

Constellation Energy[®]

Nuclear Generation Group

**ANNUAL RADIOLOGICAL
ENVIRONMENTAL OPERATING
REPORT: JANUARY 1, 2008 –
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Prepared For:

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I. SUMMARY

The Annual Radiological Environmental Operating Report is published in accordance with Section 5.0 of the Offsite Dose Calculation Manual (ODCM). This report describes the Radiological Environmental Monitoring Program, (REMP), and its implementation as required by the ODCM.

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 Cesium-137 resulting from past atmospheric nuclear weapons testing. Terrestrial pathways monitored included airborne particulate and radioiodine, milk, food products, and direct radiation. Analysis of terrestrial pathways demonstrated no detectable increase in radiation levels as a result of plant operation. The 2008 results were consistent with data for the past five years and exhibited no adverse trends.

The analytical results from the 2008 Radiological Environmental Monitoring program demonstrate that the operation of the R.E. Ginna Nuclear Power Plant had no measurable radiological impact on the environment. The results also demonstrate that operation of the plant did not result in a measurable radiation dose to the general population above natural background levels.

During 2008, 1,294 samples were collected for analysis by gross beta counting and/or gamma spectroscopy. These included 63 water samples, 16 fish samples, 5 sediment samples, 312 air iodine samples, 672 air particulates samples, 38 milk samples, 33 food products samples, and 155 thermoluminescent dosimeter measurements. During 2008 there were a total of seven deviations/changes to the REMP sampling program: two deviations from the sampling schedule for air samples, three deviations from the sampling schedule for direct radiation, and two permanent changes to environmental sampling locations (air and direct radiation sampling) due to their interference with the construction of new onsite structures. All deviations were documented in the plant's Corrective Action Program. The revised sampling locations are reflected in the latest revisions of the plant's ODCM. The minimum number of samples required in the ODCM (Ref. 2) was collected for all pathways.

Samples were collected by R. E. Ginna Nuclear Power Plant's Chemistry personnel and analyzed by the Constellation Energy Ft. Smallwood Environmental Laboratory. A summary of the content of the REMP and the results of all the data collected for indicator and control locations are provided in Tables 1 and 2.

II. R. E. GINNA NUCLEAR POWER PLANT RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

II.A. INTRODUCTION

The R. E. Ginna Nuclear Power Plant (Ginna) 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.

Results of the monitoring program for the pre-operational and previous operational periods through 2007 have been reported in a series of documents.

Results of the monitoring program for the current operational period are included in this report. The report presents the content of the REMP (Table 1), the sampling locations (Appendix A), the summary of the 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 the report.

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.

II.B. PROGRAM

II.B.1 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 the R.E. Ginna Nuclear Power Plant.

II.B.2 Sample Collection

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 by contractors to, or personnel of Constellation Energy according to R.E. Ginna Nuclear Power Plant procedures.

II.B.3 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 Table B-10.

II.B.4 Program Exceptions

Seven items reportable in the Annual Environmental Radiological Operating Report under procedure CHA-RETS-VARIATION were reported as follows:

1. January 9, 2008: The dosimeter at Environmental Monitoring Station #35 was found on the ground and intact. A new dosimeter was posted and the old dosimeter was submitted for analysis. Analyses showed no deviation from expected results.
2. May 12, 2008: The air sampler at Environmental Monitoring Station #1 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.
3. June 11, 2008: At the end of its sampling period, the air sampler at Environmental Monitoring Station #13 was found with its particulate filter in an off-set position. Environmental Staff's review of the maintenance logs determined that approximately 64.3 cubic meters of filtered air was collected during the sampling period. A new filter was properly positioned for the next air sampling period. No additional filter alignment problems were identified in subsequent sampling periods at this location.
4. June 26, 2008: The dosimeter at Environmental Monitoring Station #30 was missing at the time of collection and suspected to have been removed by vandals during the sampling period. No direct radiation data could be collected at this location for this sampling period. The dosimeter was relocated inside an adjacent, locked fenced area.
5. September 16, 2008: The dosimeter at Environmental Monitoring Station #4 was found to be facing the ground after a severe wind storm. The dosimeter was remounted in an upright position. It was estimated that the dosimeter was out of position less than 12 hours.
6. October 23, 2008: Dosimeter #13 was relocated to approximately 20 meters to the northeast in the same meteorological sector to avoid interference with the construction of the plant's Independent Spent Fuel Storage Installation (ISFSI). Environmental Monitoring Station #13 was moved from its previous location at

291 degrees and 270 meters from the reactor to its current location of 295 degrees and 260 meters from the reactor.

7. November 4, 2008: Environmental Sampling Station #4 (including air sampler and dosimeter) was relocated to approximately 60 meters to the southeast in the same meteorological sector to avoid interference with the construction of a new parking lot to the south of the Ginna Training Center. Environmental Monitoring Station #4 was moved from its previous location at 140 degrees and 220 meters from the reactor to its current location of 138 degrees and 280 meters from the reactor.

II.C. RESULTS AND DISCUSSIONS

All the environmental samples collected during the year were analyzed using Constellation Energy laboratory procedures (Ref. 3). The analytical results for this reporting period are presented in Appendix B and are also summarized in Table 2. For discussion, the analytical results are divided into four categories. The categories are the Aquatic Environment, the Atmospheric Environment, the Terrestrial Environment, and Direct Radiation. These categories are further divided into subcategories according to sample type (e.g., Circulating Water, Aquatic Organisms, etc., for the Aquatic Environment).

II.C.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 on Lake Ontario and Deer Creek near the plant.

II.C.1.a Surface and Drinking Water

Samples are collected weekly from Lake Ontario, upstream (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 2008 averages were 2.23 pCi/liter and 2.27 pCi/liter for the upstream and downstream samples, respectively. Gamma isotopic analysis of the monthly composite samples showed no statistically significant difference in activity between the upstream and downstream samples.

Gross beta peaks of up to 10 pCi/liter can occur when the lake is stirred up by wind and the weekly sample includes large quantities of suspended silt.

Weekly samples are taken from the plant circulating water intake (Circ In) and discharge canal (Circ Out), and composited monthly. The 2008 averages were 2.01 pCi/liter and

1.89 pCi/liter for the intake and discharge canal, respectively. These are essentially the same as the upstream and downstream values as they fall within the ± 1 sigma error band and range of the measurement.

Results for all water beta analyses are listed in Table B-1. No anomalous results were noted. Control and indicator samples identified trace Cesium-137 activity at or near detection limits with high uncertainty.

Samples of the creek which crosses the site are collected and analyzed monthly. The average gross beta concentration seen in the Deer Creek samples was 3.83 pCi/liter. Historically, Deer Creek gross beta values have typically been 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 2008, no sample results indicated 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 2008, no sample results indicated tritium activity. Tritium data is provided in Table B-1.

II.C.1.b Aquatic Organisms

Indicator fish are caught in the vicinity of the R.E. Ginna Nuclear Power Plant 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 were analyzed during each half-year from the indicator and background locations. The average gamma emitter concentrations observed in the indicator locations and control locations samples were 16.3 pCi/kilogram and 23 pCi/kilogram, respectively. There was no statistically significant difference in the traces of radioactivity of the fish caught between the indicator and control 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 provided in Table B-2.

II.C.1.c Shoreline Sediment

Samples of shoreline sediment are taken upstream (Town of Greece near Slater Creek) and downstream (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 2008, none of the sediment sample analytical results indicated gamma activity.

II.C.2 Atmospheric Environment

Radioactive particles in air are collected by drawing a minimum of 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 6 sampling stations is located on the plant site from 160 to 420 meters from the reactor centerline near the point of the maximum annual average ground level deposition, 1 more is located on-site at 690 meters, and 2 others offsite at approximately 7 miles. In addition, there are 3 sampling stations located approximately 7 to 16 miles from the site that serve as control stations. See Figure A-2 and Figure A-4.

II.C.2.a Air Particulate Filters

Based on weekly comparisons, there was no statistical difference between the Control and Indicator radioactive particulate concentrations. The averages for the control samples were 0.031 pCi/m^3 , and the averages for the indicators were 0.021 pCi/m^3 for the period of January to December 2008. Maximum weekly concentration for all indicator stations was less than 0.050 pCi/m^3 .

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 of the particulate activity is due to short lived noble gas decay products.

Tables B-5 is 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.

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 Table B-7.

II.C.2.b 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.

II.C.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.

II.C.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 given in Table B-8.

II.C.3.b Milk

There was one indicator dairy herd located within five miles from the plant in 2008. 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 2008, no samples indicated Iodine-131 activity that exceeded the LLD for the analysis. One sample from the indicator farm indicated trace Cesium-137 activity at or near detection limits with high uncertainty.

Table B-9 is a listing of all samples collected during 2008 with analytical results.

II.C.4 Direct Radiation

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 2008, on-site exposure ranged between 8.9 – 15.3 mrem/quarter, with an average exposure of 12.3 mrem/quarter and off-site exposure ranged between 9.2 – 14.8 mrem/quarter with an average exposure of 11.5 mrem/quarter.

40 CFR 190 requires that the annual dose equivalent not exceed 25 millirem to the whole body of any member of the public. Comparing the quarterly average of 10.6 millirem observed at the control dosimeter stations as background (equivalent to 42.4 millirem annually) and the highest site boundary dosimeter annual reading (49.6 millirem observed at Stations 15) indicates a 7.2 millirem hypothetical maximum direct radiation dose exposure to an off-site member of the public.

Table B-12 gives dosimeter readings for each quarter.

II.C.5 Monitoring Wells

In accordance with R. E. Ginna Nuclear Power Plant's Chemistry procedures, environmental groundwater monitoring wells are sampled quarterly. There is a total of 9 onsite groundwater monitoring wells:

- Three located adjacent to the All Volatiles Treatment (AVT) Building, screened at 3 depths to include groundwater from top of the water table down to bedrock.
- Three located east of the Screenhouse, screened at 3 depths to include groundwater from top of the water table down to bedrock.
- One to the west of the Screenhouse:
- One to the southeast of the Contaminated Storage Building (CSB).
- One located south of the Butler Building and upgradient from the reactor containment building, which serves as a local control sample point.

The groundwater monitoring well located east of the Screenhouse was established in late spring of 2008. Samples were collected from this location beginning in June 2008. Additionally, surface water samples from storm drains and the transformer retention pond are sampled monthly when water is present.

Groundwater samples are analyzed for tritium to a detection limit of 500 pCi/L. In 2008, no radioactivity was detected in groundwater samples or storm drain samples. Results of the groundwater monitoring well sampling are presented in Table B-13.

II.D. CONCLUSION

It is concluded that 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. Additionally, there was no significant buildup of plant-related radionuclides in the environment due to the operations of R. E. Ginna Nuclear Power Plant.

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						
Drinking Water	MC	2	24	Gamma	M	24
				Gross Beta	M	24
				Tritium	M	24
Surface Water	MC	3	39	Gamma	M	39
				Gross Beta	M	39
				Tritium	M	39
Fish ²	SA	4	16	Gamma	SA	16
Sediment	SA	3	5	Gamma	SA	5
Atmospheric Environment						
Air Iodine ³	W	6	312	Gamma	W	312
Air Particulates ⁴	W	12	624	Gross Beta	W	624
	Q	12	48	Gamma	Q	48
Direct Radiation						
Ambient Radiation	Q	39	155	Dosimeter	Q	155
Terrestrial Environment						
Food Products ⁵	A	12	33	Gamma	A	33
Milk	BW (June thru October)	2	22	Gamma	BW	22
	M (November thru May)	2	16	Gamma	M	16

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 Annually during growing season. Samples include grapes, apples, corn, cabbage, tomatoes, green leafy vegetables, cucumbers, raspberries, squash, and garden 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	Typical Lower Limit of Detection (LLD)	Indicator Locations Mean (F)/Range ¹	Indicator Location with Highest Annual Mean Name/Distance & Direction ²	Highest Annual Mean (F)/Range ¹	Control Locations Mean (F)/Range ¹
Aquatic Environment						
Drinking Water (pCi/L)	Gross Beta 26	1	2.27 (13/13) (1.55 – 3.23)	Ontario Water Dist. 2.20 km ENE	2.27 (13/13) (1.55 – 3.23)	2.23(13/13) (1.65 – 3.33)
	Cs-137 26	3.9	4.08 (2/13)	Ontario Water Dist. 2.20 km ENE	4.08 (2/13)	2.61 (1/13)
Surface Water (pCi/L)	Gross Beta 39	1	2.55 (26/26) (1.38 – 6.29)	Deer Creek 0.26 km ESE	3.83 (13/13) (2.29 – 6.29)	1.99 (13/13) (1.26 – 2.51)
	Cs-137 39	3.9	3.53 (2/26) (1.71 - 5.35)	Circulating Water Out 0.13 km NNE	5.35 (1/26) (5.35 - 5.35)	4.15(1/13)
Fish	Cs-137 16	17	16.3 (3/8) (15 – 19)	North Indicator 2.20 km ENE	17.0 (2/8)	23.0 (2/8)
Sediment						
Shoreline Sediment	Cs-137 4	58	³ (2/2)	³	³ (1/1)	³ (2/2)
Benthic Sediment	Cs-137 1	58	³ (1/1)	³	³ (1/1)	³ (2/2)

TABLE 2 (Continued)

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	Typical Lower Limit of Detection (LLD)	Indicator Locations Mean (F)/Range ¹	Indicator Location with Highest Annual Mean Name/Distance & Direction ²	Highest Annual Mean (F)/Range ¹	Control Locations Mean (F)/Range ¹
Atmospheric Environment						
Air Iodine	I-131 312	1.9	³ (260/260)	³	³ (52/52)	³ (52/52)
Air Particulates (10 ⁻² pCi/m ³)	Gross Beta 624	1	2.09 (468/468) (0.81 – 4.98)	Substation 13 Station 13 1.4 km SSW ³	2.22(52/52) (1.06 – 4.43)	3.07(156/156) (0.98 – 153.06)
	Cs-137 48	2.8	³ (36/36)	³	³ (4/4)	³ (12/12)
Direct Radiation						
Ambient Radiation (mR/91 days)	Dosimeters 155	--	11.69 (120/120) (8.9 – 15.3)	Onsite Station 5 0.16 km SSE	13.28 (4/4) (12.4 – 15.3)	10.59 (35/35) (9.1 – 12.6)
Terrestrial Environmental						
Food Products (pCi/kg)	Cs-137 33	26	³ (24/24)	³	³ (24/24)	³ (9/9)
Milk	Cs-137 38	3.7	4.7 (1/19)	Eaton Farm (Indicator) 8.27 km ESE	4.7 (1/19)	³ (19/19)

Notes:

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

³ There was no detectable activity at the control or indicator location

III. REFERENCES

- (1) R. E. Ginna Nuclear Power Plant, Nos. DPR-18, Technical Specification 5.6.2; Annual Radiological Environmental Operating Report.
- (2) Offsite Dose Calculation Manual for the R. E. Ginna Nuclear Power Plant, Revision 24, Effective Date: March 20, 2009.
- (3) Constellation Energy Laboratory Procedures Manual, General Services Department.
- (4) Constellation Energy, "Land Use Survey Around R. E. Ginna Nuclear Power Plant, September 2008."

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 the Ginna are given 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	320	0.2	E
3	East Field	420	0.3	ESE
4	East of Training Center Parking Lot	280	0.2	SE
5	Creek Bridge	160	0.1	SSE
6	Main Parking Lot	225	0.1	SW
7	West Fence Line	220	0.1	WSW
8	Seabreeze	19200	11.9	WSW
9	Webster	11400	7.1	SW
10	Walworth	13100	8.1	S
11	Williamson	11500	7.1	ESE
12	Sodus Point	25100	15.6	E
13	Substation 13	690	0.4	SSW
Direct Radiation				
2	Onsite-Manor House Yard	320	0.2	E
3	Onsite-In field approximately 200 ft SE of station #2	420	0.3	ESE
4	Onsite- East of Training Center Parking Lot	280	0.2	SE
5	Onsite-Between creek and plant entry road	160	0.1	SSE
6	Onsite-SW side of plant parking lot	225	0.1	SW
7	Onsite-utility pole along West plant fence	220	0.1	WSW
8	Topper Drive-Irondequoit, Seabreeze Substation #51	19200	11.9	WSW
9	Phillips Road-Webster, intersection with Highway #104, Substation #74	11400	7.1	SW
10	Atlantic Avenue-Walworth, Substation #230	13100	8.1	S
11	W. Main Street-Williamson, Substation #207	11500	7.1	ESE
12	12 Seaman Avenue-Sodus Point-Off Lake Road by Sewer district, Substation #209	25100	15.6	E
13	Onsite - South of Meteorological Tower	260	0.2	WNW
14	NW corner of field along lake shore	770	0.5	WNW
15	Field access road, west of orchard, approximately 3000' West of plant	850	0.5	W
16	SW Corner of orchard, approximately 3000' West of plant, approximately 200' North of Lake Road	900	0.6	WSW
17	Utility pole in orchard, approximately 75" North of Lake Road	500	0.3	SSW
18	Substation 13A fence, North Side	650	0.4	SSW
19	On NW corner of house 100' East of plant access road	400	0.2	S
20	Approximately 150' West of Ontario Center Road and approximately 170' South of Lake Road	680	0.4	SSE

Station	Description	Distance		Direction
		Meters	Miles	Sector
21	North side of Lake Road, approximately 200' East of Ontario Center Road	600	0.4	SE
22	North side of Lake Road, SE, property corner	810	0.5	SE
23	East property line, midway between Lake Road and Lake shore	680	0.4	ESE
24	Lake shore near NE corner of property	630	0.4	E
25	Substation #73, Klem Road, adjacent to 897 Klem Road	14350	8.9	WSW
26	Service Center, Plank Road, West of 250	14800	9.2	SW
27	Atlantic Avenue at Knollwood Drive utility pole, North side of road	14700	9.1	SSW
28	Substation #193, Marion, behind Stanton Ag. Service, North Main Street	17700	11.0	SE
29	Substation #208, Town Line Road (CR-118), 1000 ' North of Route 104	13800	8.6	ESE
30	District Office, Sodus, on pole, West side of bldg	20500	12.7	ESE
31	Lake Road, pole 20' North of road, 500' East of Salt Road	7280	4.5	W
32	Woodard Road at County Line Road, pole @ Northwest corner.	6850	4.2	WSW
33	County Line Road at RR tracks, pole approximately 100' East along tracks	7950	4.9	SW
34	Pole at Route 104, Lincoln Road, SW Corner.	6850	4.2	SSW
35	Transmission Right of Way, North of Clevenger Road on pole.	7600	4.7	SSW
36	Substation #205, Route 104, East of Ontario Center Road, North side of fence.	5650	3.5	S
37	Rail Road Avenue, pole at 2048	6000	3.7	SSE
38	Fisher Road at RR Tracks, pole East of road	7070	4.4	SE
39	Seeley Road, Pole South side 100' West of intersection with Stony Lonesome Road	6630	4.1	ESE
40	Lake Road at Stoney Lonesome Road, pole at SE corner	6630	4.1	E
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.				
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

Station	Description	Distance		Direction
		Meters	Miles	Sector
Sediment				
	Lake Ontario Discharge Plume	2200	1.4	ENE
	Russell Station	25600	15.9	W
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

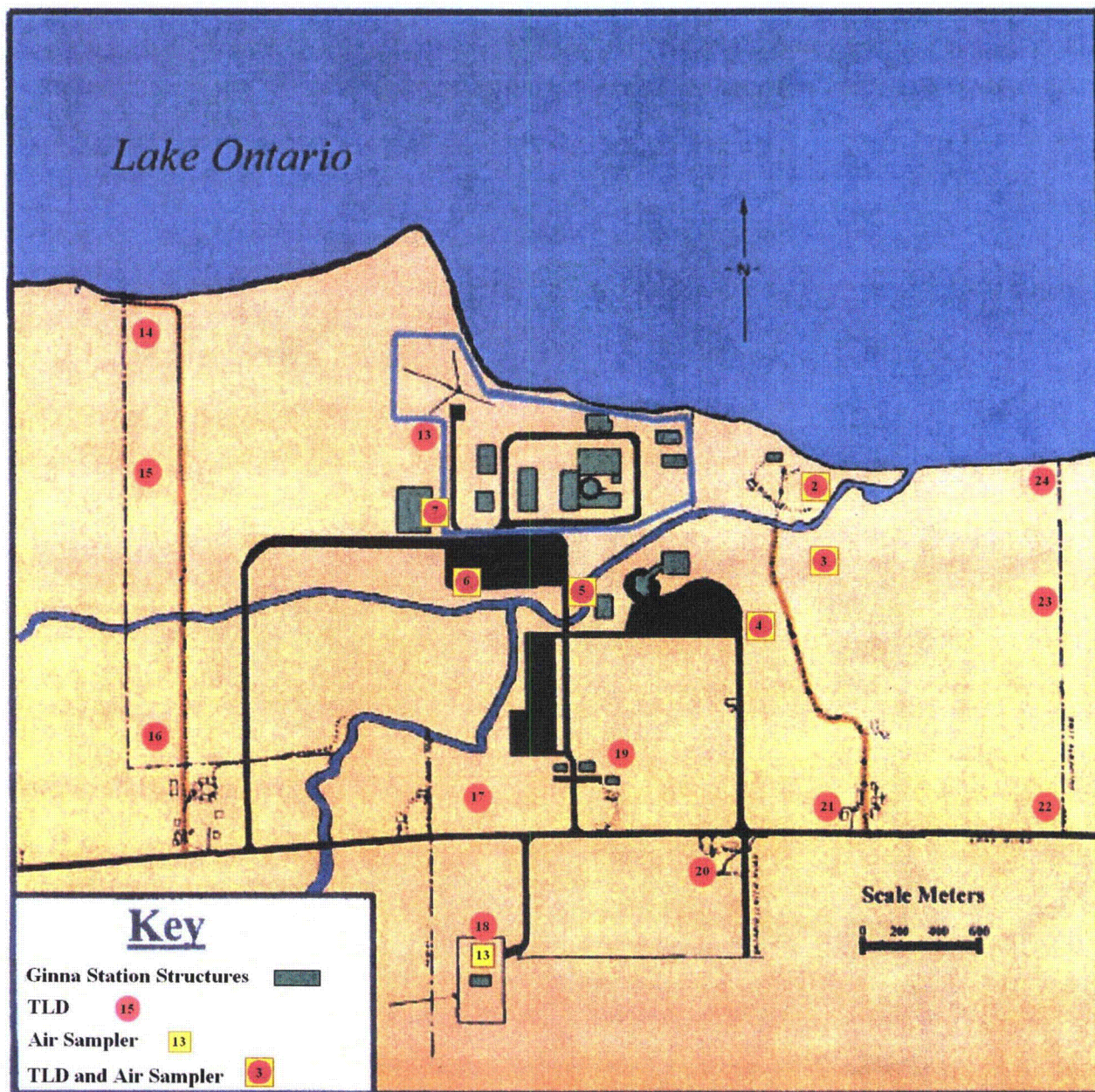


FIGURE A-3

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

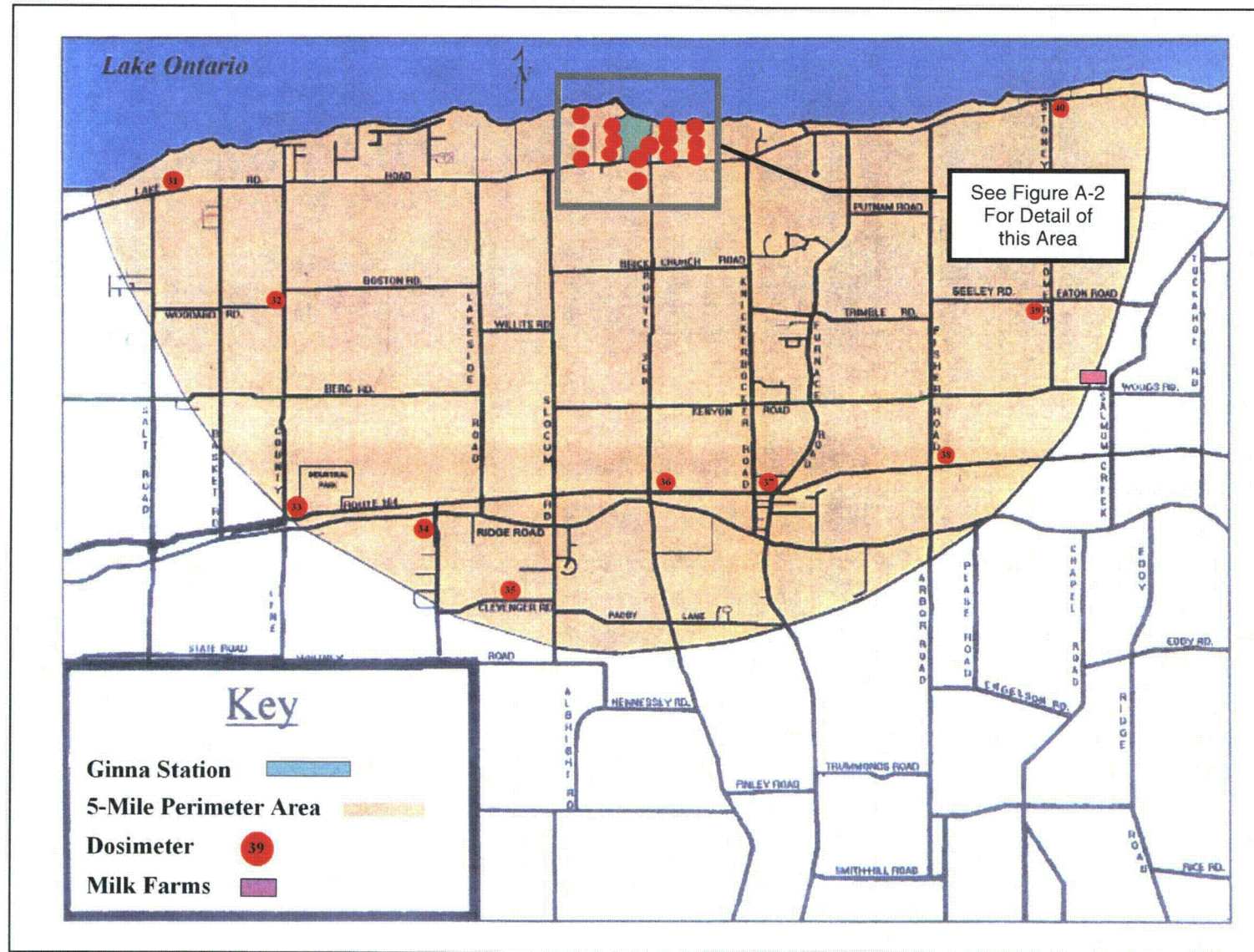
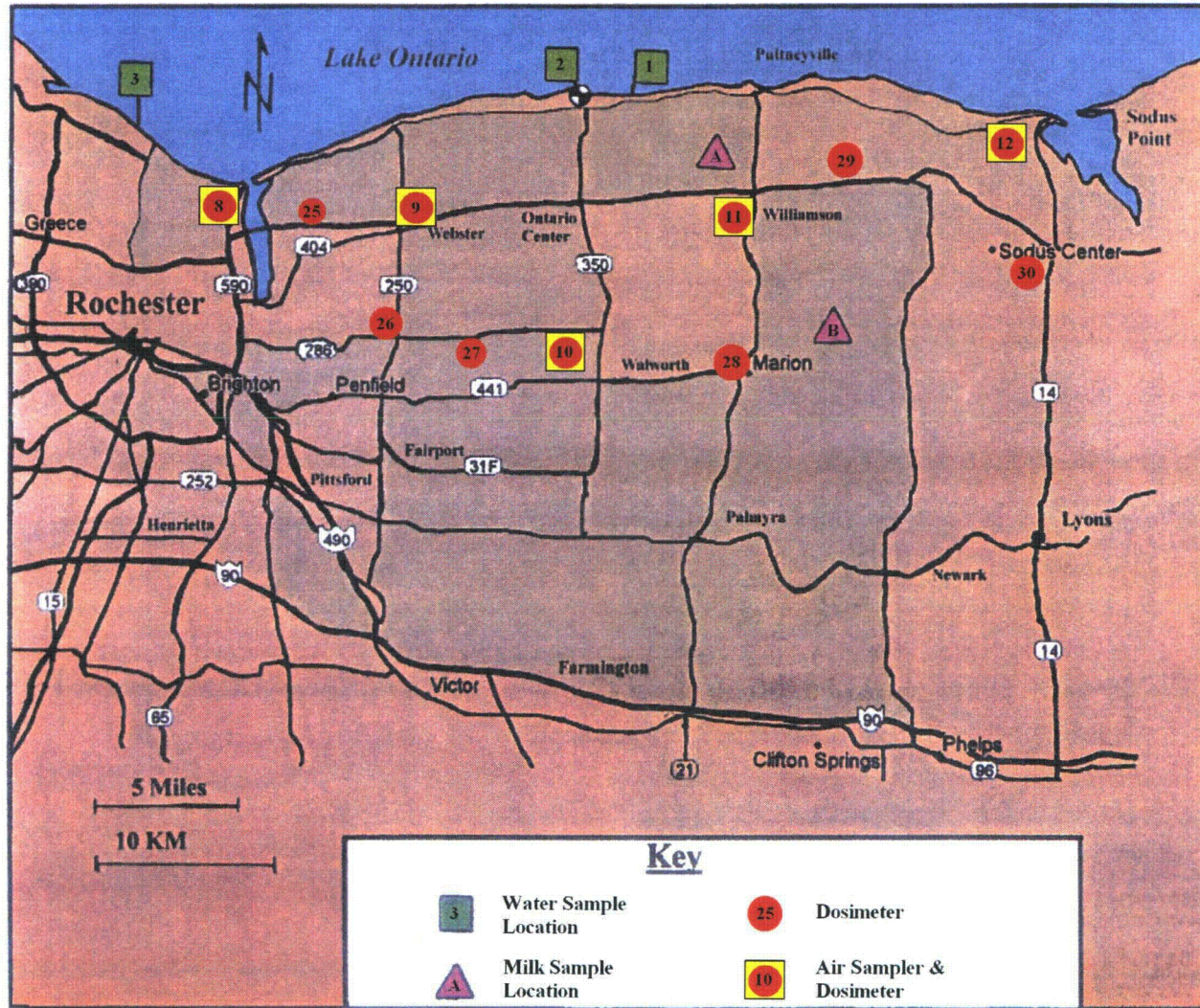


FIGURE A-4
Water Sample, Milk Farms and Dosimeter Locations



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.

APPENDIX B
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TABLE B-1

Concentration of Tritium, Gamma Emitters and Gross Beta in Surface and Drinking Water
(Results in units of pCi/L $\pm 2\sigma$)

Location	Sample Date	H-3	Gamma Emitters	Gross Beta
Monroe County Water Shoremont (MCWA) Greece	01/22/08	*	*	1.73 \pm 0.54
	02/18/08	*	*	2.06 \pm 0.55
	03/17/08	*	*	2.18 \pm 0.53
	04/14/08	*	*	3.03 \pm 0.59
	05/12/08	*	2.61 \pm 1.70 (Cs-137)	2.03 \pm 0.54
	06/09/08	*	*	1.93 \pm 0.52
	07/07/08	*	*	2.14 \pm 0.56
	08/04/08	*	*	1.84 \pm 0.54
	09/02/08	*	*	1.72 \pm 0.57
	09/29/08	*	*	1.65 \pm 0.52
	10/27/08	*	*	3.23 \pm 0.68
	11/24/08	*	*	3.33 \pm 0.57
	12/22/08	*	*	2.15 \pm 0.67
Ontario Water District (OWD) E	01/22/08	*	*	1.55 \pm 0.52
	02/18/08	*	*	2.17 \pm 0.55
	03/17/08	*	*	3.23 \pm 0.58
	04/14/08	*	*	2.18 \pm 0.55
	05/12/08	*	*	2.15 \pm 0.53
	06/09/08	*	*	2.39 \pm 0.53
	07/07/08	*	*	1.83 \pm 0.54
	08/04/08	*	*	2.03 \pm 0.56
	09/02/08	*	4.47 \pm 2.05 (Cs-137)	2.24 \pm 0.60
	09/29/08	*	*	1.91 \pm 0.55
	10/27/08	*	*	2.29 \pm 0.56
	11/24/08	*	*	3.05 \pm 0.56
	12/22/08	*	3.68 \pm 1.68 (Cs-137)	2.43 \pm 0.60
Circulating Water Inlet (Circ In) N	01/22/08	*	*	1.92 \pm 0.55
	02/19/08	*	*	2.12 \pm 0.55
	03/18/08	*	*	2.10 \pm 0.53
	04/15/08	*	*	1.26 \pm 0.49
	05/12/08	*	*	1.90 \pm 0.53
	06/10/08	*	*	2.24 \pm 0.55
	07/08/08	*	*	1.67 \pm 0.54
	08/05/08	*	*	1.68 \pm 0.54
	09/02/08	*	*	2.51 \pm 0.60
	09/29/08	*	4.15 \pm 1.81 (Cs-137)	2.25 \pm 0.56
	10/28/08	*	*	2.30 \pm 0.56
	11/24/08	*	*	2.12 \pm 0.52
	12/23/08	*	*	2.12 \pm 0.57

*All Non-Natural Gamma Emitters, including I-131, and tritium <MDA.

TABLE B-1 (Continued)

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

Location	Sample Date	H-3	Gamma Emitters	Gross Beta
Circulating Water Outlet (Circ Out) N	01/22/08	*	*	1.66 \pm 0.53
	02/19/08	*	*	1.79 \pm 0.54
	03/18/08	*	*	1.88 \pm 0.52
	04/15/08	*	*	1.79 \pm 0.53
	05/12/08	*	*	2.41 \pm 0.55
	06/10/08	*	*	1.92 \pm 0.51
	07/08/08	*	*	1.38 \pm 0.53
	08/05/08	*	*	2.16 \pm 0.56
	09/02/08	*	*	2.17 \pm 0.58
	9/29/08	*	*	1.59 \pm 0.52
	10/28/08	*	*	2.00 \pm 0.54
	11/24/08	*	*	1.91 \pm 0.55
	12/23/08	*	5.35 \pm 2.15 (Cs-137)	1.96 \pm 0.58
Deer Creek ESE	01/15/08	*	*	3.28 \pm 0.65
	02/25/08	*	*	3.34 \pm 0.67
	03/11/08	*	*	4.69 \pm 0.71
	04/08/08	*	*	2.94 \pm 0.65
	05/19/08	*	*	2.29 \pm 0.55
	06/16/08	*	*	3.95 \pm 0.65
	07/21/08	*	1.71 \pm 1.44 (Cs-137)	3.62 \pm 0.69
	08/18/08	*	*	2.73 \pm 0.73
	09/15/08	*	*	4.24 \pm 0.88
	10/13/08	*	*	6.29 \pm 1.06
	11/10/08	*	*	3.56 \pm 0.69
	12/08/08	*	*	4.98 \pm 0.77

* All Non-Natural Gamma Emitters, including I-131, and tritium < MDA.

TABLE B-2

Concentration of Gamma Emitters in the Flesh of Edible Fish
(Results in units of pCi/kg (wet) $\pm 2\sigma$)

Location	Sample Date	Fish Type	Gamma Emitters
North (Indicator)	02/01/08	Smallmouth Bass	*
	02/20/08	Lake Trout	*
	09/18/08	Brown Trout	15 \pm 11 (Cs-137)
	10/23/08	Smallmouth Bass	19 \pm 9 (Cs-137)
	10/23/08	Walleye	*
	10/23/08	Lake Trout	*
East (Indicator)	04/23/08	Rainbow Trout	15 \pm 10 (Cs-137)
	04/23/08	Carp	*
Greece (Control)	02/15/08	Brown Trout	*
	02/15/08	Walleye Perch	*
	02/22/08	Rainbow Trout	22 \pm 9 (Cs-137)
	10/13/08	Largemouth Bass	*
	10/13/08	Rainbow Trout	24 \pm 10 (Cs-137)
Hamlin (Control)	04/23/08	Carp	*
	11/11/08	Chinook Salmon	*
	11/11/08	Coho Salmon (C)	*

*All Non-Natural Gamma Emitters <MDA

TABLE B-3

Concentration of Gamma Emitters in Sediment
(Results in units of pCi/kg (wet) $\pm 2\sigma$)

Description	Sample Date	Gamma Emitters
Shoreline Sediment		
E Indicator	05/06/08	*
	8/12/08	*
Greece Control	05/06/08	*
	08/11/08	*
Benthic Sediment		
North	04/16/08	*

* 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/m³ $\pm 2\sigma$)

Start Date	Stop Date	Station #2 (I) Manor House Yard	Station #4 (I) Training Center Parking Lot	Station #7 (I) West Fence Line	Station #8 (C) Seabreeze ¹	Station #9 (I) Webster	Station #11 (I) Williamson
12/31/2008	1/07/2008	*	*	*	*	*	*
1/07/2008	1/14/2008	*	*	*	*	*	*
1/14/2008	1/21/2008	*	*	*	*	*	*
1/21/2008	1/28/2008	*	*	*	*	*	*
1/28/2008	2/04/2008	*	*	*	*	*	*
2/04/2008	2/11/2008	*	*	*	*	*	*
2/11/2008	2/18/2008	*	*	*	*	*	*
2/18/2008	2/25/2008	*	*	*	*	*	*
2/25/2008	3/03/2008	*	*	*	*	*	*
3/03/2008	3/10/2008	*	*	*	*	*	*
3/10/2008	3/17/2008	*	*	*	*	*	*
3/17/2008	3/24/2008	*	*	*	*	*	*
3/24/2008	3/31/2008	*	*	*	*	*	*
3/31/2008	4/07/2008	*	*	*	*	*	*
4/07/2008	4/14/2008	*	*	*	*	*	*
4/14/2008	4/21/2008	*	*	*	*	*	*
4/21/2008	4/28/2008	*	*	*	*	*	*
4/28/2008	5/05/2008	*	*	*	*	*	*
5/05/2008	5/12/2008	*	*	*	*	*	*
5/11/2008	5/19/2008	*	*	*	*	*	*
5/19/2008	5/26/2008	*	*	*	*	*	*
5/26/2008	6/02/2008	*	*	*	*	*	*
6/02/2008	6/09/2008	*	*	*	*	*	*
6/09/2008	6/16/2008	*	*	*	*	*	*
6/16/2008	6/23/2008	*	*	*	*	*	*
6/23/2008	6/30/2008	*	*	*	*	*	*

¹ Control Location
* <MDA (I-131)

Table B-4 (Continued)

Concentration of Iodine-131 in Filtered Air (Charcoal Cartridges)
(Results in units of 10^{-2} pCi/m³ $\pm 2\sigma$)

Start Date	Stop Date	Station #2 (I) Manor House Yard	Station #4 (I) Training Center Parking Lot	Station #7 (I) West Fence Line	Station #8 (C) Seabreeze ¹	Station #9 (I) Webster	Station #11 (I) Williamson
6/30/2008	7/07/2008	*	*	*	*	*	*
7/07/2008	7/15/2008	*	*	*	*	*	*
7/15/2008	7/13/2008	*	*	*	*	*	*
7/21/2008	7/28/2008	*	*	*	*	*	*
7/28/2008	8/04/2008	*	*	*	*	*	*
8/04/2008	8/11/2008	*	*	*	*	*	*
8/11/2008	8/18/2008	*	*	*	*	*	*
8/18/2008	8/25/2008	*	*	*	*	*	*
8/25/2008	9/02/2008	*	*	*	*	*	*
9/02/2008	9/08/2008	*	*	*	*	*	*
9/15/2008	9/15/2008	*	*	*	*	*	*
9/15/2008	9/22/2008	*	*	*	*	*	*
9/22/2008	9/29/2008	*	*	*	*	*	*
9/0292008	10/07/2008	*	*	*	*	*	*
10/07/2008	10/13/2008	*	*	*	*	*	*
10/13/2008	10/20/2008	*	*	*	*	*	*
10/20/2008	10/27/2008	*	*	*	*	*	*
10/27/2008	11/03/2008	*	*	*	*	*	*
11/03/2008	11/10/2008	*	*	*	*	*	*
11/10/2008	11/17/2008	*	*	*	*	*	*
11/17/2008	11/24/2008	*	*	*	*	*	*
11/24/2008	12/01/2008	*	*	*	*	*	*
12/01/2008	12/08/2008	*	*	*	*	*	*
12/08/2008	12/15/2008	*	*	*	*	*	*
12/15/2008	12/22/2008	*	*	*	*	*	*
12/22/2008	12/29/2008	*	*	*	*	*	*

¹ Control Location
* <MDA (I-131)

Table B-5

Concentration of Beta Emitters in Air Particulates – Onsite Samples
(Results in pCi/m³ ± 2σ Uncertainty)

START DATE	STOP DATE	Station #2 (I) Manor House Yard		Station #3 (I) East Field		Station #4 (I) Training Center Parking Lot		Station #5 (I) Creek Bridge		Station #6 (I) Main Parking Lot		Station #7 (I) West Fence Line		Station #13 (I) Substation 13	
12/31/07	01/07/08	0.0226	± 0.0014	0.0188	± 0.0014	0.0222	± 0.0015	0.0243	± 0.0014	0.0231	± 0.0014	0.0237	± 0.0014	0.0250	± 0.0015
01/07/08	01/14/08	0.0172	± 0.0013	0.0143	± 0.0012	0.0166	± 0.0013	0.0173	± 0.0012	0.0184	± 0.0015	0.0197	± 0.0015	0.0214	± 0.0017
01/14/08	01/21/08	0.0211	± 0.0013	0.0176	± 0.0012	0.0209	± 0.0013	0.0213	± 0.0012	0.0235	± 0.0014	0.0223	± 0.0014	0.0245	± 0.0015
01/21/08	01/28/08	0.0253	± 0.0013	0.0214	± 0.0012	0.0242	± 0.0013	0.0265	± 0.0013	0.0276	± 0.0014	0.0273	± 0.0014	0.0293	± 0.0015
01/28/08	02/04/08	0.0263	± 0.0014	0.0219	± 0.0013	0.0236	± 0.0014	0.0281	± 0.0013	0.0277	± 0.0015	0.0292	± 0.0015	0.0311	± 0.0016
02/04/08	02/11/08	0.0227	± 0.0013	0.0185	± 0.0012	0.0222	± 0.0013	0.0228	± 0.0012	0.0236	± 0.0014	0.0240	± 0.0014	0.0247	± 0.0015
02/11/08	02/18/08	0.0229	± 0.0012	0.0204	± 0.0012	0.0218	± 0.0012	0.0232	± 0.0011	0.0232	± 0.0013	0.0245	± 0.0013	0.0264	± 0.0015
02/18/08	02/25/08	0.0215	± 0.0013	0.0174	± 0.0012	0.0210	± 0.0013	0.0217	± 0.0013	0.0227	± 0.0014	0.0221	± 0.0014	0.0245	± 0.0014
02/25/08	03/03/08	0.0180	± 0.0012	0.0159	± 0.0012	0.0199	± 0.0013	0.0203	± 0.0012	0.0205	± 0.0013	0.0188	± 0.0013	0.0227	± 0.0014
03/03/08	03/10/08	0.0218	± 0.0013	0.0174	± 0.0012	0.0197	± 0.0012	0.0204	± 0.0012	0.0245	± 0.0014	0.0223	± 0.0013	0.0240	± 0.0017
03/10/08	03/17/08	0.0194	± 0.0012	0.0164	± 0.0011	0.0209	± 0.0013	0.0161	± 0.0011	0.0210	± 0.0013	0.0208	± 0.0013	0.0218	± 0.0014
03/17/08	03/24/08	0.0192	± 0.0012	0.0153	± 0.0011	0.0192	± 0.0012	0.0197	± 0.0012	0.0207	± 0.0013	0.0212	± 0.0013	0.0229	± 0.0014
03/24/08	03/31/08	0.0177	± 0.0011	0.0149	± 0.0010	0.0184	± 0.0011	0.0178	± 0.0010	0.0198	± 0.0013	0.0206	± 0.0013	0.0226	± 0.0014
03/31/08	04/07/08	0.0208	± 0.0014	0.0181	± 0.0013	0.0214	± 0.0014	0.0212	± 0.0012	0.0220	± 0.0014	0.0208	± 0.0013	0.0233	± 0.0015
04/07/08	04/14/08	0.0095	± 0.0010	0.0081	± 0.0010	0.0094	± 0.0009	0.0101	± 0.0010	0.0107	± 0.0011	0.0106	± 0.0011	0.0118	± 0.0012
04/14/08	04/21/08	0.0254	± 0.0019	0.0213	± 0.0013	0.0269	± 0.0016	0.0247	± 0.0013	0.0257	± 0.0015	0.0254	± 0.0015	0.0284	± 0.0016
04/21/08	04/28/08	0.0249	± 0.0014	0.0205	± 0.0013	0.0477	± 0.0027	0.0247	± 0.0013	0.0269	± 0.0015	0.0259	± 0.0015	0.0274	± 0.0016
04/28/08	05/05/08	0.0249	± 0.0013	0.0159	± 0.0011	0.0188	± 0.0013	0.0195	± 0.0012	0.0200	± 0.0014	0.0210	± 0.0014	0.0219	± 0.0014
05/05/08	05/12/08	0.0157	± 0.0013	0.0139	± 0.0012	0.0160	± 0.0012	0.0161	± 0.0012	0.0179	± 0.0013	0.0175	± 0.0013	0.0166	± 0.0014
05/12/08	05/19/08	0.0121	± 0.0011	0.0105	± 0.0010	0.0123	± 0.0011	0.0117	± 0.0010	0.0109	± 0.0011	0.0120	± 0.0011	0.0150	± 0.0013
05/19/08	05/26/08	0.0097	± 0.0009	0.0090	± 0.0008	0.0090	± 0.0009	0.0100	± 0.0008	0.0111	± 0.0010	0.0103	± 0.0010	0.0106	± 0.0010
05/26/08	06/02/08	0.0135	± 0.0012	0.0127	± 0.0012	0.0136	± 0.0012	0.0149	± 0.0012	0.0138	± 0.0013	0.0139	± 0.0013	0.0155	± 0.0014
06/02/08	06/09/08	0.0152	± 0.0012	0.0145	± 0.0011	0.0182	± 0.0013	0.0180	± 0.0012	0.0181	± 0.0013	0.0186	± 0.0013	0.0187	± 0.0033
06/09/08	06/16/08	0.0158	± 0.0012	0.0133	± 0.0011	0.0191	± 0.0013	0.0173	± 0.0011	0.0177	± 0.0013	0.0172	± 0.0013	0.0189	± 0.0018
06/16/08	06/23/08	0.0109	± 0.0010	0.0102	± 0.0009	0.0120	± 0.0010	0.0114	± 0.0009	0.0114	± 0.0011	0.0119	± 0.0011	0.0129	± 0.0014
06/23/08	06/30/08	0.0188	± 0.0014	0.0178	± 0.0013	0.0197	± 0.0013	0.0203	± 0.0017	0.0194	± 0.0013	0.0197	± 0.0013	0.0220	± 0.0021
1st 6-Month Summary															
Maximum		0.0263	± 0.0019	0.0219	± 0.0014	0.0477	± 0.0027	0.0281	± 0.0017	0.0277	± 0.0015	0.0292	± 0.0015	0.0311	± 0.0033
Average		0.0190		0.0160		0.0198		0.0192		0.0201		0.0201		0.0217	
Minimum		0.0095	± 0.0009	0.0081	± 0.0008	0.0090	± 0.0009	0.0100	± 0.0008	0.0107	± 0.0010	0.0103	± 0.0010	0.0106	± 0.0010

TABLE B-5 (Continued)
(Results in pCi/m³ ± 2σ Uncertainty)

START DATE	STOP DATE	Station #2 (I) Manor House Yard	Station #3 (I) East Field	Station #4 (I) Training Center Parking Lot	Station #5 (I) Creek Bridge	Station #6 (I) Main Parking Lot	Station #7 (I) West Fence Line	Station #13 (I) Substation 13
06/30/08	07/07/08	0.0190 ± 0.0013	0.0166 ± 0.0012	0.0202 ± 0.0015	0.0186 ± 0.0012	0.0220 ± 0.0016	0.0210 ± 0.0015	0.0207 ± 0.0021
07/07/08	07/14/08	0.0173 ± 0.0011	0.0143 ± 0.0010	0.0187 ± 0.0012	0.0192 ± 0.0013	0.0172 ± 0.0012	0.0182 ± 0.0012	0.0184 ± 0.0017
07/14/08	07/21/08	0.0328 ± 0.0017	0.0285 ± 0.0016	0.0348 ± 0.0018	0.0354 ± 0.0020	0.0345 ± 0.0017	0.0345 ± 0.0019	0.0354 ± 0.0024
07/21/08	07/28/08	0.0195 ± 0.0012	0.0182 ± 0.0012	0.0228 ± 0.0014	0.0233 ± 0.0015	0.0218 ± 0.0013	0.0214 ± 0.0015	0.0213 ± 0.0018
07/28/08	08/04/08	0.0165 ± 0.0012	0.0142 ± 0.0011	0.0185 ± 0.0013	0.0187 ± 0.0014	0.0180 ± 0.0012	0.0183 ± 0.0014	0.0175 ± 0.0018
08/04/08	08/11/08	0.0146 ± 0.0011	0.0141 ± 0.0011	0.0159 ± 0.0012	0.0170 ± 0.0014	0.0151 ± 0.0012	0.0158 ± 0.0013	0.0151 ± 0.0017
08/11/08	08/18/08	0.0183 ± 0.0012	0.0189 ± 0.0012	0.0197 ± 0.0013	0.0214 ± 0.0015	0.0183 ± 0.0012	0.0187 ± 0.0014	0.0185 ± 0.0017
08/18/08	08/25/08	0.0208 ± 0.0013	0.0210 ± 0.0013	0.0233 ± 0.0014	0.0240 ± 0.0015	0.0230 ± 0.0013	0.0218 ± 0.0015	0.0217 ± 0.0019
08/25/08	09/01/08	0.0176 ± 0.0011	0.0181 ± 0.0011	0.0194 ± 0.0012	0.0206 ± 0.0013	0.0191 ± 0.0011	0.0202 ± 0.0013	0.0195 ± 0.0016
09/01/08	09/08/08	0.0240 ± 0.0014	0.0232 ± 0.0014	0.0252 ± 0.0015	0.0272 ± 0.0017	0.0252 ± 0.0015	0.0257 ± 0.0017	0.0191 ± 0.0019
09/08/08	09/15/08	0.0173 ± 0.0012	0.0169 ± 0.0012	0.0191 ± 0.0013	0.0197 ± 0.0015	0.0198 ± 0.0013	0.0177 ± 0.0014	0.0177 ± 0.0018
09/15/08	09/22/08	0.0147 ± 0.0010	0.0154 ± 0.0010	0.0160 ± 0.0011	0.0176 ± 0.0012	0.0169 ± 0.0012	0.0163 ± 0.0013	0.0166 ± 0.0016
09/22/08	09/29/08	0.0229 ± 0.0014	0.0232 ± 0.0014	0.0248 ± 0.0016	0.0273 ± 0.0018	0.0235 ± 0.0013	0.0237 ± 0.0015	0.0235 ± 0.0021
09/29/08	10/06/08	0.0107 ± 0.0009	0.0115 ± 0.0010	0.0126 ± 0.0010	0.0135 ± 0.0011	0.0114 ± 0.0010	0.0126 ± 0.0011	0.0116 ± 0.0014
10/06/08	10/13/08	0.0248 ± 0.0015	0.0258 ± 0.0015	0.0267 ± 0.0016	0.0301 ± 0.0018	0.0258 ± 0.0015	0.0266 ± 0.0017	0.0279 ± 0.0023
10/13/08	10/20/08	0.0218 ± 0.0013	0.0147 ± 0.0011	0.0236 ± 0.0014	0.0295 ± 0.0017	0.0249 ± 0.0014	0.0121 ± 0.0012	0.0367 ± 0.0022
10/20/08	10/27/08	0.0156 ± 0.0011	0.0165 ± 0.0012	0.0176 ± 0.0012	0.0198 ± 0.0013	0.0167 ± 0.0012	0.0166 ± 0.0013	0.0152 ± 0.0017
10/27/08	11/03/08	0.0236 ± 0.0013	0.0231 ± 0.0013	0.0211 ± 0.0013	0.0248 ± 0.0016	0.0214 ± 0.0012	0.0216 ± 0.0014	0.0229 ± 0.0018
11/03/08	11/10/08	0.0395 ± 0.0016	0.0404 ± 0.0016	0.0347 ± 0.0017	0.0465 ± 0.0020	0.0447 ± 0.0018	0.0441 ± 0.0019	0.0443 ± 0.0024
11/10/08	11/17/08	0.0127 ± 0.0010	0.0143 ± 0.0011	0.0117 ± 0.0010	0.0147 ± 0.0012	0.0134 ± 0.0011	0.0134 ± 0.0012	0.0128 ± 0.0016
11/17/08	11/24/08	0.0118 ± 0.0010	0.0130 ± 0.0011	0.0132 ± 0.0011	0.0148 ± 0.0013	0.0133 ± 0.0011	0.0132 ± 0.0012	0.0135 ± 0.0016
11/24/08	12/01/08	0.0223 ± 0.0013	0.0237 ± 0.0013	0.0239 ± 0.0014	0.0266 ± 0.0016	0.0247 ± 0.0014	0.0247 ± 0.0016	0.0244 ± 0.0020
12/01/08	12/08/08	0.0166 ± 0.0012	0.0194 ± 0.0012	0.0164 ± 0.0012	0.0207 ± 0.0015	0.0188 ± 0.0013	0.0179 ± 0.0014	0.0201 ± 0.0019
12/08/08	12/15/08	0.0236 ± 0.0013	0.0245 ± 0.0014	0.0236 ± 0.0014	0.0263 ± 0.0016	0.0247 ± 0.0014	0.0263 ± 0.0015	0.0239 ± 0.0020
12/15/08	12/22/08	0.0278 ± 0.0014	0.0286 ± 0.0014	0.0268 ± 0.0014	0.0311 ± 0.0022	0.0288 ± 0.0014	0.0299 ± 0.0016	0.0307 ± 0.0020
12/22/08	12/29/08	0.0356 ± 0.0015	0.0354 ± 0.0015	0.0365 ± 0.0016	0.0452 ± 0.0031	0.0390 ± 0.0016	0.0391 ± 0.0018	0.0401 ± 0.0023
2nd 6-Month Summary								
Maximum		0.0395 ± 0.0017	0.0404 ± 0.0016	0.0365 ± 0.0018	0.0465 ± 0.0031	0.0447 ± 0.0018	0.0441 ± 0.0019	0.0443 ± 0.0024
Average		0.0208	0.0205	0.0218	0.0244	0.0224	0.0220	0.0227
Minimum		0.0107 ± 0.0009	0.0115 ± 0.0010	0.0117 ± 0.0010	0.0135 ± 0.0011	0.0114 ± 0.0010	0.0121 ± 0.0011	0.0116 ± 0.0014
12-Month Summary								
Maximum		0.0395 ± 0.0019	0.0404 ± 0.0016	0.0477 ± 0.0027	0.0465 ± 0.0031	0.0447 ± 0.0018	0.0441 ± 0.0019	0.0443 ± 0.0033
Average		0.0198	0.0183	0.0208	0.0218	0.0213	0.0210	0.0222
Minimum		0.0095 ± 0.0009	0.0081 ± 0.0008	0.0090 ± 0.0009	0.0100 ± 0.0008	0.0107 ± 0.0010	0.0103 ± 0.0010	0.0106 ± 0.0010

TABLE B-6

Concentration of Beta Emitters in Air Particulates – Offsite Samples
Results in pCi/m³ ± 2sigma Uncertainty

START DATE	STOP DATE	Station #8 (C) Seabreeze	Station #9 (I) Webster	Station #10 (C) Walworth	Station #11 (I) Williamson	Station #12 (C) Sodus Point
12/31/07	01/07/08	0.0161 ± 0.0011	0.0193 ± 0.0013	0.0212 ± 0.0013	0.0212 ± 0.0013	0.0227 ± 0.0021
01/07/08	01/14/08	0.0220 ± 0.0015	0.0201 ± 0.0017	0.0214 ± 0.0016	0.0199 ± 0.0015	0.0201 ± 0.0026
01/14/08	01/21/08	0.0225 ± 0.0012	0.0226 ± 0.0014	0.0218 ± 0.0013	0.0244 ± 0.0013	0.0219 ± 0.0021
01/21/08	01/28/08	0.0247 ± 0.0013	0.0270 ± 0.0015	0.0276 ± 0.0014	0.0276 ± 0.0014	0.0295 ± 0.0023
01/28/08	02/04/08	0.0185 ± 0.0012	0.0203 ± 0.0014	0.0275 ± 0.0014	0.0262 ± 0.0014	0.0283 ± 0.0023
02/04/08	02/11/08	0.0231 ± 0.0013	0.0221 ± 0.0014	0.0229 ± 0.0013	0.0235 ± 0.0013	0.0209 ± 0.0022
02/11/08	02/18/08	0.0214 ± 0.0012	0.0205 ± 0.0014	0.0254 ± 0.0013	0.0241 ± 0.0013	0.0237 ± 0.0022
02/18/08	02/25/08	0.0230 ± 0.0012	0.0204 ± 0.0013	0.0216 ± 0.0012	0.0229 ± 0.0013	0.0237 ± 0.0022
02/25/08	03/03/08	0.0203 ± 0.0012	0.0187 ± 0.0014	0.0203 ± 0.0013	0.0213 ± 0.0013	0.0198 ± 0.0022
03/03/08	03/10/08	0.0210 ± 0.0012	0.0188 ± 0.0013	0.0203 ± 0.0012	0.0228 ± 0.0013	0.0223 ± 0.0022
03/10/08	03/17/08	0.0221 ± 0.0012	0.0187 ± 0.0013	0.0190 ± 0.0012	0.0216 ± 0.0013	0.0197 ± 0.0021
03/17/08	03/24/08	0.0202 ± 0.0012	0.0207 ± 0.0014	0.0199 ± 0.0012	0.0198 ± 0.0012	0.0221 ± 0.0021
03/24/08	03/31/08	0.0198 ± 0.0012	0.0202 ± 0.0014	0.0206 ± 0.0013	0.0205 ± 0.0013	0.0194 ± 0.0020
03/31/08	04/07/08	0.0216 ± 0.0012	0.0211 ± 0.0014	0.0200 ± 0.0013	0.0200 ± 0.0013	0.0207 ± 0.0021
04/07/08	04/14/08	0.0108 ± 0.0010	0.0103 ± 0.0011	0.0108 ± 0.0010	0.0117 ± 0.0011	0.0117 ± 0.0019
04/14/08	04/21/08	0.0271 ± 0.0014	0.0258 ± 0.0016	0.0264 ± 0.0015	0.0283 ± 0.0015	0.0275 ± 0.0024
04/21/08	04/28/08	0.0258 ± 0.0014	0.0270 ± 0.0016	0.0261 ± 0.0014	0.0278 ± 0.0015	0.0283 ± 0.0024
04/28/08	05/05/08	0.0200 ± 0.0012	0.0195 ± 0.0014	0.0189 ± 0.0013	0.0197 ± 0.0013	0.0199 ± 0.0304
05/05/08	05/12/08	0.0171 ± 0.0013	0.0176 ± 0.0014	0.0164 ± 0.0011	0.0313 ± 0.0082	0.0171 ± 0.0020
05/12/08	05/19/08	0.0124 ± 0.0010	0.0119 ± 0.0012	0.0125 ± 0.0011	0.0152 ± 0.0013	0.0136 ± 0.0020
05/19/08	05/26/08	0.0104 ± 0.0009	0.0104 ± 0.0010	0.0101 ± 0.0009	0.0103 ± 0.0010	0.0110 ± 0.0016
05/26/08	06/02/08	0.0144 ± 0.0012	0.0153 ± 0.0014	0.0147 ± 0.0012	0.0151 ± 0.0013	0.0176 ± 0.0023
06/02/08	06/09/08	0.0185 ± 0.0012	0.0176 ± 0.0013	0.0182 ± 0.0012	0.0171 ± 0.0012	0.0164 ± 0.0014
06/09/08	06/16/08	0.0177 ± 0.0012	0.0174 ± 0.0014	1.5306 ± 0.1099	0.0171 ± 0.0015	0.0181 ± 0.0013
06/16/08	06/23/08	0.0103 ± 0.0008	0.0131 ± 0.0011	0.0098 ± 0.0009	0.0161 ± 0.0012	0.0117 ± 0.0009
06/23/08	06/30/08	0.0224 ± 0.0015	0.0224 ± 0.0018	0.0213 ± 0.0014	0.0194 ± 0.0014	0.0186 ± 0.0014
1st 6-Month Summary						
Maximum		0.0271 ± 0.0015	0.0270 ± 0.0018	1.5306 ± 0.1099	0.0313 ± 0.0082	0.0295 ± 0.0030
Average		0.0194	0.0192	0.0779	0.0210	0.0202
Minimum		0.0103 ± 0.0008	0.0103 ± 0.0010	0.0098 ± 0.0009	0.0103 ± 0.0010	0.0110 ± 0.0009

Table B-6 (Continued)

Concentration of Beta Emitters in Air Particulates – Offsite Samples
(Results in pCi/m³ ± 2σ Uncertainty)

START DATE	STOP DATE	Station #8 (C) Seabreeze		Station #9 (I) Webster		Station #10 (C) Walworth		Station #11 (I) Williamson		Station #12 (C) Sodus Point	
06/30/08	07/07/08	0.0183	± 0.0012	0.0188	± 0.0014	0.0203	± 0.0014	0.0202	± 0.0015	0.0179	± 0.0014
07/07/08	07/14/08	0.0180	± 0.0011	0.0174	± 0.0018	0.0184	± 0.0012	0.0169	± 0.0011	0.0165	± 0.0011
07/14/08	07/21/08	0.0334	± 0.0017	0.0350	± 0.0029	0.0324	± 0.0017	0.0340	± 0.0018	0.0323	± 0.0018
07/21/08	07/28/08	0.0227	± 0.0013	0.0222	± 0.0023	0.0211	± 0.0013	0.0206	± 0.0013	0.0200	± 0.0013
07/28/08	08/04/08	0.0165	± 0.0012	0.0200	± 0.0022	0.0182	± 0.0013	0.0176	± 0.0013	0.0165	± 0.0012
08/04/08	08/11/08	0.0154	± 0.0013	0.0180	± 0.0021	0.0156	± 0.0012	0.0159	± 0.0012	0.0153	± 0.0012
08/11/08	08/18/08	0.0192	± 0.0014	0.0189	± 0.0021	0.0172	± 0.0012	0.0189	± 0.0013	0.0189	± 0.0013
08/18/08	08/25/08	0.0222	± 0.0015	0.0205	± 0.0022	0.0226	± 0.0014	0.0212	± 0.0013	0.0200	± 0.0013
08/25/08	09/01/08	0.0202	± 0.0013	0.0193	± 0.0019	0.0188	± 0.0012	0.0178	± 0.0011	0.0185	± 0.0012
09/01/08	09/08/08	0.0282	± 0.0017	0.0498	± 0.0033	0.0249	± 0.0016	0.0234	± 0.0015	0.0158	± 0.0013
09/08/08	09/15/08	0.0201	± 0.0014	0.0187	± 0.0022	0.0193	± 0.0013	0.0186	± 0.0013	0.0169	± 0.0013
09/15/08	09/22/08	0.0166	± 0.0013	0.0166	± 0.0021	0.0163	± 0.0011	0.0151	± 0.0011	0.0159	± 0.0011
09/22/08	09/29/08	0.0241	± 0.0015	0.0260	± 0.0024	0.0241	± 0.0016	0.0229	± 0.0015	0.0236	± 0.0015
09/29/08	10/06/08	0.0136	± 0.0011	0.0130	± 0.0018	0.0124	± 0.0010	0.0109	± 0.0010	0.0116	± 0.0010
10/06/08	10/13/08	0.0263	± 0.0017	0.0284	± 0.0027	0.0268	± 0.0016	0.0244	± 0.0015	0.0258	± 0.0016
10/13/08	10/20/08	0.0250	± 0.0015	0.0456	± 0.0029	0.0238	± 0.0014	0.0208	± 0.0013	0.0211	± 0.0013
10/20/08	10/27/08	0.0154	± 0.0013	0.0159	± 0.0021	0.0159	± 0.0012	0.0161	± 0.0012	0.0149	± 0.0012
10/27/08	11/03/08	0.0233	± 0.0014	0.0228	± 0.0021	0.0235	± 0.0013	0.0223	± 0.0013	0.0209	± 0.0013
11/03/08	11/10/08	0.0439	± 0.0019	0.0435	± 0.0029	0.0427	± 0.0018	0.0407	± 0.0017	0.0407	± 0.0017
11/10/08	11/17/08	0.0145	± 0.0012	0.0132	± 0.0019	0.0144	± 0.0011	0.0135	± 0.0011	0.0123	± 0.0011
11/17/08	11/24/08	0.0140	± 0.0012	0.0130	± 0.0019	0.0121	± 0.0011	0.0121	± 0.0011	0.0116	± 0.0010
11/24/08	12/01/08	0.0254	± 0.0015	0.0232	± 0.0023	0.0260	± 0.0014	0.0241	± 0.0014	0.0215	± 0.0013
12/01/08	12/08/08	0.0182	± 0.0014	0.0185	± 0.0023	0.0196	± 0.0013	0.0186	± 0.0013	0.0193	± 0.0013
12/08/08	12/15/08	0.0222	± 0.0015	0.0206	± 0.0023	0.0249	± 0.0014	0.0248	± 0.0014	0.0260	± 0.0014
12/15/08	12/22/08	0.0307	± 0.0016	0.0305	± 0.0024	0.0315	± 0.0015	0.0295	± 0.0015	0.0309	± 0.0015
12/22/08	12/29/08	0.0348	± 0.0017	0.0351	± 0.0025	0.0377	± 0.0016	0.0395	± 0.0017	0.0386	± 0.0017
2nd 6-Month Summary											
Maximum		0.0439	± 0.0019	0.0498	± 0.0033	0.0427	± 0.0018	0.0407	± 0.0018	0.0407	± 0.0018
Average		0.0224		0.0240		0.0223		0.0216		0.0209	
Minimum		0.0136	± 0.0011	0.0130	± 0.0014	0.0121	± 0.0010	0.0109	± 0.0010	0.0116	± 0.0010
12-Month Summary											
Maximum		0.0439	± 0.0019	0.0498	± 0.0033	1.5306	± 0.1099	0.0407	± 0.0082	0.0407	± 0.0026
Average		0.0209		0.0216		0.0507		0.0213		0.0206	
Minimum		0.0103	± 0.0008	0.0103	± 0.0010	0.0098	± 0.0009	0.0103	± 0.0010	0.0110	± 0.0009

TABLE B-7
Concentration of Gamma Emitters in Air Particulates
(Results in units of $10^{-3}\text{pCi/m}^3 \pm 2\sigma$)

Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Station #2 Manor House Yard	*	*	*	*
Station #3 East Field	*	*	*	*
Station #4 Training Center Parking Lot	*	*	*	*
Station #5 Creek Bridge	*	*	*	*
Station #6 Main Parking Lot	*	*	*	*
Station #7 West Fence Line	*	*	*	*
Station #8 Seabreeze	*	*	*	*
Station #9 Webster	*	*	*	*
Station #10 Walworth	*	*	*	*
Station #11 Williamson	*	*	*	*
Station #12 Sodus Point	*	*	*	*
Station #13 Substation 13	*	*	*	*

* All Non-Natural Gamma Emitters <MDA

TABLE B-8

Concentration of Gamma Emitters in Vegetation Samples

(Results in units of pCi/kg (wet) $\pm 2\sigma$)

Location	Sample Date	Sample Type	Gamma Emitters
East Southeast Garden	06/30/08	Garden Vegetation	*
	07/16/08	Garden Vegetation	*
	07/16/08	Raspberries	*
	07/16/08	Squash	*
	07/30/08	Cucumbers	*
	07/30/08	Cabbage	*
	08/26/08	Tomatoes	*
	09/09/08	Grapes	*
East Garden	07/30/08	Squash	*
	07/30/08	Tomatoes	*
	08/13/08	Cucumbers	*
	08/19/08	Cabbage	*
Southeast Garden	09/09/08	Grapes	*
	09/17/08	Apples	*
South Southeast Garden	07/16/08	Squash	*
	07/30/08	Tomatoes	*
	08/19/08	Cabbage	*
	09/03/08	Corn	*
	09/17/08	Apples	*
	10/02/08	Green Leafy Vegetables	*
South Garden	09/19/2008	Apples	*
Southwest Garden	09/17/2008	Apples	*
West Garden	09/17/2008	Apples	*
South Southwest Garden	09/17/2008	Apples	*
Elba Garden Control	09/19/2008	Green Leafy Vegetables	*
Hilton Garden Control	07/19/08	Raspberries	*
	07/19/08	Cucumbers	*
	07/19/08	Squash	*
	09/11/08	Apples	*
	09/11/08	Grapes	*
	09/11/08	Tomato	*
Hamlin Garden Control	09/11/2008	Cabbage	*
Honeoye Garden Control	09/11/2008	Corn	*

* Non-Natural Gamma Emitters <MDA

Table B-9

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

Location	Sample Date	Gamma Emitters
ESE - Eaton (Indicator)	01/07/08	*
	02/04/08	*
	03/03/08	*
	04/01/08	*
	04/28/08	*
	05/27/08	*
	06/03/08	*
	06/16/08	*
	07/01/08	*
	07/15/08	*
	07/29/08	*
	08/12/08	*
	08/26/08	*
	09/09/08	*
	09/23/08	4.70 \pm 2.46 (Cs-137)
10/07/08	*	
10/21/08	*	
11/04/08	*	
12/02/08	*	
S. Sodus – Schultz (Control)	01/07/08	*
	02/04/08	*
	03/03/08	*
	04/01/08	*
	04/28/08	*
	05/27/08	*
	06/03/08	*
	06/16/08	*
	07/01/08	*
	07/15/08	*
	07/29/08	*
	08/12/08	*
	08/26/08	*
	09/09/08	*
	09/23/08	*
10/07/08	*	
10/21/08	*	
11/04/08	*	
12/02/08	*	

* All Non-Natural Gamma Emitters < MDA

TABLE B-10

Typical MDA Ranges for Gamma Spectrometry

Selected Nuclides	Water pCi/l	Fish pCi/Kg	Sediment pCi/Kg	Particulate 10 ⁻³ pCi/m ³	Vegetation pCi/Kg	Milk pCi/l
H-3	223 -- 779	--	--	--	--	--
Na-22	4 - 10	27 - 51	47 - 160	0.4 - 1.0	21 - 68	6 - 13
Cr-51	28 - 77	237 - 777	353 - 1380	14 - 27	143 - 380	31 - 61
Mn-54	4 - 8	20 - 39	39 - 118	0.5 - 0.9	15 - 56	5 - 10
Co-58	4 - 9	33 - 50	47 - 156	0.8 - 1.6	20 - 54	5 - 10
Fe-59	8 - 11	69 - 191	118 - 436	3 - 6	45 - 144	11 - 24
Co-60	4 - 9	24 - 47	49 - 144	0.5 - 1.0	21 - 70	5 - 12
Zn-65	8 - 21	53 - 95	102 - 365	3 - 3	45 - 166	12 - 25
Nb-95	4 - 11	39 - 100	53 - 222	2 - 3	23 - 61	5 - 9
Zr-95	6 - 16	47 - 94	75 - 259	1 - 3	34 - 102	8 - 16
Ru-106	34 - 71	185 - 267	319 - 922	4 - 6	149 - 440	37 - 75
Ag-110m	3 - 8	20 - 31	37 - 142	0.4 - 0.8	16 - 52	4 - 8
Te-129m	42 - 119	364 - 1170	538 - 2280	19 - 33	246 - 674	50 - 98
I-131	4 - 29**	100 - 12200	122 - 1300	161 - 827*	21 - 479	4 - 9***
Cs-134	3 - 7	18 - 27	33 - 117	0.4 - 0.7	14 - 51	4 - 8
Cs-137	4 - 8	21 - 32	39 - 125	0.3 - 0.7	18 - 57	5 - 10
Ba-140	6 - 29	59 - 2250	103 - 916	33 - 87	29 - 137	6 - 14
La-140	6 - 29	59 - 2250	103 - 916	33 - 87	29 - 137	6 - 14
Ce-144	18 - 39	61 - 80	140 - 413	1 - 2	64 - 195	20 - 43

* The MDA range for I-131 measured on a charcoal cartridge is typically 6.3×10^{-3} to 2.3×10^{-2} pCi/m³

** The MDA range for I-131 measured in drinking water is typically 0.5 to 1.1 pCi/L

***The MDA range for I-131 measured in milk is typically 0.6 to 0.9 pCi/L

TABLE B-11

Typical LLDs for Gamma Spectrometry

Selected Nuclides	Water pCi/l	Fish pCi/Kg	Sediment pCi/Kg	Particulate* 10⁻³ pCi/m³	Vegetation pCi/Kg	Milk pCi/l
Na-22	4.1	24	59	3.7	29	6
Cr-51	26	120	327	16	144	30
Mn-54	3.8	20	49	2.8	24	5
Co-58	3.9	20	36	2.8	19	5
Fs-59	7.8	45	103	2.8	50	11
Co-60	4.4	24	60	2.7	26	6
Zn-65	7.9	54	141	7.0	57	12
Nb-95	4.2	18	60	2.4	24	4
Zr-95	6.5	35	79	5.0	43	8
Ru-106	35	172	458	25	196	39
Ag-110m	3.6	15	42	2.2	21	4
Te-129m	41	170	551	27	248	50
I-131	3.2*	13	41	1.9**	19	4*
Cs-134	3.3	17	44	2.4	20	4
Cs-137	3.9	17	58	2.8	26	5
Ba-140	4.8	19	67	3.9	33	5
La-140	4.8	19	67	3.9	33	5
Ce-144	17	58	191	8.9	81	20

* The LLD for I-131 measured in drinking water and milk is 0.5 pCi/L

**The LLD for I-131 measured on charcoal filter is 9.4×10^{-3} pCi/m³

TABLE B-12

Direct Radiation

(Results in Units of mR/90 days $\pm 2\sigma$)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2	Onsite-Manor House Yard	11.6 \pm 2.9	12.0 \pm 3.0	12.3 \pm 0.7	13.9 \pm 0.5
3	Onsite-In field approximately 200 ft SE of station #2	12.0 \pm 3.0	12.7 \pm 3.2	12.7 \pm 0.9	14.3 \pm 0.6
4	Onsite-Training Center yard driveway circle	12.2 \pm 3.1	11.8 \pm 3.0	12.3 \pm 0.7	12.9 \pm 0.6
5	Onsite-Between creek and plant entry road	12.8 \pm 3.2	12.6 \pm 3.2	12.4 \pm 0.7	15.3 \pm 0.8
6	Onsite-SW side of plant parking lot	10.0 \pm 2.5	9.5 \pm 2.4	8.9 \pm 0.6	10.7 \pm 0.7
7	Onsite-utility pole along West plant fence	12.4 \pm 3.1	12.5 \pm 3.1	12.1 \pm 0.7	14.0 \pm 0.5
8 ¹	Topper Drive-Irondequoit, Seabreeze Substation #51	10.8 \pm 2.7	10.8 \pm 2.7	10.0 \pm 0.6	11.5 \pm 0.7
9	Phillips Road-Webster, intersection with Highway #104, Substation #74	10.6 \pm 2.7	10.8 \pm 2.7	10.1 \pm 0.8	11.6 \pm 1.2
10 ¹	Atlantic Avenue-Walworth, Substation #230	10.1 \pm 2.5	10.0 \pm 2.5	9.1 \pm 0.8	10.6 \pm 0.5
11	W. Main Street-Williamson, Substation #207	10.9 \pm 2.7	10.8 \pm 2.7	9.9 \pm 0.6	11.4 \pm 0.7
12 ¹	12 Seaman Avenue-Sodus Point-Off Lake Road by Sewer district, Substation #209	11.0 \pm 2.8	11.0 \pm 2.8	10.8 \pm 0.7	12.6 \pm 1.0
13	Onsite- South of Meteorological Tower	11.6 \pm 2.9	12.1 \pm 3.1	14.1 \pm 0.8	11.6 \pm 1.2
14	NW corner of field along lake shore	11.1 \pm 2.8	11.8 \pm 3.0	11.7 \pm 0.8	13.0 \pm 0.7
15	Field access road, west of orchard, approximately 3000' West of plant	12.0 \pm 3.0	11.9 \pm 3.0	12.8 \pm 0.9	12.8 \pm 0.7

TABLE B-12 (Continued)

Direct Radiation
(Results in Units of mR/90 days $\pm 2\sigma$)

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	11.8 \pm 3.0	12.0 \pm 3.0	12.2 \pm 0.7	12.4 \pm 0.5
17	Utility pole in orchard, approximately 75" North of Lake Road	11.2 \pm 2.8	11.8 \pm 3.0	10.7 \pm 0.7	13.3 \pm 0.7
18	Approximately 30' North of NE corner of Substation 13A fence	9.7 \pm 2.4	10.1 \pm 2.5	9.2 \pm 0.6	10.2 \pm 0.6
19	On NW corner of house 100' East of plant access road	10.2 \pm 2.6	10.4 \pm 2.6	9.4 \pm 0.8	10.4 \pm 0.4
20	Approximately 150' West of Ontario Center Road and approximately 170' South of Lake Road	11.8 \pm 3.0	12.0 \pm 3.0	12.1 \pm 0.9	12.7 \pm 0.8
21	North side of Lake Road, approximately 200' East of Ontario Center Road	11.4 \pm 2.9	11.9 \pm 3.0	10.5 \pm 0.8	12.2 \pm 0.5
22	North side of Lake Road, SE, property owner	11.0 \pm 2.8	11.0 \pm 2.8	10.7 \pm 0.7	11.0 \pm 0.4
23	East property line, midway between Lake Road and Lake shore	11.9 \pm 3.0	11.9 \pm 3.0	11.3 \pm 0.8	12.7 \pm 0.5
24	Lake shore near NE corner of property	12.2 \pm 3.1	12.6 \pm 3.2	11.5 \pm 0.7	13.2 \pm 0.6
25 ¹	Substation #73, Klem Road, adjacent to 897 Klem Road	10.5 \pm 2.7	10.3 \pm 2.6	10.4 \pm 0.8	10.7 \pm 0.7
26 ¹	Service Center, Plank Road, West of 250	10.6 \pm 2.7	11.1 \pm 2.8	10.2 \pm 0.7	11.2 \pm 0.8
27 ¹	Atlantic Avenue at Knollwood Drive utility pole, North side of road	10.9 \pm 2.7	11.1 \pm 2.8	10.9 \pm 0.7	11.4 \pm 0.6

TABLE B-12 (Continued)

Direct Radiation
(Results in Units of mR/90 days $\pm 2\sigma$)

Station	Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
28 ¹	Substation #193, Marion, behind Stanton Ag. Service, North Main Street	10.3 \pm 2.6	10.1 \pm 2.5	9.8 \pm 1.0	11.5 \pm 0.7
29 ¹	Substation #208, Town Line Road (CR-118), 1000' North of Route 104	10.4 \pm 2.6	10.5 \pm 2.7	9.6 \pm 0.6	10.4 \pm 0.4
30 ¹	District Office, Sodus, on pole, West side of bldg	11.2 \pm 2.8	* * *	9.6 \pm 0.7	9.6 \pm 0.4
31	Lake Road, pole 20' North of road, 500' East of Salt Road	11.4 \pm 2.9	14.2 \pm 3.0	11.2 \pm 0.7	12.5 \pm 1.1
32	Woodard Road at County Line Road, pole @ BW corner	10.0 \pm 2.5	12.5 \pm 2.6	9.3 \pm 0.6	10.7 \pm 0.7
33	County Line Road at RR tracks, pole approximately 100' East along tracks	10.3 \pm 2.6	12.1 \pm 2.6	9.6 \pm 1.0	10.7 \pm 0.4
34	Lincoln Road, pole midway between Ridge Road and Route 104	13.0 \pm 3.3	14.7 \pm 3.1	12.1 \pm 0.7	13.2 \pm 0.5
35	Transmission Right of Way, North of Clevenger Road on pole	11.6 \pm 2.9	14.8 \pm 3.1	12.3 \pm 0.8	12.6 \pm 0.9
36	Substation #205, Route 104, East of Ontario Center Road, North side of fence	10.3 \pm 2.6	12.9 \pm 2.7	10.2 \pm 0.6	10.7 \pm 0.9
37	Rail Road Avenue, pole at 2048	10.1 \pm 2.6	12.5 \pm 2.6	9.2 \pm 0.7	10.6 \pm 0.6
38	Fisher Road at RR Tracks, pole East of road	11.4 \pm 2.9	14.1 \pm 3.0	11.3 \pm 1.0	11.9 \pm 0.5
39	Seeley Road, Pole South side 100' West of intersection with Stony Lonesome Road	10.5 \pm 2.7	14.0 \pm 3.0	11.5 \pm 0.9	12.2 \pm 0.7
40	Lake Road at Stoney Lonesome Road, pole at SE corner	10.1 \pm 2.5	12.2 \pm 2.6	9.8 \pm 0.7	10.8 \pm 0.4

¹ - Control Location

* - The Dosimeter was missing at the time of collection and suspected to have been removed by vandals during the sampling period. Accordingly, no direct radiation data could be collected at this location for this sampling period.

TABLE B-13

Groundwater Monitoring Wells

Location	Depth to Water (ft)	Sample Date	Tritium
Groundwater AVT S. 13'	4.0	1/22/08	*
	1.9	2/24/08	*
	1.1	3/11/08	*
	1.3	4/11/08	*
	2.8	6/25/08	*
	4.0	9/3/08	*
	1.5	12/2/08	*
	Groundwater AVT M. 17'	4.2	1/22/08
2.3		2/24/08	*
1.5		3/11/08	*
1.7		4/11/08	*
3.3		6/25/08	*
4.2		9/3/08	*
2.1		12/2/08	*
Groundwater AVT N. 6'	4.0	1/22/08	*
	2.2	2/24/08	*
	1.5	3/11/08	*
	1.9	4/11/08	*
	3.3	6/25/08	*
	N/A	9/3/08	(2)
	1.7	12/2/08	*
Screen House East, N. 24' ¹	9.6	6/25/08	*
	10.0	9/3/08	*
	9.7	12/2/08	*
Screen House East, M. 20' ¹	8.9	6/25/08	*
	9.6	9/3/08	*
	9.5	12/2/08	*
Screen House East, So. 15.5' ¹	8.4	6/25/08	*
	9.7	9/3/08	*
	9.7	12/2/08	*
Screen House West	N/A	1/22/08	(3)
	N/A	2/24/08	(3)
	N/A	3/11/08	(3)
	13.6	4/11/08	*
	6.2	6/25/08	*
	10.1	9/3/08	*
	8.8	12/2/08	*
Butler Building	11.4	1/22/08	*
	11.7	2/24/08	*
	13.1	3/11/08	*
	12.9	4/11/08	*
	11.6	6/25/08	*
	14.3	9/3/08	*
	14.5	12/2/08	*

TABLE B-13 (Continued)
Groundwater Monitoring Wells

Location	Depth to Water (ft)	Sample Date	Tritium
SE of CSB	16.5	1/22/08	*
	16.2	2/24/08	*
	15.3	3/11/08	*
	15.3	4/11/08	*
	17.2	6/25/08	*
	17.9	9/3/08	*
	15.5	12/2/08	*
Retention Pond		6/25/08	*
		9/03/08	*
		12/02/08	(3)
Storm Drain F		1/22/08	(2)
		2/24/08	(2)
		3/11/08	*
		4/11/08	(2)
		6/25/08	(2)
		9/03/08	(2)
		12/02/08	(2)
Storm Drain G		1/22/08	*
		2/24/08	*
		3/11/08	(3)
		4/11/08	*
		6/25/08	*
		9/03/08	*
		12/02/08	*
Storm Drain H		1/22/08	*
		2/24/08	*
		3/11/08	*
		4/11/08	*
		6/25/08	*
		9/03/08	(2)
		12/02/08	*
Storm Drain I		1/22/08	*
		2/24/08	*
		3/11/08	*
		4/11/08	*
		6/25/08	*
		9/03/08	*
		12/02/08	*

* – Analytical results less than MDA

(1) – The Screen House East monitoring wells were established in late spring of 2008. The June 2008 analytical data represent the first analytical information collected from these wells.

(2) – Sampling location was dry. Unable to collect a sample for analysis.

(3) – Sampling location was frozen. Unable to collect a sample for analysis.

APPENDIX C

Quality Assurance Program

Summary of Appendix C Content:

Appendix C presents a summary of Constellation Energy laboratory's quality assurance program, including the following:

- Table C-1 compiles 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.
- Table C-2 compiles the results of the Constellation Energy Laboratory's participation in a split sample program with Teledyne Brown Engineering located in Knoxville, Tennessee.
- Table C-3 lists typical MDAs achieved by Teledyne Brown for Gamma Spectroscopy.

All the Constellation Energy Laboratory's results contained in Table C-1 generally agree with the intercomparison laboratory's results within the range of $\pm 2 \sigma$ 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 Criteria¹. The uncertainties for the Constellation Energy Laboratory's results and Analytics' results are $\pm 2\sigma$ while the ERA laboratory's uncertainty is based on USEPA guidelines².

All the results contained in Table C-2 agree within the range of $\pm 2 \sigma$ 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 five samples involving Cs-137 results: an air filter composite sample from A3 collected 5/15/2007; a soil sample from SFA4 collected 5/31/2007; a shoreline sample from Wb1 collected 5/31/2007; a vegetation sample from Ib1 collected 7/23/2007; and a vegetation sample from SFb3 collected 12/18/2007. In all five cases low levels of Cs-137 were observed in only one of the results of the comparison set and not observed in the other two. These minor discrepancies, occurring very close to or below the analyses MDA's, are most probably due to counting statistical fluctuations 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

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TABLE C-1
Results of Participation in Cross Check Programs

Sample Date	Sample Type and Units	Isotope Observed	Reported Laboratory's Results ¹	Cross Check Lab Results ¹
1/07/08	Water-pCi/L	Ba-133	23±4	26±4
		Co-60	15±3	14±4
		Cs-134	85±4	93±9
		Cs-137	160±7	158±18
		Zn-65	206±12	204±36
3/20/08	Milk-pCi/L	I-131	52±5	60±1
		Cs-134	117±9	125±2
		Cs-137	147±14	146±2
		Ce-141	256±16	249±4
		Cr-51	372±72	359±6
		Mn-54	96±13	94±2
		Co-58	73±12	71±1
		Fe-59	114±17	102±2
		Co-60	258±14	236±4
		Zn-65	143±27	137±2
3/20/08	Charcoal Cartridge-pCi	I-131	70±5	60±1
3/20/08	Water-pCi/L	Gross β	184±3	209±3
3/20/08	Filter-pCi/filter	Gross β	70±2	66±1
4/07/08	Water-pCi/L	I-131	28±2	29±5
6/19/08	Water-pCi	Gross β	177±3	169±3

¹ See discussion at the beginning of the Appendix.

Table C-1 (Continued)

Results of Participation in Cross Check Programs

Sample Date	Sample Type and Units	Isotope Observed	Reported Laboratory's Results¹	Cross Check Lab Results¹
6/19/08	Water-pCi/L	I-131	52±17	45±1
		Cs-134	97±8	104±2
		Cs-137	171±14	158±3
		Ce-141	254±20	237±4
		Co-58	88±12	84±4
		Fe-59	135±17	125±2
		Cr-51	216±88	188±3
		Co-60	148±10	142±2
		Mn-54	208±15	184±3
		Zn-65	183±23	172±3
6/19/08	Filter-pCi/filter	Ce-141	264±10	243±4
		Cr-51	237±49	192±3
		Cs-134	81±6	107±2
		Cs-137	161±11	162±3
		Mn-54	205±13	188±3
		Fe-59	115±14	128±2
		Zn-65	203±23	176±3
		Co-60	158±9	145±2
		Co-58	80±9	86±1
7/07/08	Water-pCi/L	Ba-133	42±4	47±5
		Cs-134	83±3	93±9
		Cs-137	54±5	55±9
		Zn-65	106±10	99±19
		Co-60	26±3	26±5
7/07/08	Water-pCi/L	Gross β	17±1	26±8
9/22/08	Filter-pCi/filter	Cs-134	613±13	623±148
		Cs-137	920±27	761±239
		Co-60	507±17	425±106
		Zn-65	628±40	452±174

¹ See discussion at the beginning of the Appendix

Table C-1 (Continued)

Results of Participation in Cross Check Programs

Sample Date	Sample Type and Units	Isotope Observed	Reported Laboratory's Results¹	Cross Check Lab Results¹
9/23/08	Filter-pCi/filter	Gross β	60 \pm 2	87 \pm 1
10/06/08	Water-pCi/L	I-131	27 \pm 4	28 \pm 5
12/11/08	Charcoal Cartridge-pCi	I-131	70 \pm 8	54 \pm 2
12/11/08	Milk-pCi/L	I-131	69 \pm 21	80 \pm 1
		Ce-141	171 \pm 23	191 \pm 3
		Cr-51	219 \pm 116	246 \pm 4
		Cs-134	111 \pm 11	134 \pm 2
12/11/08	Milk-pCi/L	Cs-137	120 \pm 16	120 \pm 2
		Co-58	99 \pm 16	104 \pm 2
		Mn-54	152 \pm 18	152 \pm 3
		Fe-59	99 \pm 22	100 \pm 2
		Zn-65	168 \pm 34	183 \pm 3
		Co-60	128 \pm 13	133 \pm 2
12/11/08	Filter-pCi/filter	Ce-141	179 \pm 8	159 \pm 3
		Cr-51	225 \pm 49	204 \pm 3
		Cs-134	92 \pm 5	111 \pm 2
		Cs-137	103 \pm 9	99 \pm 2
		Co-58	85 \pm 9	86 \pm 1
		Mn-54	129 \pm 10	126 \pm 2
		Fe-59	94 \pm 12	83 \pm 1
		Zn-65	168 \pm 34	151 \pm 3
		Co-60	128 \pm 13	110 \pm 2
12/11/08	Water-pCi/L	Gross β	211 \pm 3	204 \pm 3

¹ See discussion at the beginning of the Appendix

TABLE C-2

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
10^{-2} pCi/m ³					
Air Iodine-SFA3	1/08/08	I-131	<MDA	<MDA	**
Air Iodine-SFA4	1/08/08	I-131	<MDA	<MDA	**
Air Filter -A1	1/08/08	Beta	2.6±0.2	2.7±0.2	**
Air Filter -A2	1/08/08	Beta	2.6±0.2	2.6±0.3	**
Air Filter -A3	1/08/08	Beta	2.5±0.2	2.5±0.2	**
Air Filter -A4	1/08/08	Beta	2.6±0.2	2.8±0.2	**
Air Filter -A5	1/08/08	Beta	3.0±0.2	2.9±0.2	**
Air Filter -SFA1	1/08/08	Beta	2.8±0.2	2.7±0.2	**
Air Filter -SFA2	1/08/08	Beta	3.1±0.2	2.9±0.2	**
Air Filter -SFA3	1/08/08	Beta	3.3±0.3	3.4±0.3	**
Air Filter -SFA4	1/08/08	Beta	2.8±0.2	2.9±0.2	**
10^{-2} pCi/m ³					
Air Iodine-A1	2/04/08	I-131	<MDA	<MDA	**
Air Iodine-A2	2/04/08	I-131	<MDA	<MDA	**
Air Filter-A1	2/11/08	Beta	2.3±0.3	2.4±0.3	**
Air Filter-A2	2/11/08	Beta	2.3±0.2	2.7±0.2	**
Air Filter-A3	2/11/08	Beta	2.1±0.2	2.1±0.2	**
Air Filter-A4	2/11/08	Beta	2.7±0.3	3.0±0.3	**
Air Filter-A5	2/11/08	Beta	3.1±0.3	3.3±0.3	**
Air Filter-SFA1	2/11/08	Beta	2.0±0.2	2.2±0.2	**
Air Filter-SFA2	2/11/08	Beta	2.6±0.2	2.6±0.2	**
Air Filter-SFA3	2/11/08	Beta	2.9±0.3	3.1±0.3	**
Air Filter-SFA4	2/11/08	Beta	2.3±0.2	2.5±0.3	**
pCi/L					
Bay Water-Wa2	2/29/08	Gamma	<MDA	<MDA	<MDA
10^{-2} pCi/m ³					
Air Filter-A1	3/09/08	Beta	1.4±0.2	1.0±0.2	**

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
				10^{-2} pCi/m ³	
Air Filter-A2	3/09/08	Beta	1.1±0.2	1.2±0.2	**
Air Filter-A3	3/09/08	Beta	1.3±0.2	1.1±0.2	**
Air Filter-A4	3/09/08	Beta	1.6±0.2	1.4±0.2	**
Air Filter-A5	3/09/08	Beta	1.4±0.2	1.4±0.2	**
Air Filter-SFA1	3/09/08	Beta	1.1±0.2	1.0±0.2	**
Air Filter-SFA2	3/09/08	Beta	1.1±0.2	1.4±0.2	**
Air Filter-SFA3	3/09/08	Beta	1.3±0.2	1.3±0.2	**
Air Filter-SFA4	3/09/08	Beta	1.5±0.2	1.3±0.2	**
Air Iodine-A1	3/09/08	I-131	<MDA	< MDA	**
Air Iodine-A2	3/09/08	I-131	< MDA	< MDA	**
				pCi/Kg	
Oysters-Ia3	3/18/08	Gamma	<MDA	<MDA	<MDA
				pCi/Kg	
Shoreline Wb1	4/03/08	Gamma	<MDA	<MDA	<MDA
				10^{-2} pCi/m ³	
Air Filter-A1	4/07/08	Beta	1.0±0.2	1.0±0.2	**
Air Filter-A2	4/07/08	Beta	1.4±0.2	1.0±0.2	**
Air Filter-A3	4/07/08	Beta	1.3±0.2	1.1±0.2	**
Air Filter-A4	4/07/08	Beta	1.1±0.2	1.0±0.1	**
Air Filter-A5	4/07/08	Beta	1.1±0.2	1.1±0.2	**
Air Filter-SFA1	4/07/08	Beta	1.0±0.2	0.7±0.2	**
Air Filter-SFA2	4/07/08	Beta	1.2±0.2	1.0±0.2	**
Air Filter-SFA3	4/07/08	Beta	1.1±0.2	0.8±0.2	**
Air Filter-SFA4	4/07/08	Beta	1.0±0.2	0.8±0.2	**
				10^{-2} pCi/m ³	
Air Iodine-A4	4/07/08	I-131	<MDA	<MDA	**
Air Iodine-A5	4/07/08	I-131	<MDA	<MDA	**

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
				10^{-2} pCi/m ³	
Air Filters-A1	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-A2	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-A3	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-A4	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-A5	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA1	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA2	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA3	4/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA4	4/15/08	Gamma	<MDA	<MDA	<MDA
				pCi/L	
Bay Water-Wa2	4/30/08	Gamma	<MDA	<MDA	<MDA
				10^{-2} pCi/m ³	
Air Iodine-A1	5/05/08	I-131	<MDA	<MDA	**
Air Iodine-A2	5/05/08	I-131	<MDA	<MDA	**
Air Filter-A1	5/05/08	Beta	1.5±0.2	1.7±0.2	**
Air Filter-A2	5/05/08	Beta	1.6±0.2	1.3±0.2	**
Air Filter-A3	5/05/08	Beta	1.7±0.2	1.6±0.2	**
Air Filter-A4	5/05/08	Beta	1.5±0.2	1.7±0.2	**
Air Filter-A5	5/05/08	Beta	2.1±0.2	2.2±0.2	**
Air Filter-SFA1	5/05/08	Beta	1.9±0.2	1.7±0.2	**
Air Filter-SFA2	5/05/08	Beta	2.0±0.2	2.0±0.2	**
Air Filter-SFA3	5/05/08	Beta	1.8±0.2	1.8±0.2	**
Air Filter-SFA4	5/05/08	Beta	1.7±0.2	1.9±0.2	**

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
				pCi/Kg	
Soil-SFS2	6/09/08	Cs-137	50±35	<MDA	54±36
Soil-SFS5	6/09/08	Gamma	<MDA	<MDA	101±32
Vegetation-SFb2	6/09/08	Gamma	<MDA	<MDA	<MDA
Vegetation-SFb5	6/09/08	Gamma	<MDA	<MDA	<MDA
				10 ⁻² pCi/m ³	
Air Iodine-SFA2	6/10/08	I-131	<MDA	<MDA	**
Air Iodine-SFA3	6/10/08	I-131	<MDA	<MDA	**
Air Filter-A1	6/10/08	Beta	1.4±0.2	1.5±0.2	**
Air Filter-A2	6/10/08	Beta	1.1±0.2	1.2±0.2	**
Air Filter-A3	6/10/08	Beta	1.1±0.2	1.1±0.2	**
Air Filter-A4	6/10/08	Beta	1.2±0.2	1.1±0.2	**
Air Filter-A5	6/10/08	Beta	1.1±0.2	1.0±0.2	**
Air Filter-SFA1	6/10/08	Beta	1.6±0.2	1.5±0.2	**
Air Filter-SFA2	6/10/08	Beta	1.5±0.2	1.4±0.2	**
Air Filter-SFA3	6/10/08	Beta	1.4±0.2	1.1±0.2	**
Air Filter-SFA4	6/10/08	Beta	1.6±0.2	1.4±0.2	**
				mR/90 Days	
DR05	7/02/08	Dosimeter	11.91±1.10	10.34±0.83	**
DR06	7/02/08	Dosimeter	10.04±0.77	8.88±0.49	**
DR07	7/02/08	Dosimeter	10.90±1.00	9.16±0.72	**
DR08	7/02/08	Dosimeter	14.76±1.40	12.49±1.10	**
DR09	7/02/08	Dosimeter	11.35±1.27	9.56±0.80	**
DR10	7/02/08	Dosimeter	10.78±1.33	9.55±0.92	**
DR11	7/02/08	Dosimeter	10.38±1.01	09.43±0.47	**
SFDR14	7/02/08	Dosimeter	15.79±2.92	13.72±2.27	**
SFDR15	7/02/08	Dosimeter	19.81±4.39	17.92±2.71	**
DR29	7/02/08	Dosimeter	14.27±1.64	13.14±1.23	**
DR31	7/02/08	Dosimeter	14.83±1.64	13.91±1.49	**

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
10^{-2} pCi/m ³					
Air Filter-A1	7/07/08	Beta	1.3±0.2	1.4±0.2	**
Air Filter-A2	7/07/08	Beta	1.1±0.2	1.2±0.2	**
Air Filter-A3	7/07/08	Beta	1.1±0.2	1.3±0.2	**
Air Filter-A4	7/07/08	Beta	1.7±0.2	1.6±0.2	**
Air Filter-A5	7/07/08	Beta	1.4±0.2	1.4±0.2	**
Air Filter-SFA1	7/07/08	Beta	1.4±0.2	1.5±0.2	**
Air Filter-SFA2	7/07/08	Beta	1.4±0.2	1.3±0.2	**
Air Filter-SFA3	7/07/08	Beta	1.3±0.2	1.2±0.2	**
Air Filter-SFA4	7/07/08	Beta	1.4±0.2	1.4±0.2	**
Air Iodine-A4	7/07/08	I-131	<MDA	<MDA	**
Air Iodine-A5	7/07/08	I-131	<MDA	<MDA	**
pCi /kg					
Vegetation-Ib1	7/28/08	Gamma	<MDA	<MDA	<MDA
Vegetation-Ib3	7/28/08	Gamma	<MDA	<MDA	<MDA
Vegetation-Ib4	7/28/08	Gamma	<MDA	<MDA	<MDA
Vegetation-Ib5	7/28/08	Gamma	<MDA	<MDA	<MDA
Vegetation-Ib6	7/28/08	Gamma	<MDA	<MDA	<MDA
Vegetation-Ib7	7/28/08	Gamma	<MDA	<MDA	<MDA
Vegetation-Ib8	7/28/08	Gamma	<MDA	<MDA	<MDA
Vegetation-Ib9	7/28/08	Gamma	<MDA	<MDA	<MDA
10^{-2} pCi/m ³					
Air Filter-A1	8/04/08	Beta	2.3±0.2	2.3±0.2	**
Air Filter-A2	8/04/08	Beta	2.1±0.2	2.0±0.2	**
Air Filter-A3	8/04/08	Beta	2.1±0.3	2.1±0.2	**
Air Filter-A4	8/04/08	Beta	1.7±0.2	1.8±0.2	**
Air Filter-A5	8/04/08	Beta	2.9±0.3	2.9±0.3	**
Air Filter-SFA1	8/04/08	Beta	1.9±0.3	2.2±0.3	**
Air Filter-SFA2	8/04/08	Beta	2.4±0.2	2.3±0.2	**
Air Filter-SFA3	8/04/08	Beta	2.0±0.2	1.8±0.2	**
Air Filter-SFA4	8/04/08	Beta	2.4±0.3	2.3±0.2	**

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
				10^{-2} pCi/m ³	
Air Iodine-A1	8/04/08	I-131	<MDA	<MDA	**
Air Iodine-A2	8/04/08	I-131	<MDA	<MDA	**
				pCi/kg	
Fish-Ia1	8/19/08	Gamma	<MDA	<MDA	<MDA
Oysters-Ia3	8/19/08	Gamma	<MDA	<MDA	<MDA
				pCi/L	
Bay Water-Wa1	8/29/08	Gamma	<MDA	<MDA	<MDA
				pCi/kg	
Vegetation-Ib6	9/29/08	Gamma	<MDA	<MDA	**
Vegetation-Ib7	9/29/08	Gamma	<MDA	<MDA	**
Vegetation-Ib8	9/29/08	Gamma	<MDA	<MDA	**
Vegetation-Ib9	9/29/08	Gamma	<MDA	<MDA	**
				10^{-2} pCi/m ³	
Air Iodine-A3	9/08/08	I-131	<MDA	<MDA	**
Air Iodine-A4	9/08/08	I-131	<MDA	<MDA	**
Air Filter-A1	9/08/08	Beta	2.1±0.2	1.6±0.2	**
Air Filter-A2	9/08/08	Beta	2.2±0.2	1.9±0.2	**
Air Filter-A3	9/08/08	Beta	1.9±0.2	1.9±0.2	**
Air Filter-A4	9/08/08	Beta	1.8±0.2	1.7±0.2	**
Air Filter-A5	9/08/08	Beta	2.7±0.3	2.5±0.3	**
Air Filter-SFA1	9/08/08	Beta	2.6±0.3	2.4±0.3	**
Air Filter-SFA2	9/08/08	Beta	2.0±0.2	1.9±0.2	**
Air Filter-SFA3	9/08/08	Beta	1.9±0.2	1.7±0.2	**
Air Filter-SFA4	9/08/08	Beta	2.3±0.2	2.1±0.2	**
				10^{-3} pCi/m ³	
Air Filters-A1	10/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-A2	10/15/08	Gamma	<MDA	<MDA	<MDA

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
10^{-3} pCi/m ³					
Air Filters-A3	10/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-A4	10/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-A5	10/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA1	10/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA2	10/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA3	10/15/08	Gamma	<MDA	<MDA	<MDA
Air Filters-SFA4	10/15/08	Gamma	<MDA	<MDA	<MDA
10^{-2} pCi/m ³					
Air Iodine-A1	10/05/08	I-131	<MDA	<MDA	**
Air Iodine-A2	10/05/08	I-131	<MDA	<MDA	**
10^{-2} pCi/m ³					
Air Filter-A1	10/05/08	Beta	1.5±0.3	1.9±0.3	**
Air Filter-A2	10/05/08	Beta	1.5±0.3	1.7±0.3	**
Air Filter-A3	10/05/08	Beta	1.2±0.3	1.5±0.3	**
Air Filter-A4	10/05/08	Beta	1.6±0.3	1.9±0.3	**
Air Filter-A5	10/05/08	Beta	1.6±0.3	1.9±0.3	**
Air Filter-SFA1	10/05/08	Beta	1.7±0.3	2.0±0.3	**
Air Filter-SFA2	10/05/08	Beta	1.9±0.3	2.2±0.3	**
Air Filter-SFA3	10/05/08	Beta	1.9±0.3	2.0±0.3	**
Air Filter-SFA4	10/05/08	Beta	1.5±0.3	2.2±0.3	**
mR/90 Days					
DR05	10/13/08	Dosimeter	13.15±0.99	12.92±0.65	**
DR06	10/13/08	Dosimeter	11.36±1.54	11.35±1.07	**
DR07	10/13/08	Dosimeter	11.45±1.74	11.46±1.05	**
DR08	10/13/08	Dosimeter	16.85±2.52	16.77±1.44	**
DR09	10/13/08	Dosimeter	12.32±1.34	12.74±1.56	**
DR10	10/13/08	Dosimeter	11.68±1.25	10.95±0.88	**
DR11	10/13/08	Dosimeter	11.68±1.07	11.89±0.54	**
SFDR14	10/13/08	Dosimeter	17.04±3.02	17.56±3.16	**
SFDR15	10/13/08	Dosimeter	22.93±1.25	22.34±2.43	**
DR29	10/13/08	Dosimeter	17.08±2.00	16.61±0.61	**
DR31	10/13/08	Dosimeter	17.75±2.03	17.38±1.95	**

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
pCi/kg					
Vegetation-lb3	10/26/08	Gamma	<MDA	<MDA	<MDA
Vegetation-lb5	10/26/08	Gamma	<MDA	<MDA	<MDA
Vegetation-lb6	10/26/08	Cs-137	56±17	36±20	55±21
Vegetation-lb7	10/26/08	Gamma	<MDA	<MDA	<MDA
Vegetation-lb9	10/26/08	Gamma	<MDA	<MDA	<MDA
10^{-2} pCi/m^3					
Air Filter-A1	11/09/08	Beta	1.9±0.2	2.1±0.2	**
Air Filter-A2	11/09/08	Beta	1.8±0.3	2.1±0.3	**
Air Filter-A3	11/09/08	Beta	1.7±0.3	1.9±0.3	**
Air Filter-A4	11/09/08	Beta	1.7±0.2	2.0±0.2	**
Air Filter-A5	11/09/08	Beta	1.5±0.2	1.8±0.2	**
Air Filter-SFA1	11/09/08	Beta	1.7±0.3	1.8±0.3	**
Air Filter-SFA2	11/09/08	Beta	1.7±0.2	1.5±0.2	**
Air Filter-SFA3	11/09/08	Beta	1.9±0.3	1.8±0.3	**
Air Filter-SFA4	11/09/08	Beta	1.7±0.2	1.9±0.3	**
10^{-2} pCi/m^3					
Air Iodine-A3	11/09/08	I-131	<MDA	<MDA	**
Air Iodine-A5	11/09/08	I-131	<MDA	<MDA	**

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

TABLE C-2 (Continued)

Results of Quality Assurance Program

Sample Type And Location	Sample Date	Type of Analysis	Original Analysis	Replicate Analysis	Split Analysis
				pCi/Kg	
Soil-SFS4	12/01/08	Gamma	<MDA	<MDA	<MDA
Soil-SFS5	12/01/08	Cs-137	242±35	258±35	264±48
				pCi/Kg	
Vegetation-SFb4	12/01/08	Gamma	<MDA	<MDA	<MDA
Vegetation-SFb5	12/01/08	Cs-137	19±11	9±11	<MDA
				10 ⁻² pCi/m ³	
Air Filter-A1	12/07/08	Beta	2.0±0.3	2.3±0.3	**
Air Filter-A2	12/07/08	Beta	1.9±0.3	2.0±0.3	**
Air Filter-A3	12/07/08	Beta	2.1±0.3	2.3±0.3	**
Air Filter-A4	12/07/08	Beta	2.0±0.3	2.1±0.32	**
Air Filter-A5	12/07/08	Beta	1.8±0.2	1.9±0.2	**
Air Filter-SFA1	12/07/08	Beta	2.0±0.3	2.1±0.3	**
Air Filter-SFA2	12/07/08	Beta	2.0±0.3	2.0±0.3	**
Air Filter-SFA3	12/07/08	Beta	2.1±0.3	2.2±0.3	**
Air Filter-SFA4	12/07/08	Beta	1.9±0.3	2.0±0.3	**
				pCi/L	
Bay Water-Wa2	12/10/08	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 table listing the raw data of this survey and a discussion of the results are included in this appendix.

Land Use Survey

Discussion

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. A detailed description of the Land Use Survey is given in a separate document (Ref. 4). The position of the nearest residence and garden and animals producing milk for human consumption in each sector is provided in Table D-1.

**Table D-1
Land Use Survey Distances**

Sector	Distance to Nearest Residence	Distance to Nearest Garden	Distance to Milk Producing Animals
E	1260 m	Onsite Supplemental Garden	N/A
ESE	1050 m	Onsite Garden	N/A
SE	610 m	N/A	8270 m
SSE	660 m	Onsite Supplemental Garden	N/A
S	1560 m	N/A	N/A
SSW	760 m	N/A	N/A
SW	660 m	N/A	N/A
WSW	1350 m	N/A	N/A
W	1160 m	N/A	N/A

The closest residence is situated in the SE sector (610 meter from the power plant), the nearest garden is in the SSE sector (660 meters), and the nearest milk producing animals was in the SE sector (8,270 meters).

Changes from Previous Years:

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

- The pace of the development of single family homes has slowed compared to previous years.
- Although relatively small, planned commercial development did not proceed to the construction phase.
- A new onsite supplemental garden added to the East of the plant to provide additional samples.
- No new agricultural land use was noted.

- No new food producing facilities were noted.

Milk Animal Locations:

The milk animal location with a 5-mile radius of the power plant are as follows:

- Eaton Farm -- 6747 Salmon Creek Road, Williamson, NY
- No new milk producing animals were identified in the 2008 Census.