	12/20/10	Gross Beta	2.3 +/- 0.1	2.4 +/- 0.2	**
Air Filter - SFA1	12/20/10	Gross Beta	2.7 +/- 0.2	2.6 +/- 0.1	**

TABLE C-2 - Continued

Results of Quality Assurance Program

Sample Type and Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
Air Filter - SFA2	12/20/10	Gross Beta	2.6 +/- 0.2	2.5 +/- 0.2	**
Air Filter - SFA3	12/20/10	Gross Beta	2.6 +/- 0.3	2.8 +/- 0.3	**
Air Filter - SFA4	12/20/10	Gross Beta	2.2 +/- 0.2	2.0+/- 0.2	**
Intake – WA1	12/30/10	Gamma	<MDA	<MDA	<MDA
Discharge – WA2	12/30/10	Gamma	<MDA	<MDA	<MDA

** The nature of these samples precluded splitting them with an independent laboratory.

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 D-1

Land Use Survey Distances

Sector	Distance to Nearest Residence	Distance to Nearest Garden	Distance to Milk Producing Animals
E	1170 m	580 m Onsite Supplemental Garden	N/A
ESE	1660 m	390 m Onsite Garden	N/A
SE	630 m	N/A	8,270 m
SSE	610 m	620 m Onsite Supplemental Garden	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

The closest residence is situated in the SSE sector (610 meters from the power plant) and the nearest garden is in the ESE sector (390 meters).

The nearest milk producing animals within a 5-mile radius of the power plant are located in the SE sector at Eaton Farm located at 6747 Salmon Creek Road, Williamson, NY (8,270 meters).