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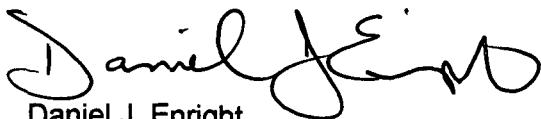
Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Subject: 2011 Annual Radiological Environmental Operating Report

Attached is the 2011 Annual Radiological Environmental Operating Report for Braidwood Station. This report is being submitted in accordance with Technical Specification 5.6.2, "Annual Radiological Environmental Operating Report." This report contains information associated with the station's radiological environmental and meteorological monitoring programs. This information is consistent with the objectives described in the Offsite Dose Calculation Manual and 10 CFR 50, Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low as is Reasonably Achievable' for Radioactive Material In Light-Water-Cooled Nuclear Power Reactor Effluents," Sections IV.B.2, and IV.B.3. Technical Specification 5.6.2 requires the Annual Radiological Environmental Operating Report to be submitted by May 15 of each year.

If you have any questions regarding this information, please contact Chris VanDenburgh, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,



Daniel J. Enright
Site Vice President
Braidwood Station

cc: US NRC Regional Administrator, Region III
US NRC Senior Resident Inspector - Braidwood Station
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Illinois Emergency Management Agency - Division of Nuclear Safety

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BRAIDWOOD STATION UNITS 1 and 2

Annual Radiological
Environmental Operating Report

1 January through 31 December 2011

Prepared By

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May 2012

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program (REMP) conducted for Exelon's Braidwood Station covers the period January 1, 2011 through December 31, 2011. During that time period, 1,565 analyses were performed on 1,334 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of Braidwood Station had no adverse radiological impact on the environment.

On March 11, 2011 an earthquake off the Japanese islands produced a massive tsunami that caused a nuclear accident at four of the six Fukushima Daiichi reactors. In planning for the potential radioactive plume reaching the United States, Exelon Nuclear increased the sampling frequency and added additional analyses of select media from pathways that were expected to be the most sensitive to any increase in ambient radiation levels. Low level I-131 analyses and gamma spectroscopy analyses were performed on air particulates, air iodine, and milk, as appropriate.

The resulting radioactive plume was first detected in the environs of Braidwood Station on March 17, 2011. The final date of positive detection was April 7, 2011. The radionuclide identified was Iodine-131. Maximum activity levels found by media were $111\text{E-}3$ pCi/m³ for air iodine and 0.8 pCi/L for milk. Samples collected were compared to offsite control locations to verify that these positive detections were not attributable to licensed activities. All other radionuclides analyzed were below the MDC (Minimum Detectable Concentration).

The radioactive half-life of I-131 is about 8 days. This short half-life allowed the effects of this radioactive plume to subside over about 3 weeks. As of April 8, 2011 no further impacts from the Fukushima Daiichi accident were evident.

Surface, public, and ground/well water samples were analyzed for concentrations of tritium and gamma emitting nuclides. Surface water and public water samples were also analyzed for concentrations of gross beta. No fission or activation products were detected. Gross beta and tritium activities detected were consistent with those detected in previous years.

Fish (commercially and/or recreationally important species) and sediment samples were analyzed for concentrations of gamma emitting nuclides. No fission or activation products were detected in fish. Two sediment samples had Cesium-137. The concentration was consistent with levels observed during the preoperational years. No plant produced fission or activation products were found in sediment.

Air particulate samples were analyzed for concentrations of gross beta and gamma emitting nuclides. No fission or activation products were detected.

High sensitivity I-131 analyses were performed on weekly air samples. All

results were less than the minimum detectable concentration with the exception of 20 samples which were positive for I-131. These positive results are directly attributed to the Fukushima event in March of 2011.

Cow milk samples were analyzed for concentrations of I-131 and gamma emitting nuclides. Iodine-131 was detected in one sample after the Fukushima event at a level just above the MDC. The positive I-131 result is directly attributed to the Fukushima accident. Concentrations of naturally occurring K-40 were also detected. No fission or activation products were found and all required LLDs (Lower Limit of Detection) were met.

Food Product samples were analyzed for concentrations of gamma emitting nuclides. No plant produced fission or activation products were detected.

Environmental gamma radiation measurements were performed quarterly using thermoluminescent dosimeters (TLD). Levels detected were consistent with those observed in previous years.

II. Introduction

The Braidwood Station, consisting of two 3,587 MWt pressurized water reactors owned and operated by Exelon Corporation, is located in Will County, Illinois. Unit No. 1 went critical on May 29, 1987. Unit No. 2 went critical on March 08, 1988. The site is located in northeastern Illinois, 15 miles south-southwest of Joliet, Illinois, 60 miles southwest of Chicago, and southwest of the Kankakee River.

This report covers those analyses performed by Teledyne Brown Engineering (TBE), Mirion Technologies, and Environmental Inc. (Midwest Labs) on samples collected during the period January 1, 2011 through December 31, 2011.

A. Objective of the REMP

The objectives of the REMP are to:

1. Provide data on measurable levels of radiation and radioactive materials in the site environs.
2. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.

B. Implementation of the Objectives

The implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.
2. Establishing baseline radiological data of media within those pathways.
3. Continuously monitoring those media before and during Station operation to assess Station radiological effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Samples for the Braidwood Station REMP were collected for Exelon Nuclear by Environmental Inc. (Midwest Labs). This section describes the general collection methods used by Environmental Inc. (Midwest Labs) to

obtain environmental samples for the Braidwood Station REMP in 2011. Sample locations and descriptions can be found in Table B-1 and Figures B-1 through B-3, Appendix B. The sampling methods used by Environmental Inc. are listed in Table B-2.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, public water, well water, fish, and sediment. Two gallon water samples were collected weekly from six surface water locations (BD-10, BD-25 [control], BD-38, BD-40, BD-55 and BD-56), and two weekly composite samples of public drinking water at location (BD-22), and ground/well water samples collected quarterly from nine locations (BD-13, BD-34, BD-35, BD-36, BD-37, BD-50, BD-51, BD-53 and BD-54). All samples were collected in new unused plastic bottles, which were rinsed with source water prior to collection. Fish samples comprising the flesh of largemouth bass, smallmouth bass, golden redhorse, silver redhorse, channel catfish and common carp were collected semiannually at three locations, BD-25 (control), BD-28, and BD-41. Sediment samples composed of recently deposited substrate were collected at two locations semiannually, BD-10 and BD-57.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulate and airborne iodine. Air particulate samples were collected and analyzed weekly at eight locations (BD-02, BD-03, BD-04, BD-05, BD-06, BD-19, BD-20, and BD-21). The control location was BD-03. Airborne iodine and particulate samples were obtained at each location, using a vacuum pump with charcoal and glass fiber filters attached. The pumps were run continuously and sampled air at the rate of approximately one cubic foot per minute. The air filters and air iodine samples were replaced weekly and sent to the laboratory for analysis.

Terrestrial Environment

The terrestrial environment was evaluated by performing radiological analyses on milk and food product samples. Milk samples were collected biweekly at two locations (BD-17 and BD-18) from March through October, and monthly from November through February. The control location was BD-18. All samples were collected in new unused two gallon plastic bottles from the bulk tank at each location, preserved with sodium bisulfite, and shipped promptly to the laboratory. Food products were collected annually in September at five locations (BD-Control, BD-Quad 1,

BD-Quad 2, BD-Quad 3, and BD-Quad 4). The control location was BD-Control. Various types of samples were collected and placed in new unused plastic bags, and sent to the laboratory for analysis.

Ambient Gamma Radiation

Direct radiation measurements were made using dual calcium fluoride and lithium fluoride thermoluminescent dosimeters (TLD). Each location consisted of 2 TLD sets. The TLDs were exchanged quarterly and sent to Mirion Technologies for analysis. The TLDs were placed at locations on and around the Braidwood Station site as follows:

An inner ring consisting of 16 locations (BD-101, BD-102, BD-103, BD-104, BD-105, BD-106, BD-107, BD-108, BD-109, BD-110, BD-111a, BD-112, BD-113a, BD-114, BD-115 and BD-116) at or near the site boundary.

An outer ring consisting of 16 locations (BD-201, BD-202, BD-203, BD-204, BD-205, BD-206, BD-207, BD-208, BD-209, BD-210, BD-211, BD-212, BD-213, BD-214, BD-215, BD-216) extending to approximately 5 miles from the site.

An additional (other) set consisting of seven locations (BD-02, BD-04, BD-05, BD-06, BD-19, BD-20 and BD-21).

The balance of one location (BD-03) represents the control area.

The specific TLD locations were determined by the following criteria:

1. The presence of relatively dense population;
2. Site meteorological data taking into account distance and elevation for each of the sixteen—22 1/2 degree sectors around the site, where estimated annual dose from Braidwood Station, if any, would be most significant.

B. Sample Analysis

This section describes the general analytical methodologies used by TBE and Environmental Inc. (Midwest Labs) to analyze the environmental samples for radioactivity for the Braidwood Station REMP in 2011. The analytical procedures used by the laboratories are listed in Table B-2.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of beta emitters in public and surface water and air particulates.
2. Concentrations of gamma emitters in public, ground/well and surface water, air particulates, milk, fish, sediment and food products.
3. Concentrations of tritium in public, ground/well and surface water.
4. Concentrations of I-131 in air, milk, and public water.
5. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

The radiological and direct radiation data collected prior to Braidwood Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Braidwood Station was considered operational at initial criticality. In addition, data was compared to previous years' operational data for consistency and trending. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) was defined as the smallest concentration of radioactive material in a sample that would yield a net count (above background) that would be detected with only a 5% probability of falsely concluding that a blank observation represents a "real" signal. The LLD was intended as a before the fact estimate of a system (including instrumentation, procedure and sample type) and not as an after the fact criteria for the presence of activity. All analyses were designed to achieve the required Braidwood Station detection capabilities for environmental sample analysis.

The MDC is the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. The MDC an *a posteriori* determination.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample was calculated by subtracting background

activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations may result in sample activity being lower than the background activity resulting in a negative number. An MDC was reported in all cases where positive activity was not detected.

Gamma spectroscopy results for each type of sample were grouped as follows:

For surface, public, ground/well water, and fish 12 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, I-131, Cs-134, Cs-137, Ba-140, and La-140 were reported.

For sediment, air particulate, milk and vegetation 11 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, Cs-134, Cs-137, Ba-140, and La-140 were reported.

Means and standard deviations of the results were calculated. The standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty.

D. Program Exceptions

For 2011 the Braidwood Station REMP had a sample recovery rate in excess of 98.4%. Sample anomalies and missed samples are listed in the tables below:

Table D-1 LISTING OF SAMPLE ANOMALIES

Sample Type	Location Code	Collection Date	Reason
WW	BD-53	01/13/11	No sample; Homeowner was away, sample obtained on 01/20/11.
WW	BD-50	01/27/11	No sample; Homeowner was away, sample obtained on 02/03/11.
A/I	BD-04	02/24/11	No apparent reason for low reading of 170.4 hours.
A/I	BD-19	02/24/11	No apparent reason for low reading of 169.2 hours.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
WW	BD-51	03/10/11	No sample; Homeowner was away, sample obtained on 03/17/11.
WW	BD-35	03/24/11	No sample; Homeowner was away, sample obtained on 03/31/11.
WW	BD-13	04/14/11	Sample taken from well #4; usual sampling well under repair.
A/I	BD-02	08/04/11	No apparent reason for low reading of 166.6 hours.
A/I	BD-06	10/27/11	No apparent reason for low reading of 160.7 hours.
A/I	BD-06	11/03/11	No apparent reason for low reading of 166.3 hours.
A/I	BD-06	11/10/11	No apparent reason for low reading of 162.0 hours.
A/I	BD-20	11/10/11	No apparent reason for low reading of 115.7 hours.
A/I	BD-06	11/16/11	No apparent reason for low reading of 137.1 hours.
A/I	BD-20	11/23/11	Timer reading of 169.0 hours estimated, timer replaced.
A/I	BD-06	12/01/11	No apparent reason for low reading of 183.1 (8-day run) hours.
A/I	BD-06	12/08/11	No apparent reason for low reading of 148.3 hours; collector wired second timer directly to pump to investigate consistently low readings.
A/I	BD-20	12/08/11	No apparent reason for low reading of 144.7 hours.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
A/I	BD-20	12/15/11	No apparent reason for low reading of 124.6 hours; collector placed second timer to investigate low reading.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
WT	BD-38, BD-55, BD-56	01/06/11	No sample, water frozen.
WT	BD-38, BD-55, BD-56	01/13/11	No sample, water frozen.
WT	BD-38, BD-55, BD-56	01/20/11	No sample, water frozen.
WT	BD-38, BD-55, BD-56	01/27/11	No sample, water frozen.
WT	BD-38, BD-55, BD-56	02/03/11	No sample, water frozen.
WT	BD-38, BD-55, BD-56	02/10/11	No sample, water frozen.
TLD	BD-214-2	06/30/11	TLD missing in field.
WG	BD-53	07/14/11	No sample; house torn down; property vacant.
WG	BD-53	10/14/11	No sample; house torn down; property vacant.

Each program exception was reviewed to understand the causes of the program exception. Sampling and maintenance issues were reviewed with the personnel involved to prevent recurrence. Occasional equipment breakdowns, power outages, and weather related issues were unavoidable.

The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

E. Program Changes

Starting in November of 2011, I-131 is now being analyzed in drinking water by the low level method to detect down to 1 pCi/L.

Well water location BD-53 is no longer being sampled due to the house being demolished. The well has been capped and sealed in accordance with Will County Regulations. The property is no longer a private residence as it is owned by Exelon.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken weekly and composited monthly at six locations (BD-10, BD-25, BD-38, BD-40, BD-55 and BD-56). Of these locations, only BD-10 could be affected by Braidwood Station's effluent releases as it is downstream of the NPDES permitted outfall. The following analyses were performed.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Table C-I.1, Appendix C). Gross beta was detected in 61 of 69 samples. The values ranged from 2.7 to 13.4 pCi/L. Concentrations detected were consistent with those detected in previous years (Figures C-1 through C-3, Appendix C).

Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C-I.2, Appendix C). Tritium activity was not detected in any samples at a concentration above 200 pCi/l (Figures C-4 through C-6, Appendix C).

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C-I.3, Appendix C). No nuclides were detected,

and all required LLDs were met.

2. Public Water

Monthly composites of weekly samples were made at one location (BD-22). This location could be affected by Braidwood Station's effluent releases. The following analyses were performed:

Gross Beta

Samples from the location were analyzed for concentrations of gross beta (Tables C-II.1, Appendix C). Gross beta was detected in nine of 12 samples. The values ranged from 2.3 to 5.7 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C-7, Appendix C).

Tritium

Monthly composites of weekly samples from BD-22 were analyzed for tritium activity (Table C-II.2, Appendix C). Tritium was detected in one of 12 samples at a concentration of 309 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C-8, Appendix C).

Iodine

Starting in November, monthly composites of weekly samples from the location were analyzed for I-131 (Table C-II.3, Appendix C). Iodine was not detected in any samples and the required LLD was met.

Gamma Spectrometry

Samples from the location were analyzed for gamma emitting nuclides (Table C-II.4, Appendix C). No nuclides were detected, and all required LLDs were met.

3. Ground/Well Water

Quarterly samples were collected at nine locations (BD-13, BD-34, BD-35, BD-36, BD-37, BD-50, BD-51, BD-53 and BD-54). The following analyses were performed:

Tritium

Quarterly grab samples from the locations were analyzed for tritium activity (Table C–III.1, Appendix C). Tritium was detected in one of 34 samples at a concentration of 225 pCi/L. The concentration detected was consistent with those detected in previous years (Figures C–9 through C–13, Appendix C).

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C–III.2, Appendix C). No nuclides were detected, and all required LLDs were met.

4. Fish

Fish samples comprised of largemouth bass, smallmouth bass, golden redhorse, silver redhorse, channel catfish and common carp were collected at three locations (BD-25, BD-28, and BD-41) semiannually. Location BD-28 could be affected by Braidwood Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from all three locations was analyzed for gamma emitting nuclides (Table C–IV.1, Appendix C). No fission or activation products were found. No nuclides were detected, and all required LLDs were met.

5. Sediment

Aquatic sediment samples were collected at two locations (BD-10 and BD-57) semiannually. The locations, at the Braidwood Station outfall to the Kanakakee River and downstream of the outfall, could be affected by Braidwood Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from the location were analyzed for gamma emitting nuclides (Table C–V.1, Appendix C). Concentrations of the fission product Cs-137 were found at locations BD-10 and BD-57. The concentration ranged from 84 to 117 pCi/kg dry. The activity detected was consistent with those detected in previous years (29 pCi/kg to 260 pCi/kg from 1995 to 2006). No other

Braidwood fission or activation products were found and all required LLDs were met.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from eight locations on a weekly basis. The eight locations were separated into three groups: Near field samplers (BD-06, BD-19, BD-20 and BD-21), far field samplers within 10 km of the site (BD-02, BD-04 and BD-05) and the Control sampler between 10 and 30 km from the site (BD-03). The following analyses were performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C-VI.1 and C-VI.2, Appendix C). Detectable gross beta activity was observed at all locations. Comparison of results among the three groups aid in determining the effects, if any, resulting from the operation of Braidwood Station. The results from the near field (Group I) ranged from 8 to 42 E-3 pCi/m³ with a mean of 21 E-3 pCi/m³. The results from the far field (Group II) ranged from 7 to 40 E-3 pCi/m³ with a mean of 21 E-3 pCi/m³. The results from the Control location (Group III) ranged from 6 to 41 E-3 pCi/m³ with a mean of 20 E-3 pCi/m³. Comparison of the 2011 air particulate data with previous years data indicate no effects from the operation of Braidwood Station. In addition a comparison of the weekly mean values for 2011 indicate no notable differences among the three groups (Figures C-14 through C-18, Appendix C).

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma emitting nuclides (Table C-VI.3, Appendix C). No nuclides were detected, and all required LLDs were met. Additionally, air particulate samples from BD-03 (control) were analyzed weekly during the Fukushima accident. No nuclides were detected and all required LLDS were met.

b. Airborne Iodine

Continuous air samples were collected from eight locations (BD-02, BD-03, BD-04, BD-05, BD-06, BD-19, BD-20, and BD-21) and analyzed weekly for I-131 (Table C–VII.1, Appendix C). All results were less than the minimum detectable concentration with the exception of 20 samples which were positive for I-131. These positive results are directly attributed to the Fukushima event in March of 2011.

C. Terrestrial Environment

1. Milk

Samples were collected from two locations (BD-17 and BD-18). Sampling frequencies were increased to biweekly in March and continued through October and monthly sampling was performed November through February. The following analyses were performed:

Iodine-131

Milk samples from both locations were analyzed for concentrations of I-131 (Table C–VIII.1, Appendix C). Iodine-131 was detected in one sample at location BD-17 after the Fukushima event at a level just above the MDC. This positive result is directly attributed to the Fukushima event. All required LLDs were met.

Gamma Spectrometry

Each milk sample was analyzed for concentrations of gamma emitting nuclides (Table C–VIII.2, Appendix C). No nuclides were detected, and all required LLDs were met.

2. Food Products

Food product samples were collected at five locations (BD-Control, BD-Quad 1, BD-Quad 2, BD-Quad 3 and BD-Quad 4) when available. Four locations, (located downstream, BD-Quad 1, BD-Quad 2, BD-Quad 3 and BD-Quad 4) could be affected by Braidwood Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C–IX.1, Appendix C). No nuclides were detected, and all required LLDs were met.

D. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing dual element calcium fluoride and lithium fluoride thermoluminescent dosimeters (TLD). Eighty TLD locations were established around the site. Results of TLD measurements are listed in Tables C–X.1 to C–X.3, Appendix C.

Most TLD measurements were below 30 mR/quarter, with a range of 17 to 30 mR/quarter with the exception of the first quarter TLDs. A comparison of the Inner Ring, Outer Ring and Other data to the Control Location data, indicate that the ambient gamma radiation levels from all locations were similar.

E. Land Use Survey

A Land Use Survey conducted during August 2011 around the Braidwood Station was performed by Environmental Inc. (Midwest Labs) for Exelon Nuclear to comply with section 12.5.2 of the Braidwood Station's Offsite Dose Calculation Manual. The purpose of the survey was to document the nearest resident, milk producing animal and garden of greater than 500 ft² in each of the sixteen 22 ½ degree sectors around the site. For dose calculation, a garden is assumed at the nearest residence. There were no changes required to the Braidwood Station REMP, as a result of this survey. The results of this survey are summarized below.

Distance in Miles from the Braidwood Station Reactor Buildings			
Sector	Residence Miles	Livestock Miles	Milk Farm Miles
(A) N	0.5	2.6	-
(B) NNE	0.9	-	-
(C) NE	0.7	0.9	-
(D) ENE	0.8	3.3	-
(E) E	1.5	2.3	-
(F) ESE	2.2	2.3	-
(G) SE	2.7	2.7	11.2
(H) SSE	4.5	-	-
(J) S	4.2	4.8	-
(K) SSW	1.3	5.3	5.5
(L) SW	0.4	1.2	-
(M) WSW	0.5	-	-
(N) W	0.4	1.6	8.7
(P) WNW	0.4	-	-
(Q) NW	0.4	-	-
(R) NNW	0.4	-	-

F. Summary of Results – Inter-Laboratory Comparison Program

The primary and secondary laboratories analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation and water matrices (Appendix D). The PE samples, supplied by Analytics Inc., Environmental Resource Associates (ERA) and DOE's Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

Analytics' evaluation report provides a ratio of laboratory results and Analytics' known value. Since flag values are not assigned by Analytics, TBE-ES evaluates the reported ratios based on internal QC requirements, which are based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, NELAC, State Specific PT program requirements or ERA's SOP for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

MAPEP's evaluation report provides an acceptance range with associated flag values.

The MAPEP defines three levels of performance: Acceptable (flag = "A"), Acceptable with Warning (flag = "W"), and Not Acceptable (flag = "N"). Performance is considered acceptable when a mean result for the specified analyte is $\pm 20\%$ of the reference value. Performance is acceptable with warning when a mean result falls in the range from $\pm 20\%$ to $\pm 30\%$ of the reference value (i.e., $20\% < \text{bias} < 30\%$). If the bias is greater than 30%, the results are deemed not acceptable.

For the primary laboratory, 14 out of 18 analytes met the specified acceptance criteria. Four analytes did not meet the specified acceptance criteria for the following reason:

1. Teledyne Brown Engineering's Analytics March 2011 Cr-51 in milk result of 398 pCi/L was higher than the known value of 298 pCi/L, resulting in a found to known ratio of 1.34. NCR 11-13 was initiated to investigate this failure. There was a slightly high bias in all the gamma activities. The June gamma results in milk did not show a high bias. No further action was required.
2. Teledyne Brown Engineering's ERA May 2011 Gross Alpha in water result of 64.1 pCi/L was higher than the known value of 50.1 pCi/L, which exceeded the upper control limit of 62.9 pCi/L. NCR 11-08 was initiated to investigate this failure. The solids on the planchet exceeded 100 mg, which was beyond the range of the efficiency curve.

Teledyne Brown Engineering's MAPEP March 2011 Gross Alpha in air particulate result of 0.101 Bq/sample was lower than the known value of 0.659 Bq/sample, which exceeded the lower control limit of 0.198 Bq/sample. NCR 11-11 was initiated to investigate this failure. The air particulate filter was counted on the wrong side.
3. Teledyne Brown Engineering's ERA November 2011 Sr-89 in water result of 81.0 pCi/L was higher than the known value of 69.7 pCi/L, which exceeded the upper control limit of 77.9 pCi/L. NCR 11-16 was initiated to investigate this failure. The TBE reported value to known ratio of 1.16 fell within the acceptable range of $\pm 20\%$, which TBE considers acceptable.

4. Teledyne Brown Engineering's MAPEP March 2011 Sr-90 in soil, air particulate, and vegetation results were not reported. MAPEP evaluates analytes not reported as failures. NCR 11-11 was initiated to investigate these failures.

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT ANNUAL SUMMARY

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
BRAIDWOOD STATION, 2011**

Name of Facility: BRAIDWOOD Location of Facility: BRACEVILLE, IL				DOCKET NUMBER: 50-456 & 50-457 REPORTING PERIOD: ANNUAL 2011					
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)			
				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS	
SURFACE WATER (PCI/LITER)	GR-B	69	4	6.1 (49/57) (2.7/13.4)	9.1 (12/12) (5.4/12.8)	9.7 (12/12) (3.5/13.4)	BD-40 INDICATOR BRAIDWOOD STATION COOLING LAKE ONSITE		0
	H-3	24	200	<LLD	<LLD	-			0
	GAMMA MN-54	69	15	<LLD	<LLD	-			0
	CO-58		15	<LLD	<LLD	-			0
	FE-59		30	<LLD	<LLD	-			0
	CO-60		15	<LLD	<LLD	-			0
	ZN-65		30	<LLD	<LLD	-			0
	NB-95		15	<LLD	<LLD	-			0

I-V

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
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Name of Facility: BRAIDWOOD Location of Facility: BRACEVILLE, IL				DOCKET NUMBER: 50-456 & 50-457 REPORTING PERIOD: ANNUAL 2011				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0
PUBLIC WATER (PCI/LITER)	GR-B	12	4	4.1 (9/12) (2.3/5.7)	NA	4.1 (9/12) (2.3/5.7)	BD-22 INDICATOR WILMINGTON 6.0 MILES NE OF SITE	0
	H-3	12	200	309 (1/12)	NA	309 (1/12)	BD-22 INDICATOR WILMINGTON 6.0 MILES NE OF SITE	0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE STATION # NAME DISTANCE AND DIRECTION		NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/LITER)	I-131	2	1	<LLD	NA	-		0
	GAMMA MN-54	12	15	<LLD	NA	-		0
	CO-58		15	<LLD	NA	-		0
	FE-59		30	<LLD	NA	-		0
	CO-60		15	<LLD	NA	-		0
	ZN-65		30	<LLD	NA	-		0
	NB-95		15	<LLD	NA	-		0
	ZR-95		30	<LLD	NA	-		0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

A-3
f

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)		NUMBER OF NONROUTINE REPORTED MEASUREMENTS
				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	
PUBLIC WATER (PCI/LITER)	I-131		15	<LLD	NA	-		0
	CS-134		15	<LLD	NA	-		0
	CS-137		18	<LLD	NA	-		0
	BA-140		60	<LLD	NA	-		0
	LA-140		15	<LLD	NA	-		0
GROUND WATER (PCI/LITER)	H-3	34	200	225 (1/34)	NA	225 (1/4)	BD-36 INDICATOR HUTTON WELL 4.7 MILES E OF SITE	0
	GAMMA MN-54	34	15	<LLD	NA	-		0
	CO-58		15	<LLD	NA	-		0

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				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
GROUND WATER (PCI/LITER)	FE-59		30	<LLD	NA	-			0
	CO-60		15	<LLD	NA	-			0
	ZN-65		30	<LLD	NA	-			0
	NB-95		15	<LLD	NA	-			0
	ZR-95		30	<LLD	NA	-			0
	I-131		15	<LLD	NA	-			0
	CS-134		15	<LLD	NA	-			0
	CS-137		18	<LLD	NA	-			0

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GROUND WATER (PCI/LITER)	BA-140		60	<LLD	NA	-		0
	LA-140		15	<LLD	NA	-		0
FISH (PCI/KG WET)	GAMMA MN-54	12	130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0

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				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	
FISH (PCI/KG WET)	ZR-95		NA	<LLD	<LLD	-		0
	I-131		NA	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0
	CS-137		150	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
SEDIMENT (PCI/KG DRY)	GAMMA MN-54	4	NA	<LLD	NA	-		0
	CO-58		NA	<LLD	NA	-		0

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				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	
SEDIMENT (PCI/KG DRY)	FE-59		NA	<LLD	NA	-		0
	CO-60		NA	<LLD	NA	-		0
	ZN-65		NA	<LLD	NA	-		0
	NB-95		NA	<LLD	NA	-		0
	ZR-95		NA	<LLD	NA	-		0
	CS-134		150	<LLD	NA	-		0
	CS-137		180	100 (2/4) (84/117)	NA	117 (1/2)	BD-10 INDICATOR KANKAKEE RIVER DOWNSTREAM 5.4 MILES NE OF SITE	0
	BA-140		NA	<LLD	NA	-		0

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				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	
SEDIMENT (PCI/KG DRY)	LA-140		NA	<LLD	NA	-		0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	416	10	21 (362/364) (7/42)	20 (52/52) (6/41)	21 (51/52) (9/42)	BD-06 INDICATOR GODLEY 0.5 MILEW WSW OF SITE	0
	GAMMA MN-54	32	NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)			NUMBER OF NONROUTINE REPORTED MEASUREMENTS
				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
AIR PARTICULATE (E-3 PCI/CU.METER)	ZR-95		NA	<LLD	<LLD	-			0
	CS-134		50	<LLD	<LLD	-			0
	CS-137		60	<LLD	<LLD	-			0
	BA-140		NA	<LLD	<LLD	-			0
	LA-140		NA	<LLD	<LLD	-			0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	416	70	65 (18/364) (28/111)	51 (2/52) (50/53)	76 (2/52) (67/85)	BD-19 INDICATOR NEARSITE NW 0.3 MILES NW OF SITE		0
MILK (PCI/LITER)	I-131	38	1	0.8 (1/19)	<LLD	0.8 (1/19)	BD-17 INDICATOR HALPIN'S DAIRY 5.5 MILES SSW OF SITE		0
	GAMMA MN-54	38	NA	<LLD	<LLD	-			0

A-10

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)			NUMBER OF NONROUTINE REPORTED MEASUREMENTS
				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
MILK (PCI/LITER)	CO-58		NA	<LLD	<LLD	-			0
	FE-59		NA	<LLD	<LLD	-			0
	CO-60		NA	<LLD	<LLD	-			0
	ZN-65		NA	<LLD	<LLD	-			0
	NB-95		NA	<LLD	<LLD	-			0
	ZR-95		NA	<LLD	<LLD	-			0
	CS-134		15	<LLD	<LLD	-			0
	CS-137		18	<LLD	<LLD	-			0

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					LOCATION	MEAN (M)	STATION #	NUMBER OF	
					MEAN (M)	MEAN (M)	NAME	DISTANCE AND DIRECTION	REPORTED
					RANGE	RANGE			MEASUREMENTS
MILK (PCI/LITER)	BA-140		60	<LLD	<LLD	-			0
	LA-140		15	<LLD	<LLD	-			0
VEGETATION (PCI/KG WET)	GAMMA MN-54	10	NA	<LLD	<LLD	-			0
	CO-58		NA	<LLD	<LLD	-			0
	FE-59		NA	<LLD	<LLD	-			0
	CO-60		NA	<LLD	<LLD	-			0
	ZN-65		NA	<LLD	<LLD	-			0
	NB-95		NA	<LLD	<LLD	-			0

A-12

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
BRAIDWOOD STATION, 2011**

Name of Facility: BRAIDWOOD Location of Facility: BRACEVILLE, IL				DOCKET NUMBER: 50-456 & 50-457 REPORTING PERIOD: ANNUAL 2011					
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)			NUMBER OF NONROUTINE REPORTED MEASUREMENTS
				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
VEGETATION (PCI/KG WET)	ZR-95		NA	<LLD	<LLD	-			0
	CS-134		60	<LLD	<LLD	-			0
	CS-137		80	<LLD	<LLD	-			0
	BA-140		NA	<LLD	<LLD	-			0
	LA-140		NA	<LLD	<LLD	-			0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	319	NA	21 (311/311) (17/30)	21 (8/8) (19/24)	25 (4/4) (23/27)	BD-211-1 INDICATOR 4.8 MILES SW		0

A-13

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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APPENDIX B

LOCATION DESIGNATION, DISTANCE & DIRECTION, AND SAMPLE COLLECTION & ANALYTICAL METHODS

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TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Braidwood Station, 2011

Location	Location Description	Distance & Direction From Site
<u>A. Surface Water</u>		
BD-10	Kankakee River Downstream (indicator)	5.4 miles NE
BD-25	Kankakee River Upstream (control)	9.6 miles E
BD-38	Main Drainage Ditch (indicator)	1.5 miles SW
BD-40	Braidwood Station Cooling Lake (indicator)	Onsite
BD-55	North Pond Fatlan Site (Indicator)	0.6 miles NE
BD-56	South Pond Fatlan Site (indictor)	0.6 miles NE
<u>B. Drinking (Potable) Water</u>		
BD-22	Wilmington (indicator)	6.0 miles NE
<u>C. Ground/Well Water</u>		
BD-13	Braidwood City Hall Well (indicator)	1.7 miles NNE
BD-34	Gibson Well (indicator)	4.7 miles E
BD-35	Joly Well (indicator)	4.7 miles E
BD-36	Hutton Well (indicator)	4.7 miles E
BD-37	Nurczyk Well (indicator)	4.7 miles E
BD-50	Skole Well (indicator)	4.7 miles E
BD-51	Fatlan Well (indicator)	0.6 miles NE
BD-53	Phelps Well (indicator)	0.7 miles E
BD-54	Cash Well (indicator)	0.9 miles NE
<u>D. Milk - bi-weekly / monthly</u>		
BD-17	Halpin's Dairy (indicator)	5.5 miles SSW
BD-18	Biros' Farm (control)	8.7 miles W
<u>E. Air Particulates / Air Iodine</u>		
BD-02	Custer Park (indicator)	5.0 miles E
BD-03	County Line Road (control)	6.2 miles ESE
BD-04	Essex (indicator)	4.8 miles SSE
BD-05	Gardner (indicator)	5.5 miles SW
BD-06	Godley (indicator)	0.5 miles WSW
BD-19	Nearsite NW (indicator)	0.3 miles NW
BD-20	Nearsite N (indicator)	0.6 miles N
BD-21	Nearsite NE (indicator)	0.5 miles NE
<u>F. Fish</u>		
BD-25	Kankakee River, Upstream (control)	9.6 miles E
BD-28	Kankakee River, Discharge (indicator)	5.4 miles E
BD-41	Cooling Lake (indicator)	1.0 mile E
<u>G. Sediment</u>		
BD-10	Kankakee River, Downstream (indicator)	5.4 miles NE
BD-57	Circulating Water Blowdown Discharge (indicator)	5.4 miles E

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Braidwood Station, 2011

Location	Location Description	Distance & Direction From Site
<u>H. Food Products</u>		
Quadrant 1	Clark Farm	3.8 miles ENE
Quadrant 2	W.F. Soltwisch	4.5 miles SSE
Quadrant 3	Terri Schultz	4.8 miles SSW
Quadrant 4	Bruce Sinkular	1.9 miles NNW
Control	Gorman Farm	9.0 miles NE
<u>I. Environmental Dosimetry - TLD</u>		
<u>Site Boundary</u>		
BD-101-3 and -4		0.5 miles N
BD-102-1 and -2		1.1 miles NNE
BD-103-1 and -2		1.0 mile NE
BD-104-1 and -2		0.7 miles ENE
BD-105-1 and -2		2.2 miles E
BD-106-1 and -2		2.5 miles ESE
BD-107-1 and -2		3.2 miles SE
BD-108-1 and -2		3.2 miles SSE
BD-109-1 and -2		3.8 miles S
BD-110-1 and -2		2.8 miles SSW
BD-111a-1 and -2		1.4 miles SW
BD-112-1 and -2		0.7 miles WSW
BD-113a-1 and -2		0.5 miles W
BD-114-1 and -2		0.4 miles WNW
BD-115-1 and -2		0.3 miles NW
BD-116-1		0.4 miles NNW
BD-116-2		0.5 miles NNW
<u>Intermediate Distance</u>		
BD-201-1 and -2		4.2 miles N
BD-202-1 and -2		4.8 miles NNE
BD-203-1 and -2		4.9 miles NE
BD-204-1 and -2		4.3 miles ENE
BD-205-1 and -2		4.0 miles E
BD-206-1 and -2		4.5 miles ESE
BD-207-1 and -2		4.5 miles SE
BD-208-1 and -2		4.5 miles SSE
BD-209-1 and -2		4.8 miles S
BD-210-1 and -2		5.3 miles SSW
BD-211-1 and -2		4.8 miles SW
BD-212-3 and -4		5.0 miles WSW
BD-213-3 and -4		4.8 miles W
BD-214-1 and -2		4.3 miles WNW
BD-215-1 and -2		4.5 miles NW
BD-216-1 and -2		4.0 miles NNW
<u>Other</u>		
BD-02-1 and -2	Custer Park (indicator)	5.0 miles E
BD-04-1 and -2	Essex (indicator)	4.8 miles SSE
BD-05-1 and -2	Gardner (indicator)	5.5 miles SW
BD-06-1 and -2	Godley (indicator)	0.5 miles WSW
BD-19-1 and -2	Nearsite NW (indicator)	0.3 miles NW
BD-20-1 and -2	Nearsite N (indicator)	0.6 miles N
BD-21-1 and -2	Nearsite NE (indicator)	0.5 miles NE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Braidwood Station, 2011

Location	Location Description	Distance & Direction From Site
<u>I. Environmental Dosimetry – TLD (cont'd)</u>		
<u>Control</u>		
BD-03-1 and -2	13000 W. Road	6.2 miles ESE

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Braidwood Station, 2011

Sample Medium	Analysis	Sampling Method	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite from weekly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Surface Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or Gross Beta activity in various matrices
Surface Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Drinking Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or Gross Beta activity in various matrices
Drinking Water	Gamma Spectroscopy	Monthly composite from weekly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Drinking Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Drinking Water	Iodine	Weekly grab and monthly composite from weekly grab	TBE, TBE-2031 Radioactive Iodine in drinking water
Ground/Well Water	Gamma Spectroscopy	Quarterly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Ground/Well Water	Tritium	Quarterly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Fish	Gamma Spectroscopy	Samples collected twice annually via electro-shocking or other techniques	TBE-2007 Gamma emitting radioisotope analysis

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Braidwood Station, 2011

Sample Medium	Analysis	Sampling Method	Analytical Procedure Number
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Iodine	Gamma Spectroscopy	Weekly composite of continuous air sampling through charcoal filter	TBE, TBE-2007 Gamma emitting radioisotope analysis
Milk	I-131	Bi-weekly grab sample May through October. Monthly all other times	TBE, TBE-2012 Radioiodine in various matrices
Milk	Gamma Spectroscopy	Bi-weekly grab sample May through October. Monthly all other times	TBE, TBE-2007 Gamma emitting radioisotope analysis
Food Products	Gamma Spectroscopy	Annual grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two Mirion Technologies CaF ₂ and LiF ₂ elements.	Mirion Technologies

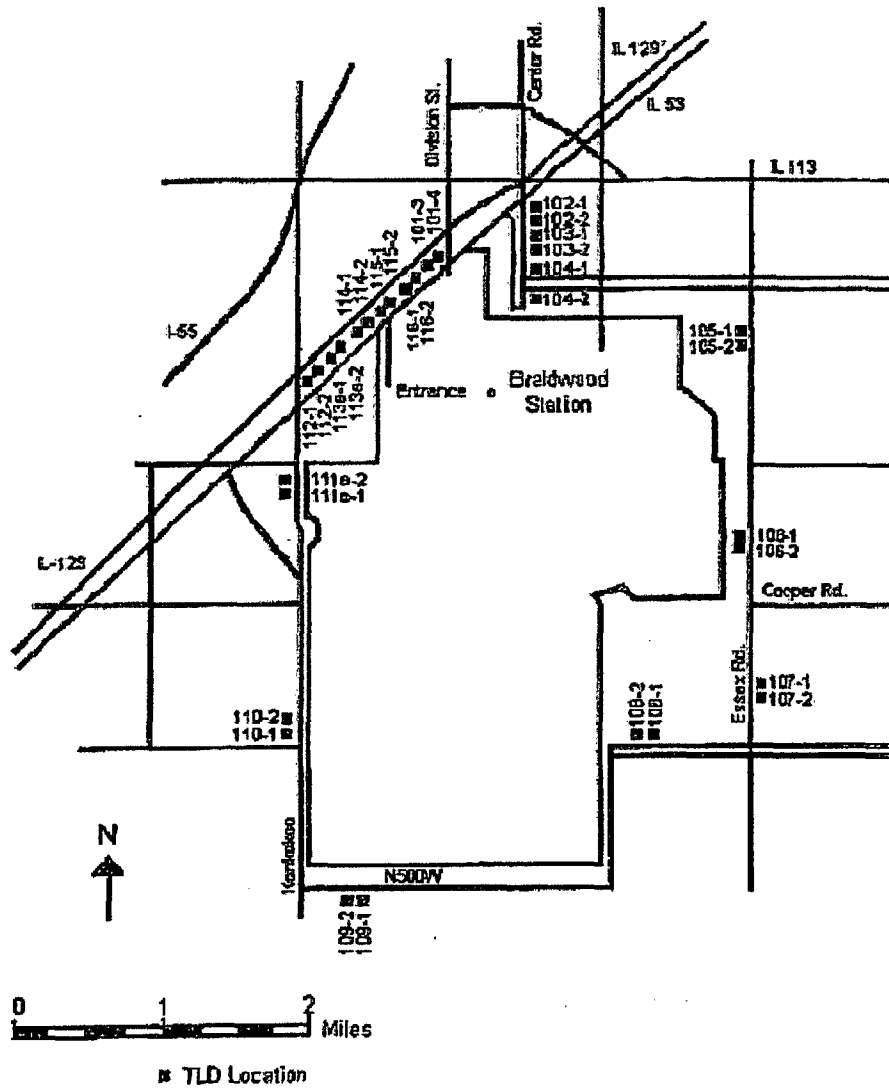


Figure B-1
 Inner Ring TLD Locations of the
 Braidwood Station, 2011

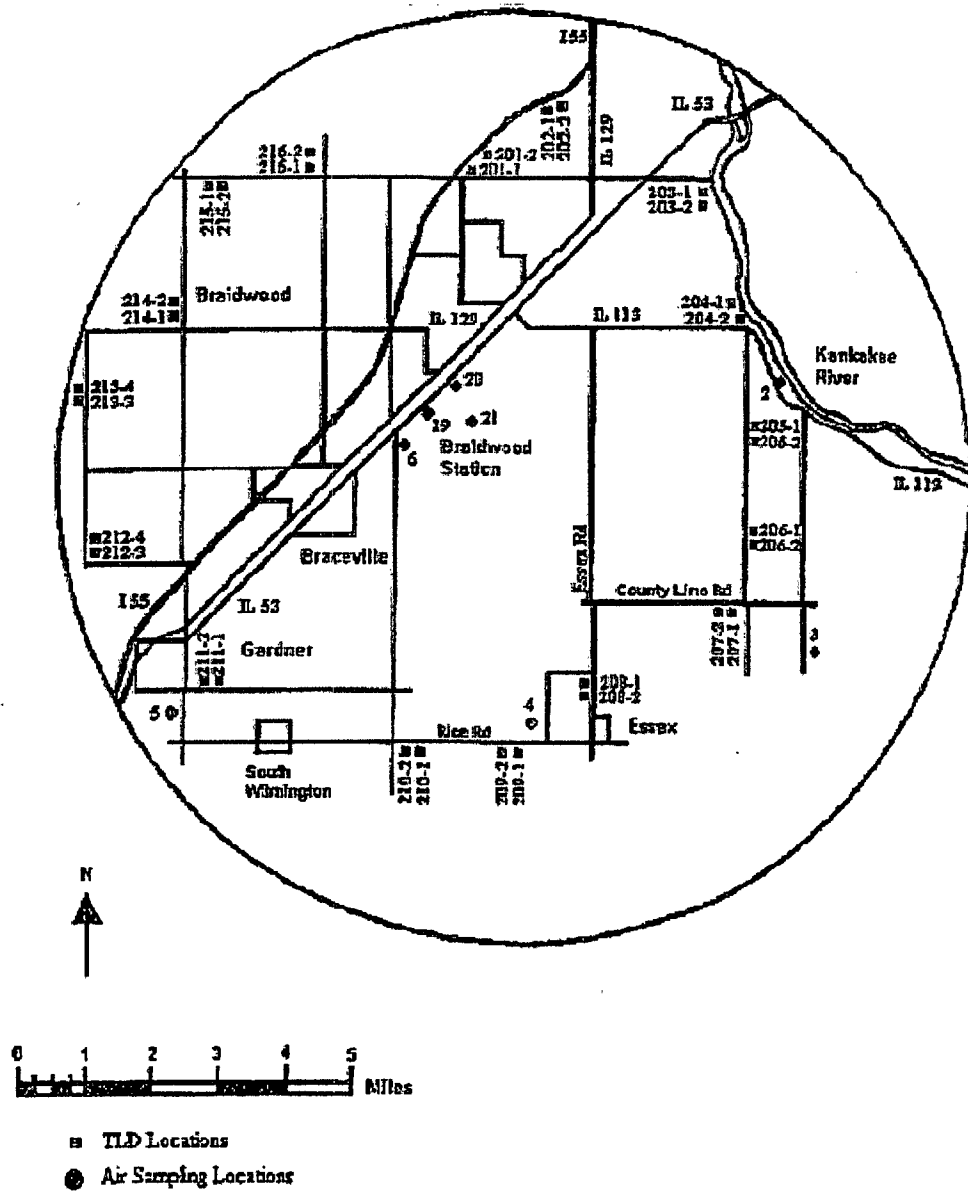


Figure B-2
 Fixed Air Sampling and Outer Ring TLD Locations
 of the Braidwood Station, 2011

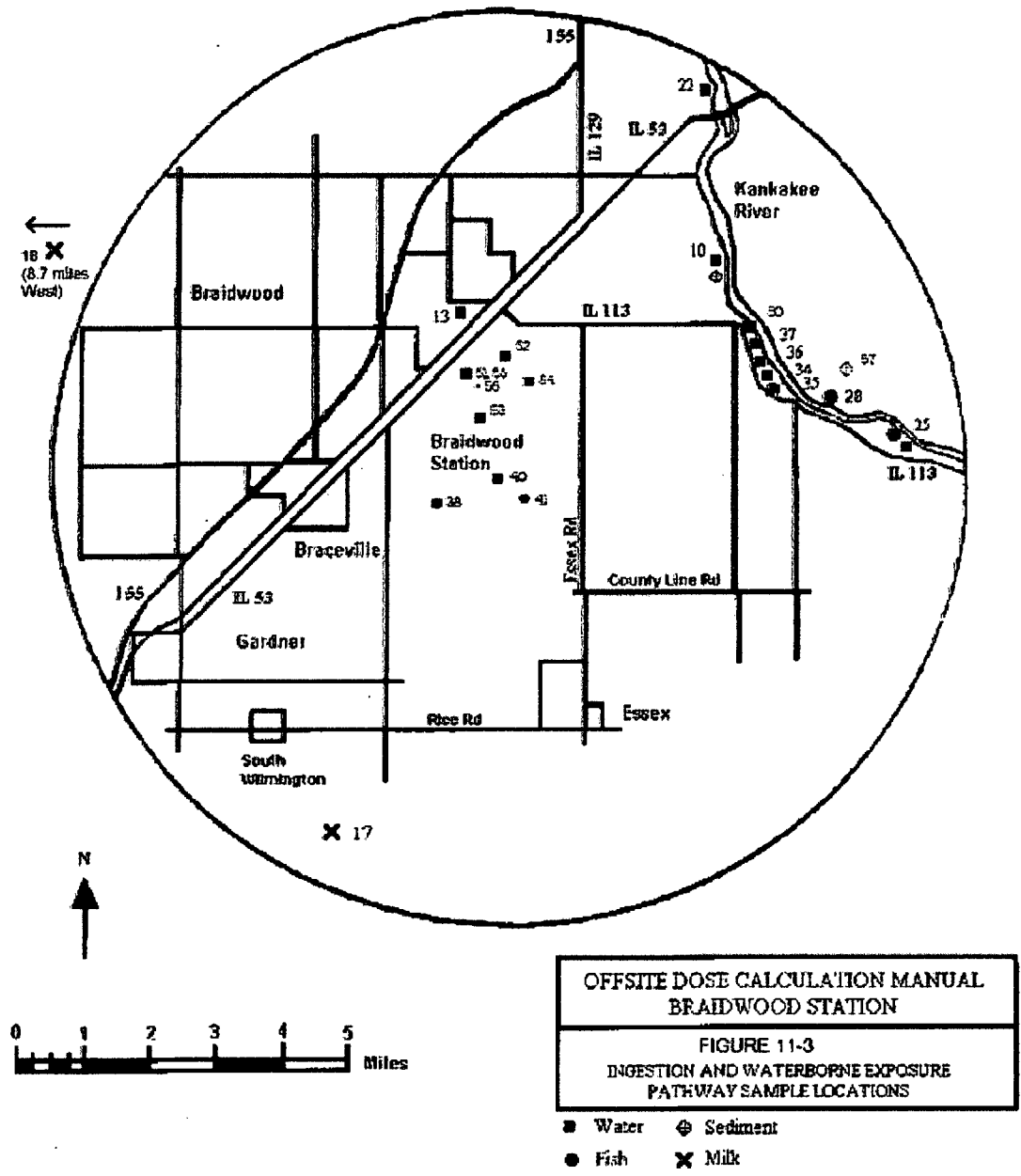


Figure B-3
Ingestion and Waterborne Exposure Pathway Sample Locations
of the Braidwood Station, 2011

APPENDIX C

DATA TABLES AND FIGURES PRIMARY LABORATORY

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TABLE C-I.1 CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-10	BD-25	BD-38	BD-40	BD-55	BD-56
01/06/11 - 01/27/11	4.6 ± 2.6	11.0 ± 3.6	(1)	3.5 ± 2.1	(1)	(1)
02/17/11 - 02/24/11	5.1 ± 1.9	8.0 ± 2.1	3.7 ± 2.0 (1)	8.1 ± 2.4	< 2.0	(1) 7.9 ± 1.9 (1)
03/03/11 - 03/31/11	4.6 ± 2.9	5.4 ± 2.8	7.3 ± 3.5	11.5 ± 3.5	< 3.7	4.2 ± 1.4
04/07/11 - 04/28/11	3.9 ± 2.5	8.1 ± 3.0	< 4.0	10.3 ± 3.0	2.8 ± 1.9	< 3.0
05/05/11 - 05/26/11	4.7 ± 2.6	9.7 ± 3.2	6.5 ± 3.1	9.0 ± 3.2	4.2 ± 2.6	4.2 ± 2.7
06/02/11 - 06/30/11	5.4 ± 2.5	11.1 ± 2.9	10.3 ± 3.0	11.0 ± 3.0	6.4 ± 2.4	6.2 ± 2.5
07/07/11 - 07/28/11	3.6 ± 2.0	12.8 ± 2.8	4.4 ± 2.6	8.3 ± 2.5	4.1 ± 1.6	3.3 ± 1.9
08/04/11 - 08/25/11	4.9 ± 2.6	8.0 ± 2.8	< 3.3	10.5 ± 3.2	3.7 ± 2.3	< 3.8
09/01/11 - 09/29/11	5.7 ± 1.5	9.5 ± 1.5	4.6 ± 1.6	9.4 ± 1.7	2.7 ± 1.2	< 2.1
10/06/11 - 10/27/11	3.1 ± 1.5	8.3 ± 1.8	< 1.7	10.4 ± 2.0	6.9 ± 1.8	3.1 ± 1.5
11/03/11 - 11/23/11	3.9 ± 1.3	10.0 ± 1.8	8.7 ± 1.9	13.4 ± 2.0	4.0 ± 1.2	4.6 ± 1.3
12/01/11 - 12/29/11	5.0 ± 1.4	6.7 ± 1.6	5.7 ± 1.6	10.8 ± 1.9	3.2 ± 1.1	6.1 ± 1.5
MEAN	4.5 ± 1.5	9.1 ± 4.1	6.4 ± 4.6	9.7 ± 4.8	4.2 ± 3.0	4.9 ± 3.3

TABLE C-I.2 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-10	BD-25	BD-38	BD-40	BD-55	BD-56
01/06/11 - 03/31/11	< 173	< 172	< 175 (1)	< 173	< 175 (1)	< 174 (1)
04/07/11 - 06/30/11	< 177	< 177	< 180	< 175	< 178	< 175
07/07/11 - 09/29/11	< 191	< 192	< 189	< 193	< 190	< 196
10/06/11 - 12/29/11	< 184	< 184	< 183	< 181	< 181	< 185
MEAN	-	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-I.3

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-10	01/06/11 - 01/27/11	< 2	< 3	< 6	< 2	< 6	< 3	< 5	< 14	< 3	< 3	< 27	< 9
	02/03/11 - 02/24/11	< 1	< 1	< 3	< 1	< 2	< 2	< 3	< 12	< 1	< 1	< 18	< 5
	03/03/11 - 03/31/11	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 8	< 2	< 2	< 39	< 14
	04/07/11 - 04/28/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 33	< 10
	05/05/11 - 05/26/11	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 13	< 1	< 1	< 18	< 5
	06/02/11 - 06/30/11	< 3	< 3	< 7	< 2	< 5	< 3	< 5	< 14	< 2	< 2	< 27	< 9
	07/07/11 - 07/28/11	< 4	< 5	< 11	< 5	< 9	< 5	< 8	< 15	< 5	< 5	< 23	< 6
	08/04/11 - 08/25/11	< 1	< 1	< 3	< 1	< 3	< 2	< 2	< 7	< 1	< 1	< 12	< 4
	09/01/11 - 09/29/11	< 5	< 5	< 15	< 5	< 12	< 7	< 11	< 15	< 5	< 6	< 32	< 9
	10/06/11 - 10/27/11	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 16	< 6
	11/03/11 - 11/23/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 17	< 5
	12/01/11 - 12/29/11	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 2	< 19	< 6
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BD-25	01/06/11 - 01/27/11	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 14	< 2	< 3	< 24	< 8
	02/03/11 - 02/24/11	< 1	< 1	< 3	< 1	< 2	< 2	< 2	< 10	< 1	< 1	< 16	< 6
	03/03/11 - 03/31/11	< 2	< 2	< 6	< 2	< 4	< 3	< 5	< 9	< 2	< 2	< 47	< 13
	04/07/11 - 04/28/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 28	< 9
	05/05/11 - 05/26/11	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 13	< 1	< 1	< 15	< 5
	06/02/11 - 06/30/11	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 8	< 1	< 1	< 15	< 5
	07/07/11 - 07/28/11	< 5	< 4	< 9	< 4	< 11	< 5	< 7	< 15	< 5	< 5	< 33	< 8
	08/04/11 - 08/25/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 17	< 6
	09/01/11 - 09/29/11	< 6	< 6	< 14	< 8	< 12	< 8	< 11	< 14	< 5	< 5	< 38	< 15
	10/06/11 - 10/27/11	< 2	< 2	< 6	< 3	< 5	< 2	< 4	< 10	< 2	< 2	< 18	< 5
	11/03/11 - 11/23/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 16	< 6
	12/01/11 - 12/29/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 17	< 5
	MEAN		-	-	-	-	-	-	-	-	-	-	-

C-2

TABLE C-1.3

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-38	01/06/11 - 01/27/11 (1)	-	-	-	-	-	-	-	-	-	-	-	-
	02/17/11 - 02/24/11 (1)	< 1	< 1	< 3	< 1	< 2	< 2	< 3	< 12	< 1	< 1	< 17	< 5
	03/03/11 - 03/31/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 8	< 1	< 1	< 31	< 10
	04/07/11 - 04/28/11	< 1	< 2	< 5	< 1	< 3	< 2	< 3	< 10	< 1	< 1	< 37	< 12
	05/05/11 - 05/26/11	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 4	< 2	< 1	< 31	< 8
	06/02/11 - 06/30/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 12	< 1	< 2	< 19	< 6
	07/07/11 - 07/28/11	< 5	< 5	< 10	< 4	< 10	< 5	< 10	< 15	< 5	< 6	< 33	< 11
	08/04/11 - 08/25/11	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 10	< 2	< 2	< 17	< 5
	09/01/11 - 09/29/11	< 4	< 6	< 13	< 6	< 9	< 5	< 9	< 15	< 4	< 5	< 32	< 12
	10/06/11 - 10/27/11	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	11/03/11 - 11/23/11	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 14	< 1	< 1	< 14	< 5
	12/01/11 - 12/29/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 15	< 2	< 2	< 23	< 6
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BD-40	01/06/11 - 01/27/11	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 13	< 2	< 3	< 24	< 8
	02/03/11 - 02/24/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 14	< 1	< 1	< 20	< 6
	03/03/11 - 03/31/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 35	< 10
	04/07/11 - 04/28/11	< 1	< 2	< 4	< 1	< 2	< 2	< 4	< 10	< 1	< 2	< 42	< 11
	05/05/11 - 05/26/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 18	< 6
	06/02/11 - 06/30/11	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 14	< 2	< 2	< 20	< 7
	07/07/11 - 07/28/11	< 5	< 6	< 9	< 5	< 10	< 6	< 9	< 14	< 5	< 4	< 33	< 8
	08/04/11 - 08/25/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 16	< 6
	09/01/11 - 09/29/11	< 6	< 5	< 10	< 6	< 12	< 6	< 10	< 15	< 6	< 5	< 31	< 12
	10/06/11 - 10/27/11	< 2	< 2	< 6	< 2	< 5	< 3	< 5	< 10	< 2	< 2	< 20	< 7
	11/03/11 - 11/23/11	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 12	< 1	< 1	< 13	< 4
	12/01/11 - 12/29/11	< 1	< 1	< 3	< 1	< 2	< 2	< 3	< 11	< 1	< 1	< 16	< 5
	MEAN		-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-I.3

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-55	01/06/11 - 01/27/11 (1)	-	-	-	-	-	-	-	-	-	-	-	-
	02/17/11 - 02/24/11 (1)	< 1	< 1	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 21	< 5
	03/03/11 - 03/31/11	< 1	< 2	< 5	< 1	< 3	< 2	< 4	< 8	< 1	< 1	< 36	< 11
	04/07/11 - 04/28/11	< 1	< 2	< 4	< 1	< 2	< 2	< 3	< 11	< 1	< 1	< 32	< 11
	05/05/11 - 05/26/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 19	< 5
	06/02/11 - 06/30/11	< 2	< 2	< 6	< 2	< 5	< 3	< 5	< 14	< 2	< 2	< 24	< 8
	07/07/11 - 07/28/11	< 3	< 4	< 8	< 3	< 7	< 3	< 6	< 11	< 4	< 3	< 24	< 8
	08/04/11 - 08/25/11	< 2	< 2	< 6	< 2	< 5	< 3	< 5	< 10	< 2	< 2	< 21	< 8
	09/01/11 - 09/29/11	< 5	< 6	< 13	< 5	< 15	< 7	< 12	< 14	< 5	< 6	< 29	< 11
	10/06/11 - 10/27/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 8	< 2	< 2	< 16	< 5
	11/03/11 - 11/23/11	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 14	< 1	< 1	< 16	< 5
	12/01/11 - 12/29/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 15	< 1	< 1	< 22	< 7
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BD-56	01/06/11 - 01/27/11 (1)	-	-	-	-	-	-	-	-	-	-	-	-
	02/17/11 - 02/24/11 (1)	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 15	< 1	< 1	< 21	< 7
	03/03/11 - 03/31/11	< 2	< 2	< 6	< 2	< 4	< 3	< 5	< 11	< 2	< 2	< 46	< 14
	04/07/11 - 04/28/11	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 10	< 1	< 1	< 47	< 13
	05/05/11 - 05/26/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 18	< 5
	06/02/11 - 06/30/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 14	< 1	< 2	< 21	< 7
	07/07/11 - 07/28/11	< 4	< 4	< 9	< 4	< 9	< 5	< 7	< 14	< 4	< 4	< 29	< 10
	08/04/11 - 08/25/11	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 19	< 6
	09/01/11 - 09/29/11	< 5	< 4	< 9	< 5	< 9	< 6	< 8	< 14	< 5	< 5	< 29	< 11
	10/06/11 - 10/27/11	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 9	< 2	< 2	< 18	< 6
	11/03/11 - 11/23/11	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 14	< 1	< 1	< 16	< 6
	12/01/11 - 12/29/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 15	< 5
	MEAN		-	-	-	-	-	-	-	-	-	-	-

C-4

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**TABLE C-II.1 CONCENTRATIONS OF GROSS BETA IN PUBLIC WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-22
12/30/10 - 02/03/11	4.1 ± 2.2
02/03/11 - 03/03/11	5.7 ± 2.6
03/03/11 - 03/31/11	< 3.5
03/31/11 - 04/28/11	< 3.5
04/28/11 - 06/02/11	3.7 ± 1.5
06/02/11 - 06/30/11	< 3.4
06/30/11 - 07/28/11	2.3 ± 1.5
07/28/11 - 09/01/11	5.5 ± 2.3
09/01/11 - 09/29/11	3.2 ± 1.6
09/29/11 - 11/03/11	5.3 ± 1.6
11/03/11 - 12/01/11	3.6 ± 1.6
12/01/11 - 12/29/11	3.4 ± 1.1
MEAN	4.1 ± 2.4

**TABLE C-II.2 CONCENTRATIONS OF TRITIUM IN PUBLIC WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-22
12/30/10 - 02/03/11	< 181
02/03/11 - 03/03/11	< 177
03/03/11 - 03/31/11	< 191
03/31/11 - 04/28/11	< 192
04/28/11 - 06/02/11	< 169
06/02/11 - 06/30/11	< 170
06/30/11 - 07/28/11	< 185
07/28/11 - 09/01/11	< 185
09/01/11 - 09/29/11	< 186
09/29/11 - 11/03/11	309 ± 133
11/03/11 - 12/01/11	< 183
12/01/11 - 12/29/11	< 156
MEAN	-

**TABLE C-II.3 CONCENTRATIONS OF I-131 IN PUBLIC WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-22
11/03/11 - 12/01/11 (1)	< 0.6
12/01/11 - 12/29/11	< 0.4
MEAN	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-II.4

**CONCENTRATIONS OF GAMMA EMITTERS IN PUBLIC WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-22	12/30/10 - 02/03/11	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 18	< 6
	02/03/11 - 03/03/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 17	< 4
	03/03/11 - 03/31/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 22	< 7
	03/31/11 - 04/28/11	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 15	< 1	< 1	< 15	< 5
	04/28/11 - 06/02/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 14	< 4
	06/02/11 - 06/30/11	< 3	< 3	< 7	< 4	< 7	< 4	< 7	< 10	< 3	< 4	< 23	< 6
	06/30/11 - 07/28/11	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 14	< 1	< 1	< 19	< 6
	07/28/11 - 09/01/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 7	< 1	< 1	< 11	< 3
	09/01/11 - 09/29/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 20	< 7
	09/29/11 - 11/03/11	< 1	< 2	< 4	< 1	< 2	< 1	< 3	< 11	< 1	< 1	< 16	< 5
	11/03/11 - 12/01/11	< 4	< 4	< 9	< 3	< 8	< 5	< 7	< 14	< 4	< 4	< 26	< 8
	12/01/11 - 12/29/11	< 4	< 4	< 8	< 5	< 9	< 5	< 8	< 14	< 4	< 5	< 37	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1

**CONCENTRATIONS OF TRITIUM IN GROUND/WELL WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	BD-13	BD-34	BD-35	BD-36	BD-37	BD-50	BD-51	BD-53	BD-54
01/20/11 - 03/31/11	< 154	< 154	< 181 (1)	225 \pm 105	< 153	< 155 (1)	< 176 (1)	< 161 (1)	< 155
04/15/11 - 04/15/11	< 177 (1)	< 179	< 178	< 180	< 175	< 178	< 180	< 180	< 178
07/15/11 - 07/15/11	< 187	< 186	< 183	< 186	< 191	< 192	< 195	(1)	< 194
10/14/11 - 10/14/11	< 173	< 173	< 172	< 184	< 180	< 183	< 184	(1)	< 184
MEAN	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-III.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUND/WELL WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-13	01/13/11 - 01/13/11	< 5	< 5	< 11	< 5	< 8	< 5	< 8	< 14	< 4	< 5	< 31	< 12
	04/14/11 - 04/14/11 (1)	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 21	< 7
	07/15/11 - 07/15/11	< 5	< 6	< 12	< 6	< 10	< 6	< 9	< 12	< 5	< 5	< 27	< 11
	10/13/11 - 10/13/11	< 3	< 3	< 6	< 2	< 6	< 4	< 5	< 9	< 3	< 3	< 15	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-34	01/14/11 - 01/14/11	< 5	< 5	< 10	< 5	< 8	< 5	< 8	< 15	< 4	< 5	< 33	< 10
	04/15/11 - 04/15/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 1	< 2	< 17	< 5
	07/15/11 - 07/15/11	< 4	< 6	< 9	< 5	< 12	< 5	< 9	< 11	< 4	< 5	< 24	< 9
	10/14/11 - 10/14/11	< 4	< 3	< 9	< 4	< 6	< 4	< 6	< 9	< 3	< 4	< 23	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-35	03/31/11 - 03/31/11 (1)	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 22	< 7
	04/15/11 - 04/15/11	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 21	< 7
	07/15/11 - 07/15/11	< 5	< 4	< 10	< 5	< 10	< 5	< 6	< 10	< 5	< 5	< 31	< 8
	10/14/11 - 10/14/11	< 2	< 3	< 9	< 3	< 6	< 4	< 7	< 7	< 3	< 3	< 21	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-36	01/14/11 - 01/14/11	< 4	< 5	< 10	< 5	< 10	< 6	< 9	< 14	< 4	< 5	< 38	< 14
	04/15/11 - 04/15/11	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 22	< 7
	07/15/11 - 07/15/11	< 4	< 5	< 8	< 5	< 9	< 6	< 8	< 10	< 4	< 5	< 27	< 8
	10/14/11 - 10/14/11	< 3	< 3	< 9	< 4	< 5	< 4	< 7	< 9	< 3	< 4	< 24	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-37	01/14/11 - 01/14/11	< 4	< 4	< 10	< 4	< 11	< 5	< 9	< 14	< 5	< 5	< 31	< 9
	04/15/11 - 04/15/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 10	< 1	< 2	< 17	< 5
	07/15/11 - 07/15/11	< 6	< 6	< 10	< 6	< 12	< 6	< 10	< 15	< 6	< 5	< 35	< 11
	10/14/11 - 10/14/11	< 3	< 6	< 9	< 5	< 8	< 3	< 9	< 12	< 4	< 4	< 35	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-50	02/03/11 - 02/03/11 (1)	< 5	< 5	< 8	< 4	< 9	< 6	< 9	< 13	< 4	< 4	< 29	< 13
	04/15/11 - 04/15/11	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 14	< 2	< 2	< 22	< 6
	07/15/11 - 07/15/11	< 6	< 7	< 11	< 5	< 10	< 6	< 11	< 12	< 6	< 7	< 31	< 11
	10/14/11 - 10/14/11	< 4	< 3	< 10	< 3	< 7	< 3	< 6	< 11	< 3	< 4	< 15	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-III.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWELL WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-51	03/17/11 - 03/17/11 (1)	< 3	< 4	< 9	< 3	< 7	< 4	< 7	< 14	< 3	< 4	< 29	< 9
	04/15/11 - 04/15/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 13	< 1	< 2	< 20	< 6
	07/15/11 - 07/15/11	< 6	< 6	< 12	< 8	< 13	< 6	< 13	< 13	< 5	< 7	< 38	< 13
	10/14/11 - 10/14/11	< 3	< 4	< 8	< 6	< 8	< 5	< 10	< 10	< 5	< 4	< 22	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-53	01/20/11 - 01/20/11 (1)	< 3	< 3	< 8	< 4	< 8	< 4	< 6	< 11	< 4	< 4	< 26	< 8
	04/15/11 - 04/15/11	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 12	< 1	< 2	< 19	< 7
	07/15/11 - 07/15/11 (1)	-	-	-	-	-	-	-	-	-	-	-	-
	10/14/11 - 10/14/11 (1)	-	-	-	-	-	-	-	-	-	-	-	-
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-54	01/14/11 - 01/14/11	< 4	< 4	< 7	< 4	< 7	< 4	< 6	< 12	< 3	< 4	< 25	< 9
	04/15/11 - 04/15/11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 12	< 1	< 1	< 17	< 5
	07/15/11 - 07/15/11	< 11	< 10	< 20	< 10	< 18	< 8	< 15	< 15	< 7	< 8	< 50	< 14
	10/14/11 - 10/14/11	< 6	< 7	< 16	< 6	< 14	< 8	< 11	< 12	< 6	< 7	< 31	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

C-9

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IV.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-25													
Channel Catfish	05/11/11	< 85	< 74	< 205	< 82	< 150	< 90	< 171	< 1200	< 56	< 71	< 1450	< 312
Common Carp	05/11/11	< 61	< 65	< 149	< 51	< 121	< 63	< 122	< 929	< 58	< 54	< 900	< 336
Golden Redhorse	10/10/11	< 67	< 69	< 148	< 72	< 147	< 70	< 152	< 390	< 39	< 47	< 663	< 64
Smallmouth Bass	10/10/11	< 66	< 69	< 180	< 73	< 156	< 72	< 90	< 1010	< 58	< 80	< 865	< 340
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-28													
Channel Catfish	05/11/11	< 69	< 65	< 168	< 66	< 167	< 96	< 127	< 879	< 63	< 74	< 1340	< 373
Smallmouth Bass	05/11/11	< 83	< 105	< 251	< 69	< 198	< 96	< 140	< 1230	< 97	< 82	< 1590	< 501
Golden Redhorse	10/10/11	< 80	< 87	< 193	< 75	< 166	< 109	< 179	< 506	< 53	< 77	< 885	< 344
Silver Redhorse	10/10/11	< 97	< 75	< 182	< 75	< 156	< 85	< 147	< 574	< 80	< 62	< 945	< 260
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-41													
Channel Catfish	05/11/11	< 84	< 111	< 221	< 73	< 193	< 135	< 190	< 1310	< 75	< 77	< 1460	< 349
Largemouth Bass	05/11/11	< 75	< 95	< 191	< 77	< 164	< 101	< 200	< 1120	< 73	< 74	< 1520	< 491
Common Carp	10/11/11	< 64	< 70	< 168	< 67	< 133	< 74	< 129	< 467	< 61	< 68	< 654	< 181
Largemouth Bass	10/11/11	< 72	< 85	< 146	< 66	< 148	< 77	< 141	< 414	< 60	< 66	< 888	< 84
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

C-10

TABLE C-V.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/KG DRY ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-10	05/12/11	< 84	< 112	< 370	< 110	< 235	< 146	< 184	< 86	117 ± 75	< 1770	< 537
	10/14/11	< 83	< 83	< 229	< 104	< 208	< 120	< 183	< 74	< 133	< 908	< 235
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-57	05/12/11	< 95	< 100	< 235	< 96	< 197	< 144	< 155	< 104	< 128	< 1670	< 538
	10/14/11	< 62	< 71	< 211	< 83	< 185	< 110	< 133	< 67	84 ± 50	< 694	< 203
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VI.1

**CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I				GROUP II			GROUP III
	BD-06	BD-19	BD-20	BD-21	BD-02	BD-04	BD-05	BD-03
12/30/10 - 01/06/11	34 ± 5	35 ± 6	37 ± 6	35 ± 6	35 ± 6	35 ± 6	38 ± 6	29 ± 5
01/06/11 - 01/13/11	22 ± 5	23 ± 5	16 ± 4	17 ± 4	21 ± 5	19 ± 4	18 ± 4	18 ± 4
01/13/11 - 01/20/11	26 ± 4	29 ± 4	24 ± 4	25 ± 4	20 ± 4	27 ± 4	23 ± 4	25 ± 4
01/20/11 - 01/27/11	37 ± 6	34 ± 6	29 ± 5	35 ± 6	30 ± 5	39 ± 6	38 ± 6	34 ± 6
01/27/11 - 02/03/11	19 ± 5	20 ± 5	20 ± 5	25 ± 6	25 ± 6	20 ± 5	17 ± 5	19 ± 5
02/03/11 - 02/10/11	23 ± 5	19 ± 4	20 ± 4	18 ± 4	19 ± 4	23 ± 5	21 ± 4	18 ± 4
02/10/11 - 02/17/11	19 ± 4	21 ± 4	22 ± 5	21 ± 5	18 ± 4	19 ± 4	19 ± 4	21 ± 4
02/17/11 - 02/24/11	11 ± 4	11 ± 4	(1) 17 ± 4	14 ± 4	16 ± 4	14 ± 4	(1) 9 ± 4	13 ± 4
02/24/11 - 03/03/11	22 ± 4	21 ± 4	18 ± 4	24 ± 4	21 ± 4	20 ± 4	20 ± 4	22 ± 4
03/03/11 - 03/10/11	12 ± 4	13 ± 4	11 ± 4	14 ± 4	14 ± 4	14 ± 4	14 ± 4	14 ± 4
03/10/11 - 03/17/11	17 ± 4	22 ± 4	19 ± 4	21 ± 4	21 ± 4	19 ± 4	18 ± 4	17 ± 4
03/17/11 - 03/24/11	42 ± 6	31 ± 6	26 ± 5	31 ± 6	29 ± 6	27 ± 6	30 ± 6	27 ± 5
03/24/11 - 03/31/11	26 ± 5	27 ± 5	30 ± 5	24 ± 5	34 ± 5	29 ± 5	30 ± 5	28 ± 5
03/31/11 - 04/07/11	19 ± 5	24 ± 6	21 ± 5	22 ± 5	25 ± 6	21 ± 5	20 ± 5	24 ± 6
04/07/11 - 04/14/11	13 ± 4	12 ± 4	17 ± 4	17 ± 4	16 ± 4	12 ± 4	15 ± 4	13 ± 4
04/14/11 - 04/21/11	12 ± 5	8 ± 4	12 ± 5	20 ± 5	16 ± 5	12 ± 5	13 ± 5	11 ± 5
04/21/11 - 04/28/11	9 ± 4	9 ± 4	10 ± 4	10 ± 4	8 ± 3	12 ± 4	8 ± 4	11 ± 4
04/28/11 - 05/05/11	12 ± 4	14 ± 5	14 ± 5	14 ± 5	16 ± 5	12 ± 4	9 ± 4	12 ± 4
05/05/11 - 05/12/11	15 ± 4	18 ± 4	20 ± 5	18 ± 4	13 ± 4	15 ± 4	15 ± 4	14 ± 4
05/12/11 - 05/19/11	10 ± 4	10 ± 4	11 ± 4	14 ± 5	14 ± 5	12 ± 5	11 ± 4	11 ± 4
05/19/11 - 05/26/11	14 ± 4	15 ± 4	14 ± 4	14 ± 4	14 ± 4	18 ± 4	14 ± 4	7 ± 3
05/26/11 - 06/02/11	15 ± 4	15 ± 4	13 ± 4	15 ± 4	14 ± 4	17 ± 4	15 ± 4	11 ± 3
06/02/11 - 06/09/11	24 ± 5	25 ± 5	27 ± 5	25 ± 5	21 ± 5	19 ± 5	23 ± 5	21 ± 5
06/09/11 - 06/16/11	< 6	8 ± 4	< 6	8 ± 4	7 ± 4	7 ± 4	9 ± 4	6 ± 4
06/16/11 - 06/23/11	10 ± 5	12 ± 5	11 ± 5	10 ± 5	11 ± 5	11 ± 5	10 ± 5	10 ± 5
06/23/11 - 06/30/11	12 ± 4	15 ± 4	13 ± 4	11 ± 4	11 ± 4	10 ± 4	14 ± 4	9 ± 4
06/30/11 - 07/07/11	19 ± 5	24 ± 6	16 ± 5	18 ± 5	20 ± 5	20 ± 5	21 ± 5	18 ± 5
07/07/11 - 07/14/11	23 ± 5	15 ± 5	18 ± 5	24 ± 5	16 ± 5	21 ± 5	22 ± 5	19 ± 5
07/14/11 - 07/21/11	24 ± 5	27 ± 5	21 ± 5	23 ± 5	21 ± 5	29 ± 5	28 ± 5	28 ± 5
07/21/11 - 07/28/11	23 ± 5	21 ± 4	16 ± 4	24 ± 5	21 ± 4	23 ± 5	19 ± 4	19 ± 4
07/28/11 - 08/04/11	25 ± 5	23 ± 5	25 ± 5	21 ± 5	22 ± 5	(1) 33 ± 5	32 ± 5	26 ± 5
08/04/11 - 08/11/11	21 ± 5	20 ± 5	18 ± 5	17 ± 5	18 ± 5	22 ± 5	23 ± 5	22 ± 5
08/11/11 - 08/18/11	24 ± 5	23 ± 4	25 ± 5	18 ± 4	21 ± 4	25 ± 5	21 ± 4	22 ± 5
08/18/11 - 08/25/11	24 ± 5	25 ± 5	21 ± 5	26 ± 5	28 ± 5	27 ± 5	26 ± 5	27 ± 5
08/25/11 - 09/01/11	25 ± 5	23 ± 5	26 ± 5	21 ± 5	20 ± 5	22 ± 5	26 ± 5	23 ± 5
09/01/11 - 09/08/11	27 ± 5	28 ± 5	25 ± 5	25 ± 5	23 ± 5	24 ± 5	22 ± 4	23 ± 5
09/08/11 - 09/15/11	21 ± 4	19 ± 4	18 ± 4	17 ± 4	20 ± 4	19 ± 4	24 ± 4	22 ± 4
09/15/11 - 09/22/11	21 ± 5	17 ± 4	19 ± 4	21 ± 5	14 ± 4	20 ± 4	16 ± 4	18 ± 4
09/22/11 - 09/29/11	22 ± 5	15 ± 4	17 ± 4	16 ± 4	14 ± 4	18 ± 4	18 ± 4	18 ± 4
09/29/11 - 10/06/11	21 ± 4	22 ± 4	22 ± 4	21 ± 4	21 ± 4	17 ± 4	20 ± 4	20 ± 4
10/06/11 - 10/13/11	34 ± 6	40 ± 6	40 ± 6	40 ± 6	39 ± 6	40 ± 6	40 ± 6	41 ± 6
10/13/11 - 10/20/11	17 ± 5	19 ± 5	12 ± 5	13 ± 5	13 ± 5	15 ± 5	14 ± 5	12 ± 5
10/20/11 - 10/27/11	23 ± 5	(1) 24 ± 5	22 ± 5	21 ± 5	26 ± 5	25 ± 5	25 ± 5	26 ± 5
10/27/11 - 11/03/11	25 ± 5	(1) 32 ± 6	26 ± 5	29 ± 5	24 ± 5	27 ± 5	28 ± 5	26 ± 5
11/03/11 - 11/10/11	18 ± 5	(1) 20 ± 5	28 ± 7	(1) 17 ± 5	21 ± 5	21 ± 5	20 ± 5	21 ± 5
11/10/11 - 11/16/11	27 ± 6	(1) 36 ± 6	33 ± 6	32 ± 6	31 ± 6	28 ± 6	30 ± 6	24 ± 6
11/16/11 - 11/23/11	18 ± 4	14 ± 4	12 ± 4	(1) 15 ± 4	15 ± 4	15 ± 4	12 ± 4	13 ± 4
11/23/11 - 12/01/11	21 ± 4	(1) 16 ± 4	19 ± 4	15 ± 4	19 ± 4	17 ± 4	16 ± 4	22 ± 4
12/01/11 - 12/08/11	28 ± 5	(1) 21 ± 4	22 ± 5	(1) 23 ± 5	22 ± 4	21 ± 4	22 ± 4	23 ± 5
12/08/11 - 12/15/11	29 ± 5	18 ± 4	30 ± 6	(1) 27 ± 5	18 ± 4	24 ± 5	26 ± 5	30 ± 5
12/15/11 - 12/22/11	34 ± 5	35 ± 5	35 ± 5	37 ± 5	31 ± 5	35 ± 5	37 ± 5	33 ± 5
12/22/11 - 12/29/11	23 ± 5	21 ± 5	20 ± 5	17 ± 5	18 ± 5	23 ± 5	24 ± 5	24 ± 5
MEAN	21 ± 14	21 ± 15	21 ± 14	21 ± 14	20 ± 14	21 ± 15	21 ± 16	20 ± 14

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VI.2 MONTHLY AND YEARLY VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

GROUP I - NEAR FIELD LOCATIONS				GROUP II - FAR FIELD LOCATIONS				GROUP III - CONTROL LOCATIONS			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
12/30/10 - 02/03/11	16	37	27 ± 14	12/30/10 - 02/03/11	17	39	27 ± 16	12/30/10 - 02/03/11	18	34	25 ± 14
02/03/11 - 03/03/11	11	24	19 ± 8	02/03/11 - 03/03/11	9	23	18 ± 7	02/03/11 - 03/03/11	13	22	18 ± 8
03/03/11 - 03/31/11	11	42	23 ± 17	03/03/11 - 03/31/11	14	34	23 ± 14	03/03/11 - 03/31/11	14	28	21 ± 14
03/31/11 - 04/28/11	8	24	15 ± 11	03/31/11 - 04/28/11	8	25	15 ± 11	03/31/11 - 04/28/11	11	24	15 ± 12
04/28/11 - 06/02/11	10	20	14 ± 5	04/28/11 - 06/02/11	9	18	14 ± 5	04/28/11 - 06/02/11	7	14	11 ± 5
06/02/11 - 06/30/11	8	27	15 ± 14	06/02/11 - 06/30/11	7	23	13 ± 11	06/02/11 - 06/30/11	6	21	12 ± 13
06/30/11 - 07/28/11	15	27	21 ± 7	06/30/11 - 07/28/11	16	29	22 ± 7	06/30/11 - 07/28/11	18	28	21 ± 9
07/28/11 - 09/01/11	17	26	22 ± 6	07/28/11 - 09/01/11	18	33	24 ± 8	07/28/11 - 09/01/11	22	27	24 ± 4
09/01/11 - 09/29/11	15	28	20 ± 8	09/01/11 - 09/29/11	14	24	19 ± 7	09/01/11 - 09/29/11	18	23	20 ± 5
09/29/11 - 11/03/11	12	40	25 ± 17	09/29/11 - 11/03/11	13	40	25 ± 18	09/29/11 - 11/03/11	12	41	25 ± 21
11/03/11 - 12/01/11	12	36	21 ± 15	11/03/11 - 12/01/11	12	31	20 ± 12	11/03/11 - 12/01/11	13	24	20 ± 10
12/01/11 - 12/29/11	17	37	26 ± 13	12/01/11 - 12/29/11	18	37	25 ± 12	12/01/11 - 12/29/11	23	33	27 ± 10
12/30/10 - 12/29/11	8	42	21 ± 14	12/30/10 - 12/29/11	7	40	21 ± 15	12/30/10 - 12/29/11	6	41	20 ± 14

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-VI.3

**CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-02	12/30/10 - 03/31/11	< 4	< 5	< 12	< 2	< 9	< 4	< 8	< 3	< 3	< 114	< 42
	03/31/11 - 06/30/11	< 2	< 3	< 7	< 2	< 6	< 3	< 5	< 1	< 2	< 126	< 67
	06/30/11 - 09/29/11	< 3	< 4	< 7	< 3	< 6	< 4	< 6	< 2	< 1	< 71	< 19
	09/29/11 - 12/29/11	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 2	< 3	< 17	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-03	03/10/11 - 03/17/11	< 26	< 23	< 63	< 35	< 72	< 21	< 54	< 29	< 24	< 111	< 58
	03/17/11 - 03/24/11	< 31	< 26	< 46	< 33	< 80	< 30	< 53	< 37	< 29	< 109	< 30
	03/24/11 - 03/31/11	< 31	< 35	< 72	< 39	< 51	< 28	< 54	< 31	< 37	< 151	< 42
	03/31/11 - 04/07/11	< 43	< 35	< 67	< 41	< 90	< 36	< 52	< 43	< 34	< 156	< 48
	12/30/10 - 03/31/11	< 3	< 4	< 10	< 3	< 7	< 4	< 8	< 3	< 3	< 114	< 39
	03/31/11 - 06/30/11	< 2	< 2	< 8	< 1	< 4	< 3	< 4	< 2	< 1	< 123	< 47
	06/30/11 - 09/29/11	< 2	< 4	< 7	< 2	< 6	< 3	< 6	< 2	< 2	< 61	< 18
	09/29/11 - 12/29/11	< 3	< 3	< 5	< 2	< 7	< 3	< 6	< 3	< 2	< 23	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-04	12/30/10 - 03/31/11	< 3	< 5	< 9	< 3	< 9	< 4	< 8	< 3	< 2	< 121	< 30
	03/31/11 - 06/30/11	< 3	< 3	< 11	< 3	< 7	< 4	< 8	< 3	< 2	< 207	< 54
	06/30/11 - 09/29/11	< 3	< 3	< 11	< 3	< 8	< 4	< 7	< 3	< 3	< 75	< 35
	09/29/11 - 12/29/11	< 4	< 3	< 9	< 4	< 7	< 4	< 6	< 4	< 4	< 26	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-05	12/30/10 - 03/31/11	< 3	< 5	< 13	< 3	< 8	< 5	< 8	< 3	< 3	< 127	< 45
	03/31/11 - 06/30/11	< 1	< 3	< 7	< 2	< 6	< 4	< 6	< 2	< 2	< 166	< 101
	06/30/11 - 09/29/11	< 2	< 3	< 10	< 2	< 6	< 3	< 5	< 2	< 2	< 59	< 21
	09/29/11 - 12/29/11	< 3	< 4	< 8	< 4	< 8	< 3	< 5	< 3	< 3	< 24	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-

BOLDED VALUES INDICATE ADDITIONAL SAMPLING DUE TO THE FUKUSHIMA EVENT

TABLE C-VI.3

**CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-06	12/30/10 - 03/31/11	< 3	< 4	< 9	< 3	< 7	< 5	< 8	< 3	< 3	< 125	< 47
	03/31/11 - 06/30/11	< 2	< 3	< 8	< 2	< 4	< 3	< 4	< 2	< 2	< 131	< 46
	06/30/11 - 09/29/11	< 2	< 3	< 9	< 2	< 4	< 4	< 5	< 2	< 2	< 66	< 6
	09/29/11 - 12/29/11	< 2	< 2	< 7	< 2	< 8	< 3	< 5	< 3	< 3	< 23	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-19	12/30/10 - 03/31/11	< 4	< 4	< 12	< 4	< 7	< 5	< 9	< 3	< 3	< 132	< 24
	03/31/11 - 06/30/11	< 2	< 3	< 8	< 2	< 5	< 3	< 6	< 2	< 2	< 136	< 62
	06/30/11 - 09/29/11	< 2	< 3	< 7	< 2	< 5	< 3	< 5	< 2	< 2	< 57	< 28
	09/29/11 - 12/29/11	< 2	< 3	< 5	< 2	< 7	< 2	< 5	< 2	< 2	< 16	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-20	12/30/10 - 03/31/11	< 3	< 3	< 10	< 3	< 9	< 4	< 6	< 3	< 3	< 112	< 52
	03/31/11 - 06/30/11	< 3	< 4	< 12	< 4	< 7	< 5	< 8	< 3	< 3	< 204	< 93
	06/30/11 - 09/29/11	< 3	< 3	< 7	< 2	< 7	< 3	< 7	< 3	< 3	< 85	< 27
	09/29/11 - 12/29/11	< 2	< 2	< 5	< 2	< 4	< 2	< 5	< 2	< 2	< 18	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-21	12/30/10 - 03/31/11	< 3	< 5	< 12	< 3	< 5	< 4	< 6	< 3	< 3	< 144	< 45
	03/31/11 - 06/30/11	< 3	< 4	< 8	< 2	< 8	< 3	< 6	< 3	< 2	< 196	< 62
	06/30/11 - 09/29/11	< 2	< 3	< 9	< 2	< 4	< 3	< 4	< 2	< 2	< 59	< 22
	09/29/11 - 12/29/11	< 2	< 3	< 6	< 2	< 7	< 3	< 4	< 3	< 2	< 17	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I				GROUP II			GROUP III
	BD-06	BD-19	BD-20	BD-21	BD-02	BD-04	BD-05	BD-03
12/30/10 - 01/06/11	< 42	< 67	< 68	< 68	< 56	< 56	< 57	< 56
01/06/11 - 01/13/11	< 30	< 29	< 30	< 30	< 22	< 21	< 22	< 22
01/13/11 - 01/20/11	< 40	< 30	< 40	< 40	< 43	< 40	< 40	< 41
01/20/11 - 01/27/11	< 62	< 62	< 62	< 62	< 51	< 51	< 51	< 51
01/27/11 - 02/03/11	< 35	< 35	< 15	< 35	< 31	< 31	< 35	< 31
02/03/11 - 02/10/11	< 36	< 36	< 36	< 36	< 20	< 20	< 21	< 20
02/10/11 - 02/17/11	< 66	< 66	< 66	< 29	< 46	< 46	< 66	< 46
02/17/11 - 02/24/11	< 45	< 46 (1)	< 45	< 45	< 46	< 46 (1)	< 46	< 46
02/24/11 - 03/03/11	< 68	< 67	< 68	< 65	< 60	< 60	< 60	< 60
03/03/11 - 03/10/11	< 46	< 46	< 46	< 46	< 34	< 34	< 34	< 34
03/10/11 - 03/17/11	< 53	< 53	< 54	< 54	< 45	< 45	< 45	< 19
03/17/11 - 03/24/11	111 ± 26	85 ± 41	84 ± 34	84 ± 27	77 ± 39	86 ± 26	67 ± 26	50 ± 25
03/24/11 - 03/31/11	50 ± 26	< 47	36 ± 28	28 ± 22	< 34	33 ± 25	< 38	< 38
03/31/11 - 04/07/11	63 ± 30	67 ± 28	55 ± 31	78 ± 32	52 ± 32	47 ± 36	69 ± 29	53 ± 26
04/07/11 - 04/14/11	< 37	< 42	< 41	< 35	< 42	< 30	< 35	< 44
04/14/11 - 04/21/11	< 57	< 58	< 58	< 58	< 56	< 56	< 57	< 56
04/21/11 - 04/28/11	< 58	< 58	< 58	< 58	< 51	< 51	< 51	< 51
04/28/11 - 05/05/11	< 63	< 63	< 63	< 63	< 53	< 53	< 53	< 53
05/05/11 - 05/12/11	< 67	< 27	< 63	< 63	< 56	< 56	< 56	< 56
05/12/11 - 05/19/11	< 51	< 51	< 52	< 51	< 56	< 58	< 57	< 56
05/19/11 - 05/26/11	< 60	< 62	< 33	< 60	< 62	< 64	< 60	< 63
05/26/11 - 06/02/11	< 44	< 44	< 44	< 44	< 59	< 59	< 57	< 59
06/02/11 - 06/09/11	< 51	< 53	< 53	< 53	< 58	< 59	< 59	< 59
06/09/11 - 06/16/11	< 48	< 48	< 48	< 48	< 36	< 36	< 36	< 36
06/16/11 - 06/23/11	< 61	< 61	< 61	< 61	< 38	< 60	< 60	< 60
06/23/11 - 06/30/11	< 69	< 69	< 69	< 69	< 58	< 58	< 58	< 58
06/30/11 - 07/07/11	< 69	< 59	< 59	< 59	< 69	< 38	< 69	< 69
07/07/11 - 07/14/11	< 60	< 60	< 60	< 58	< 61	< 61	< 61	< 61
07/14/11 - 07/21/11	< 68	< 68	< 69	< 69	< 65	< 65	< 65	< 36
07/21/11 - 07/28/11	< 31	< 31	< 31	< 31	< 41	< 41	< 41	< 41
07/28/11 - 08/04/11	< 37	< 39	< 39	< 39	< 38 (1)	< 20	< 37	< 37
08/04/11 - 08/11/11	< 52	< 54	< 54	< 55	< 44	< 44	< 44	< 44
08/11/11 - 08/18/11	< 62	< 45	< 47	< 47	< 62	< 62	< 26	< 62
08/18/11 - 08/25/11	< 40	< 40	< 40	< 40	< 29	< 29	< 27	< 29
08/25/11 - 09/01/11	< 18	< 38	< 38	< 38	< 32	< 32	< 32	< 32
09/01/11 - 09/08/11	< 40	< 40	< 41	< 41	< 29	< 29	< 29	< 29
09/08/11 - 09/15/11	< 48	< 26	< 48	< 48	< 53	< 53	< 53	< 53
09/15/11 - 09/22/11	< 21	< 21	< 21	< 21	< 15	< 15	< 15	< 15
09/22/11 - 09/29/11	< 62	< 63	< 63	< 63	< 51	< 51	< 51	< 51
09/29/11 - 10/06/11	< 47	< 47	< 47	< 47	< 42	< 42	< 44	< 42
10/06/11 - 10/13/11	< 29	< 28	< 29	< 16	< 43	< 43	< 43	< 43
10/13/11 - 10/20/11	< 13	< 14	< 14	< 6	< 11	< 11	< 6	< 11
10/20/11 - 10/27/11	< 33 (1)	< 33	< 32	< 32	< 24	< 44	< 44	< 44
10/27/11 - 11/03/11	< 57 (1)	< 56	< 56	< 57	< 51	< 51	< 51	< 51
11/03/11 - 11/10/11	< 49 (1)	< 42	< 61 (1)	< 42	< 47	< 47	< 47	< 26
11/10/11 - 11/16/11	< 21 (1)	< 20	< 21	< 21	< 47	< 45	< 48	< 48
11/16/11 - 11/23/11	< 35	< 43	< 43 (1)	< 43	< 34	< 19	< 34	< 34
11/23/11 - 12/01/11	< 45 (1)	< 45	< 45	< 45	< 51	< 51	< 51	< 50
12/01/11 - 12/08/11	< 50 (1)	< 52	< 59 (1)	< 52	< 44	< 44	< 19	< 44
12/08/11 - 12/15/11	< 32	< 32	< 43 (1)	< 32	< 30	< 29	< 30	< 30
12/15/11 - 12/22/11	< 15	< 27	< 27	< 27	< 28	< 28	< 28	< 28
12/22/11 - 12/29/11	< 64	< 64	< 64	< 64	< 55	< 55	< 55	< 55
MEAN	75 ± 64	76 ± 24	58 ± 49	63 ± 62	64 ± 35	55 ± 54	68 ± 2	51 ± 4

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-VIII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	CONTROL FARM INDICATOR FARM	
	BD-18	BD-17
01/06/11	< 0.7	< 0.5
02/03/11	< 0.6	< 0.7
03/03/11	< 0.5	< 0.5
03/31/11	< 0.5	< 0.8
04/07/11	< 0.7	0.8 ± 0.5
04/21/11	< 0.5	< 0.4
05/05/11	< 0.7	< 0.8
05/19/11	< 0.5	< 0.6
06/02/11	< 0.7	< 0.7
06/16/11	< 0.9	< 0.7
06/30/11	< 0.7	< 0.8
07/14/11	< 0.8	< 0.9
07/28/11	< 0.8	< 0.8
08/11/11	< 0.9	< 0.7
08/25/11	< 0.8	< 0.8
09/08/11	< 0.7	< 0.7
09/22/11	< 0.8	< 0.7
10/06/11	< 0.7	< 0.6
10/20/11	< 0.7	< 0.6
11/03/11	< 0.9	< 0.7
12/01/11	< 0.6	< 0.5
MEAN	-	-

BOLDED VALUES INDICATE ADDITIONAL SAMPLING DUE TO THE FUKUSHIMA EVENT

TABLE C-VIII.2

CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-17	01/06/11	< 4	< 3	< 9	< 4	< 9	< 4	< 7	< 3	< 4	< 23	< 6
	02/03/11	< 7	< 7	< 16	< 8	< 16	< 7	< 12	< 5	< 6	< 41	< 12
	03/03/11	< 5	< 6	< 12	< 5	< 9	< 6	< 8	< 4	< 5	< 32	< 9
	03/31/11	< 5	< 5	< 12	< 6	< 10	< 6	< 8	< 4	< 5	< 41	< 15
	04/07/11	< 5	< 5	< 14	< 6	< 9	< 5	< 10	< 4	< 5	< 41	< 13
	04/21/11	< 5	< 5	< 11	< 6	< 11	< 5	< 9	< 4	< 5	< 22	< 7
	05/05/11	< 5	< 6	< 15	< 7	< 15	< 6	< 10	< 5	< 6	< 32	< 11
	05/19/11	< 4	< 5	< 13	< 5	< 9	< 5	< 8	< 4	< 4	< 43	< 11
	06/02/11	< 6	< 8	< 21	< 9	< 13	< 9	< 14	< 8	< 7	< 54	< 14
	06/16/11	< 7	< 8	< 19	< 8	< 20	< 9	< 13	< 6	< 8	< 52	< 14
	06/30/11	< 7	< 6	< 16	< 7	< 13	< 6	< 11	< 5	< 6	< 39	< 13
	07/14/11	< 7	< 8	< 20	< 12	< 17	< 7	< 12	< 6	< 8	< 44	< 14
	07/28/11	< 6	< 7	< 14	< 9	< 14	< 6	< 11	< 6	< 7	< 35	< 9
	08/11/11	< 8	< 9	< 18	< 8	< 18	< 9	< 14	< 6	< 8	< 35	< 13
	08/25/11	< 5	< 5	< 16	< 5	< 11	< 6	< 10	< 5	< 5	< 28	< 7
	09/08/11	< 8	< 8	< 16	< 10	< 13	< 6	< 14	< 6	< 7	< 37	< 12
	09/22/11	< 6	< 6	< 11	< 6	< 15	< 5	< 12	< 6	< 7	< 26	< 7
	10/06/11	< 6	< 7	< 15	< 8	< 13	< 6	< 11	< 5	< 6	< 32	< 9
	10/20/11	< 6	< 6	< 14	< 8	< 16	< 8	< 13	< 6	< 7	< 42	< 14
11/03/11	< 5	< 6	< 18	< 7	< 15	< 6	< 10	< 6	< 6	< 42	< 6	
12/01/11	< 6	< 6	< 17	< 7	< 13	< 5	< 12	< 5	< 6	< 36	< 10	
MEAN		-	-	-	-	-	-	-	-	-	-	-

BOLDDED VALUES INDICATE ADDITIONAL SAMPLING DUE TO THE FUKUSHIMA EVENT

TABLE C-VIII.2

**CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-18	01/06/11	< 5	< 5	< 10	< 5	< 11	< 5	< 9	< 4	< 6	< 32	< 10
	02/03/11	< 6	< 7	< 18	< 8	< 14	< 8	< 13	< 6	< 6	< 43	< 12
	03/03/11	< 5	< 6	< 14	< 7	< 14	< 6	< 10	< 5	< 5	< 40	< 13
	03/31/11	< 5	< 7	< 14	< 6	< 14	< 6	< 11	< 5	< 6	< 48	< 11
	04/07/11	< 4	< 5	< 14	< 6	< 10	< 5	< 9	< 4	< 5	< 46	< 13
	04/21/11	< 5	< 5	< 12	< 6	< 11	< 5	< 10	< 5	< 5	< 26	< 8
	05/05/11	< 5	< 5	< 11	< 7	< 12	< 6	< 10	< 5	< 6	< 32	< 10
	05/19/11	< 5	< 5	< 13	< 7	< 11	< 6	< 11	< 4	< 5	< 55	< 15
	06/02/11	< 6	< 7	< 17	< 7	< 14	< 6	< 13	< 6	< 6	< 44	< 13
	06/16/11	< 5	< 7	< 15	< 7	< 16	< 6	< 13	< 6	< 7	< 48	< 14
	06/30/11	< 5	< 6	< 14	< 6	< 11	< 6	< 11	< 5	< 6	< 30	< 8
	07/14/11	< 6	< 6	< 13	< 7	< 12	< 5	< 11	< 5	< 6	< 36	< 10
	07/28/11	< 8	< 5	< 18	< 11	< 15	< 7	< 13	< 6	< 7	< 43	< 9
	08/11/11	< 5	< 7	< 17	< 8	< 18	< 6	< 15	< 7	< 7	< 43	< 12
	08/25/11	< 6	< 6	< 15	< 7	< 15	< 7	< 11	< 6	< 6	< 42	< 13
	09/08/11	< 6	< 6	< 14	< 8	< 15	< 7	< 13	< 6	< 6	< 40	< 10
	09/22/11	< 6	< 5	< 11	< 7	< 11	< 6	< 9	< 5	< 5	< 26	< 9
	10/06/11	< 8	< 8	< 17	< 11	< 17	< 7	< 12	< 7	< 7	< 43	< 13
	10/20/11	< 5	< 6	< 13	< 7	< 15	< 6	< 10	< 5	< 6	< 34	< 12
	11/03/11	< 8	< 7	< 17	< 9	< 14	< 8	< 12	< 5	< 7	< 42	< 10
12/01/11	< 6	< 7	< 17	< 7	< 13	< 7	< 11	< 5	< 7	< 32	< 11	
MEAN		-	-	-	-	-	-	-	-	-	-	-

BOLDED VALUES INDICATE ADDITIONAL SAMPLING DUE TO THE FUKUSHIMA EVENT

TABLE C-IX.1

**CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/KG WET \pm 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-CONTROL												
Cabbage	09/27/11	< 9	< 10	< 31	< 11	< 22	< 10	< 21	< 9	< 9	< 81	< 31
Potatoes	09/27/11	< 14	< 16	< 38	< 24	< 38	< 17	< 33	< 13	< 16	< 106	< 26
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 1												
Brussels sprouts	09/27/11	< 15	< 16	< 37	< 19	< 33	< 16	< 26	< 14	< 14	< 103	< 34
Onions	09/27/11	< 15	< 16	< 43	< 16	< 36	< 18	< 29	< 13	< 19	< 139	< 32
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 2												
Broccoli	09/27/11	< 14	< 16	< 36	< 18	< 32	< 15	< 27	< 14	< 16	< 119	< 33
Potatoes	09/27/11	< 15	< 19	< 40	< 22	< 38	< 15	< 27	< 12	< 14	< 108	< 32
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 3												
Cabbage	09/27/11	< 14	< 12	< 39	< 16	< 35	< 13	< 25	< 13	< 12	< 110	< 30
Potatoes	09/27/11	< 14	< 17	< 33	< 15	< 36	< 14	< 24	< 13	< 11	< 108	< 21
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 4												
Beets	09/27/11	< 15	< 16	< 42	< 18	< 37	< 16	< 28	< 12	< 17	< 122	< 35
Cauliflower	09/27/11	< 16	< 16	< 40	< 19	< 39	< 16	< 32	< 17	< 15	< 120	< 30
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-X.1 QUARTERLY TLD RESULTS FOR BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER \pm 2 STANDARD DEVIATIONS

STATION CODE	MEAN \pm 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
BD-02-1	19.8 \pm 1.9	19	21	19	20
BD-02-2	20.3 \pm 1.9	20	21	19	21
BD-03-1	20.8 \pm 3.0	19	22	20	22
BD-03-2	21.5 \pm 4.8	19	23	20	24
BD-04-1	20.5 \pm 2.6	19	22	20	21
BD-04-2	20.0 \pm 2.8	18	21	20	21
BD-05-1	21.0 \pm 3.3	19	23	21	21
BD-05-2	20.5 \pm 3.5	19	22	19	22
BD-06-1	20.3 \pm 3.0	19	22	19	21
BD-06-2	20.0 \pm 3.3	18	20	20	22
BD-19-1	20.8 \pm 3.0	20	22	19	22
BD-19-2	20.8 \pm 3.0	19	22	20	22
BD-20-1	21.0 \pm 2.3	20	22	20	22
BD-20-2	20.8 \pm 1.9	20	21	20	22
BD-21-1	20.0 \pm 2.8	18	21	20	21
BD-21-2	20.5 \pm 3.5	20	20	19	23
BD-101-3	20.0 \pm 3.7	18	22	19	21
BD-101-4	20.8 \pm 3.4	20	23	19	21
BD-102-1	19.3 \pm 3.4	17	20	19	21
BD-102-2	20.8 \pm 2.5	19	22	21	21
BD-103-1	21.8 \pm 2.5	20	23	22	22
BD-103-2	21.8 \pm 1.0	21	22	22	22
BD-104-1	19.5 \pm 2.6	18	21	19	20
BD-104-2	19.0 \pm 3.7	17	21	18	20
BD-105-1	20.3 \pm 3.4	18	22	20	21
BD-105-2	20.8 \pm 5.7	21	21	17	24
BD-106-1	20.3 \pm 3.4	18	22	20	21
BD-106-2	20.3 \pm 1.9	19	21	20	21
BD-107-1	20.8 \pm 3.0	19	22	20	22
BD-107-2	20.0 \pm 4.6	18	22	18	22
BD-108-1	19.8 \pm 1.9	19	21	19	20
BD-108-2	20.5 \pm 1.2	20	21	20	21
BD-109-1	24.3 \pm 8.4	20	30	23	24
BD-109-2	22.3 \pm 5.0	19	23	22	25
BD-110-1	21.3 \pm 5.5	18	24	20	23
BD-110-2	20.5 \pm 3.8	18	22	20	22
BD-112-1	20.5 \pm 3.8	18	22	20	22
BD-112-2	21.0 \pm 2.3	20	22	20	22
BD-114-1	20.0 \pm 2.8	20	22	19	19
BD-114-2	19.8 \pm 2.5	18	21	20	20
BD-115-1	20.8 \pm 3.4	19	23	20	21
BD-115-2	20.3 \pm 1.9	19	21	20	21
BD-116-1	20.3 \pm 1.9	20	21	19	21
BD-116-2	21.0 \pm 2.8	22	22	19	21
BD-201-1	23.3 \pm 1.9	22	24	23	24
BD-201-2	22.5 \pm 6.2	20	22	21	27
BD-202-1	19.5 \pm 2.6	18	21	19	20
BD-202-2	20.0 \pm 4.3	17	20	21	22

TABLE C-X.1 QUARTERLY TLD RESULTS FOR BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
BD-203-1	22.3 ± 3.0	23	23	20	23
BD-203-2	19.8 ± 3.0	18	21	19	21
BD-204-1	19.3 ± 1.0	19	20	19	19
BD-204-2	18.8 ± 1.9	18	18	19	20
BD-205-1	20.0 ± 4.3	18	23	19	20
BD-205-2	20.0 ± 2.8	18	21	20	21
BD-206-1	22.5 ± 3.8	21	23	21	25
BD-206-2	20.8 ± 3.0	19	22	20	22
BD-207-1	19.0 ± 2.8	17	20	19	20
BD-207-2	20.3 ± 4.4	18	21	19	23
BD-208-1	20.5 ± 2.6	19	22	20	21
BD-208-2	19.8 ± 3.0	18	21	19	21
BD-209-1	23.8 ± 6.2	21	28	22	24
BD-209-2	24.5 ± 2.6	23	25	24	26
BD-210-1	22.5 ± 3.5	21	24	21	24
BD-210-2	21.0 ± 2.3	20	22	20	22
BD-211-1	25.0 ± 3.7	23	26	24	27
BD-211-2	24.8 ± 2.5	23	25	25	26
BD-212-3	22.5 ± 2.0	23	23	21	23
BD-212-4	23.8 ± 1.9	23	25	23	24
BD-213-3	20.8 ± 3.0	19	22	20	22
BD-213-4	20.0 ± 2.3	19	21	19	21
BD-214-1	20.3 ± 4.1	18	22	19	22
BD-214-2	24.3 ± 6.4	22	(1)	23	28
BD-215-1	20.0 ± 1.6	19	21	20	20
BD-215-2	19.3 ± 1.9	18	20	19	20
BD-216-1	22.8 ± 3.8	20	23	24	24
BD-216-2	21.5 ± 3.8	19	23	21	23
BD-111A-1	21.3 ± 1.9	20	22	22	21
BD-111A-2	20.0 ± 2.8	20	19	19	22
BD-113A-1	20.8 ± 2.5	19	22	21	21
BD-113A-2	20.8 ± 5.0	18	21	20	24

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-X.2 MEAN QUARTLY TLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	19.1 ± 2.4	19.8 ± 4.0	19.1 ± 1.5	19.0 ± 0.0
APR-JUN	22.0 ± 3.5	22.3 ± 4.1	21.4 ± 1.7	22.5 ± 1.4
JUL-SEP	19.9 ± 2.6	20.7 ± 3.7	19.6 ± 1.3	20.0 ± 0.0
OCT-DEC	21.5 ± 2.6	22.7 ± 4.8	21.5 ± 1.5	23.0 ± 2.8

TABLE C-X.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	128	17	30	20.6 ± 3.7
OUTER RING	127	17	28	21.4 ± 4.7
OTHER	56	18	23	20.4 ± 2.6
CONTROL	8	19	24	21.1 ± 3.8

INNER RING STATIONS - BD-101-3, BD-101-4, BD-102-1, BD-102-2, BD-103-1, BD-103-2, BD-104-1, BD-104-2, BD-105-1, BD-105-2, BD-106-1, BD-106-2, BD-107-1, BD-107-2, BD-108-1, BD-108-2, BD-109-1, BD-109-2, BD-110-1, BD-110-2, BD-111A-1, BD-111A-2, BD-112-1, BD-112-2, BD-113A-1, BD-113A-2, BD-114-1, BD-114-2, BD-115-1, BD-115-2, BD-116-1, BD-116-2

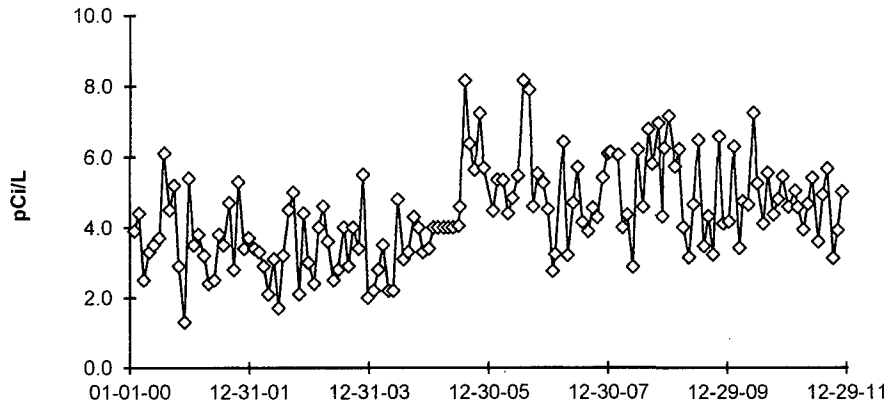
OUTER RING STATIONS - BD-201-1, BD-201-2, BD-202-1, BD-202-2, BD-203-1, BD-203-2, BD-204-1, BD-204-2, BD-205-1, BD-205-2, BD-206-1, BD-206-2, BD-207-1, BD-207-2, BD-208-1, BD-208-2, BD-209-1, BD-209-2, BD-210-1, BD-210-2, BD-211-1, BD-211-2, BD-212-3, BD-212-4, BD-213-3, BD-213-4, BD-214-1, BD-214-2, BD-215-1, BD-215-2, BD-216-1, BD-216-2

OTHER STATIONS - BD-02-1, BD-02-2, BD-04-1, BD-04-2, BD-05-1, BD-05-2, BD-06-1, BD-06-2, BD-19-1, BD-19-2, BD-20-1, BD-20-2, BD-21-1, BD-21-2

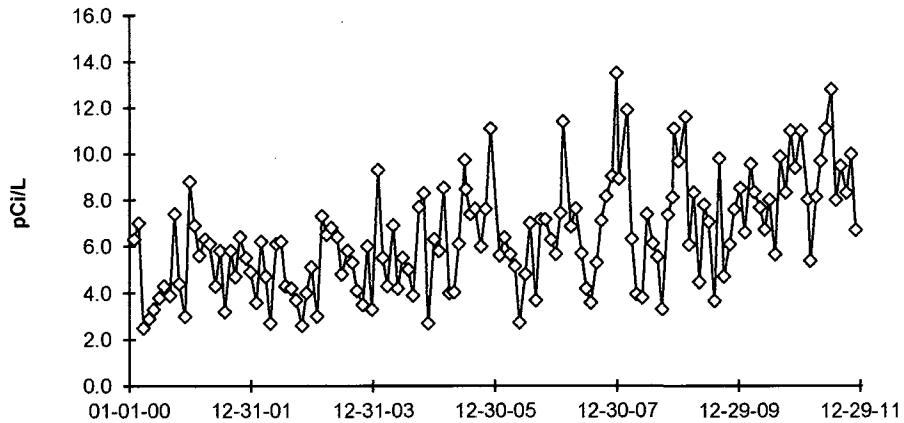
CONTROL STATIONS - BD-03-1, BD-03-2

FIGURE C-1
Surface Water - Gross Beta - Stations BD-10 and BD-25 (C)
Collected in the Vicinity of Braidwood Station, 2000 - 2011

BD-10 Kankakee River, Downstream



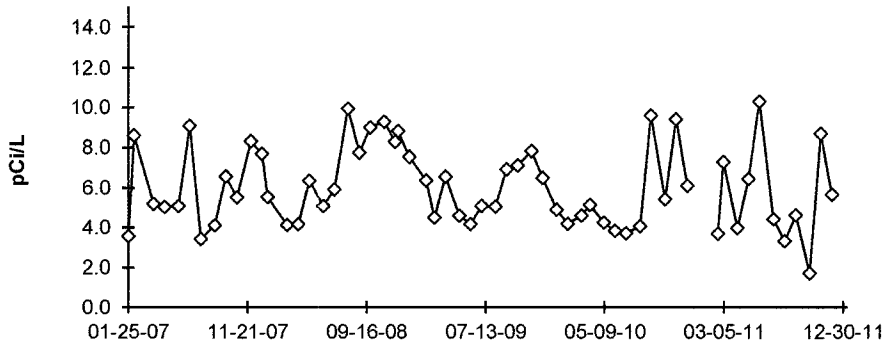
BD-25 (C) Kankakee River, Upstream



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-2
Surface Water - Gross Beta - Stations BD-38 and BD-40
Collected in the Vicinity of Braidwood Station, 2007 - 2011

BD-38 Main Drainage Ditch



BD-40 Braidwood Station Cooling Lake

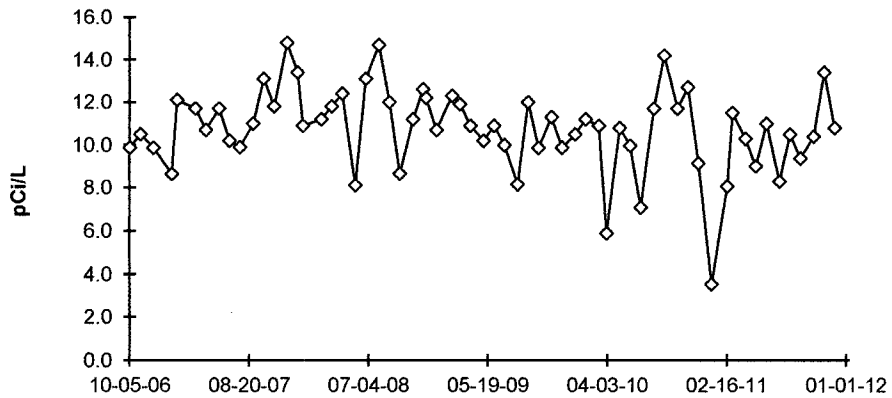
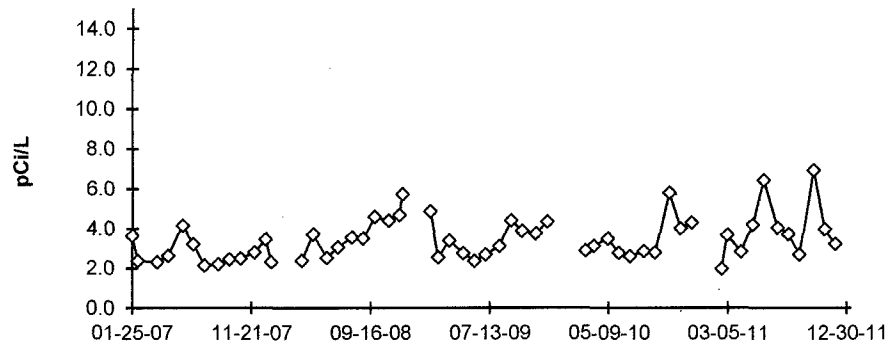
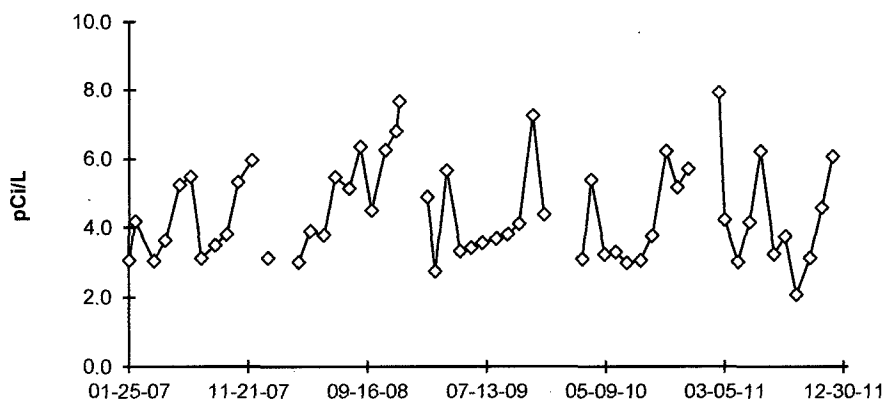


FIGURE C-3
Surface Water - Gross Beta - Stations BD-55 and BD-56
Collected in the Vicinity of Braidwood Station, 2007 - 2011

BD-55 North Pond Fatlan Site



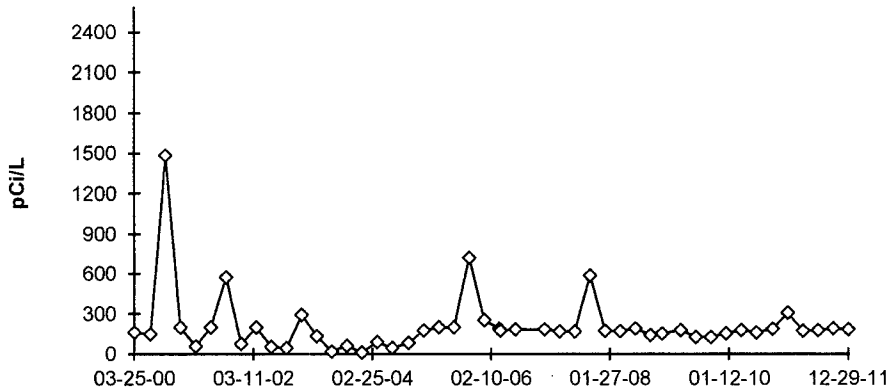
BD-56 South Pond Fatlan Site



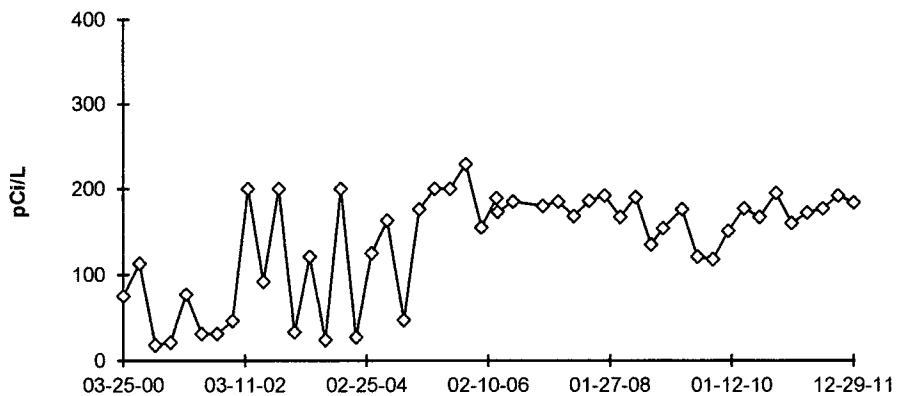
GAPS IN DATA ARE DUE TO SAMPLING POINTS BEING FROZEN AT TIME OF COLLECTION

FIGURE C-4
Surface Water - Tritium - Stations BD-10 and BD-25 (C)
Collected in the Vicinity of Braidwood Station, 2000 - 2011

BD-10 Kankakee River, Downstream



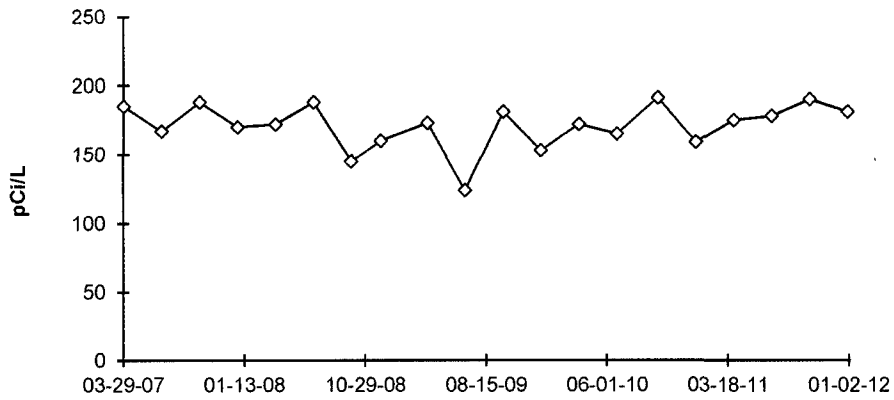
BD-25 (C) Kankakee River, Upstream



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-6
Surface Water - Tritium - Stations BD-55 and BD-56
Collected in the Vicinity of Braidwood Station, 2007 - 2011

BD-55 North Pond Fatlan Site



BD-56 South Pond Fatlan Site

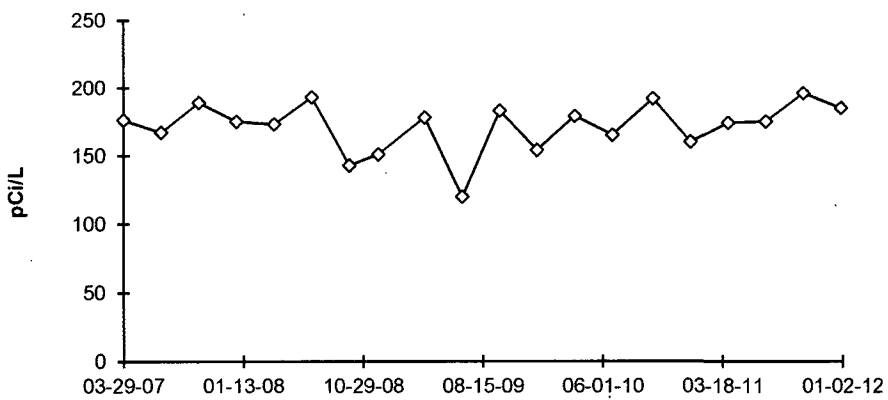
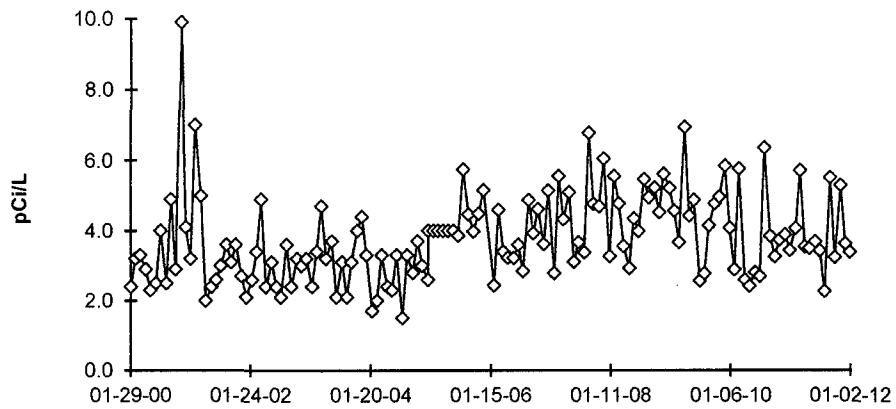


FIGURE C-7
Public Water - Gross Beta - Station BD-22
Collected in the Vicinity of Braidwood Station, 2000 - 2011

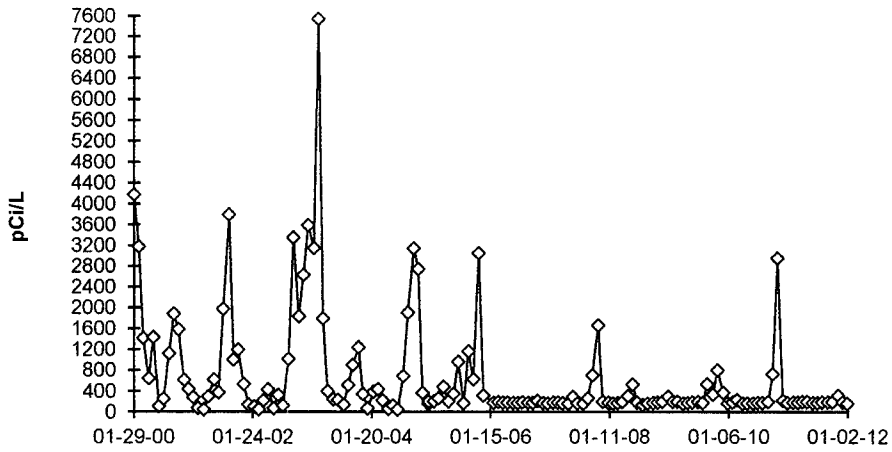
BD-22 Wilmington



DUE TO VENDOR CHANGE, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-8
Public Water - Tritium - Station BD-22
Collected in the Vicinity of Braidwood Station, 2000 - 2011

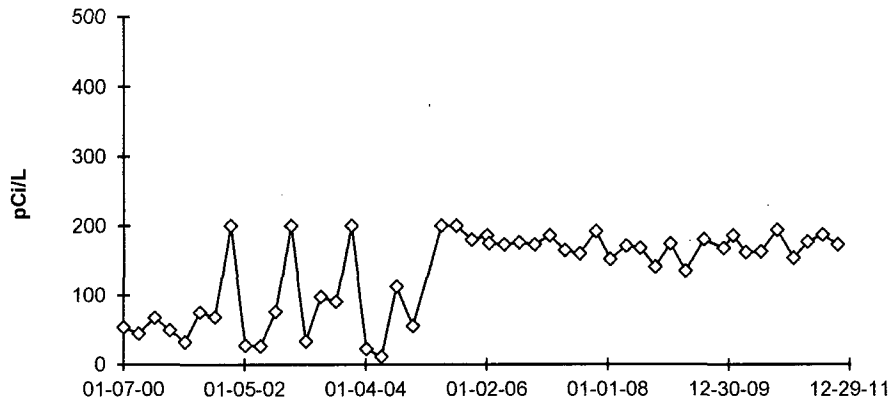
BD-22 Wilmington



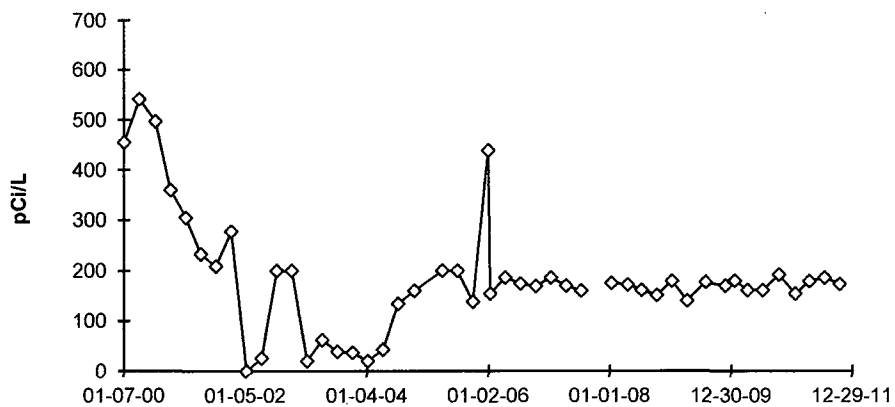
DUE TO VENDOR CHANGE, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-9
Ground/Well Water - Tritium - Stations BD-13 and BD-34
Collected in the Vicinity of Braidwood Station, 2000 - 2011

BD-13 Braidwood City Hall Well



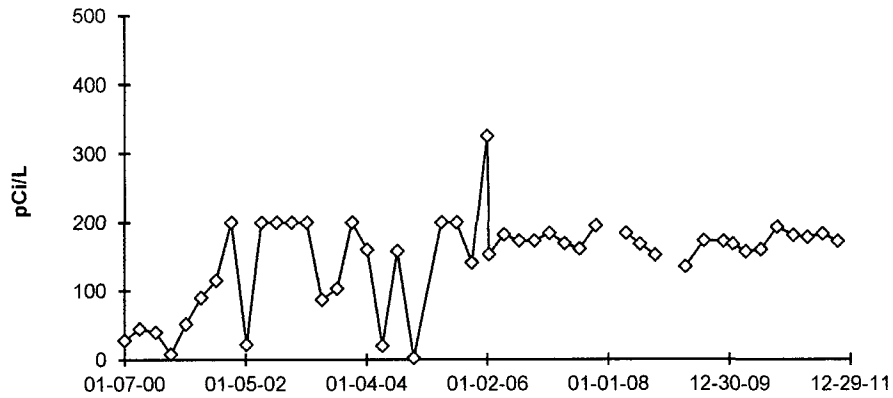
BD-34 Gibson Well



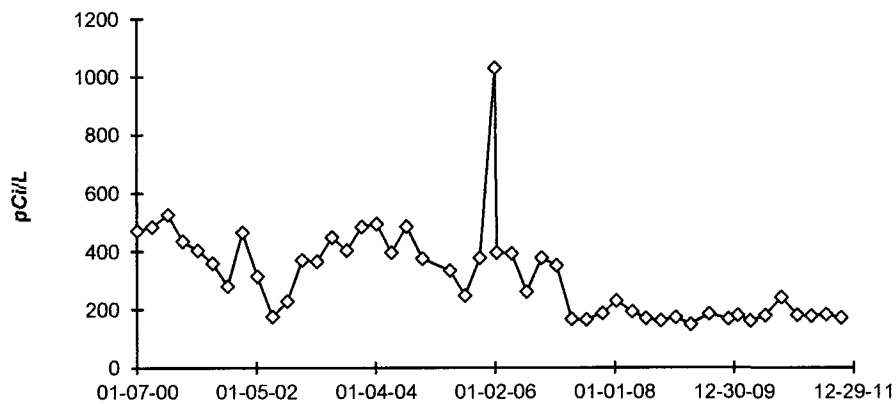
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY.

FIGURE C-10
Ground/Well Water - Tritium - Stations BD-35 and BD-36
Collected in the Vicinity of Braidwood Station, 2000 - 2011

BD-35 Joly Well

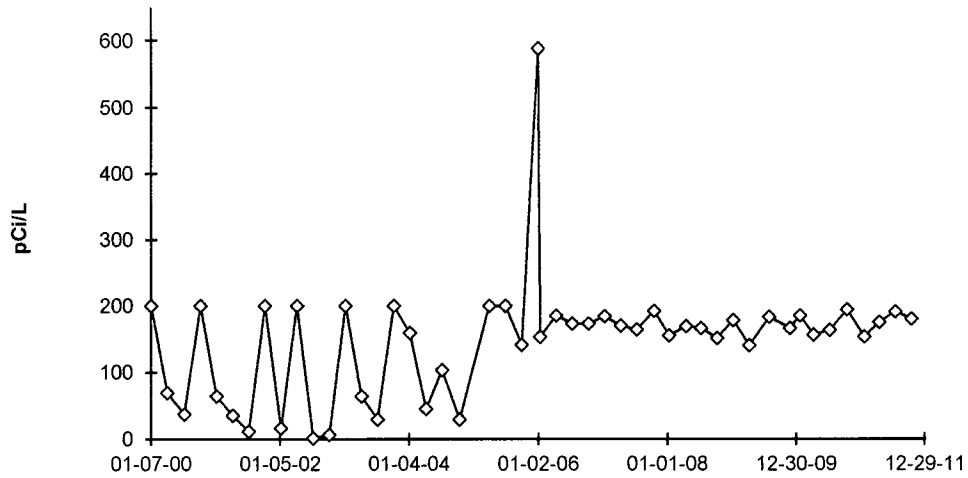


BD-36 Hutton Well



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY.

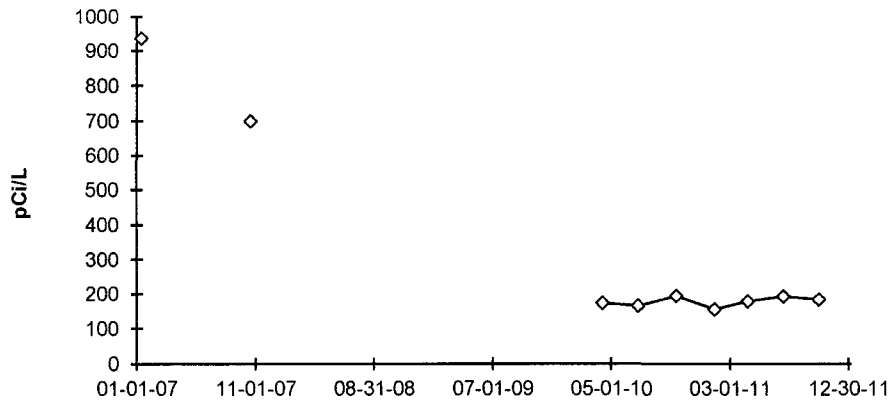
FIGURE C-11
Ground/Well Water - Tritium - Station BD-37
Collected in the Vicinity of Braidwood Station, 2000 - 2011
BD-37 Nurczyk Well



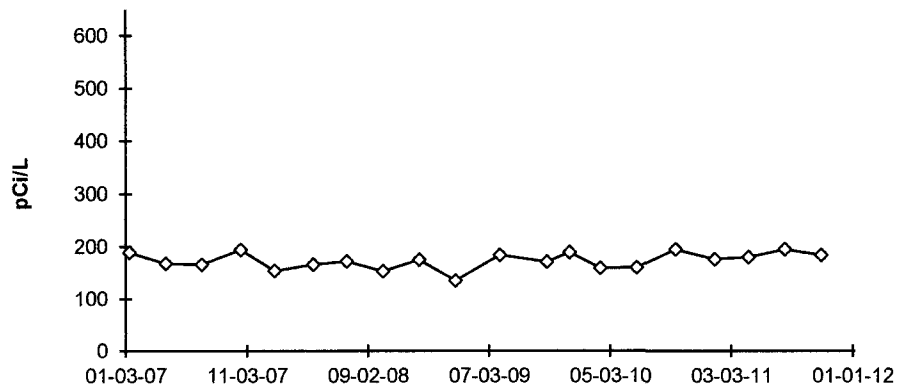
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY.

FIGURE C-12
Ground/Well Water - Tritium - Station BD-50 and BD-51
Collected in the Vicinity of Braidwood Station, 2007 - 2011

BD-50 Skole Well



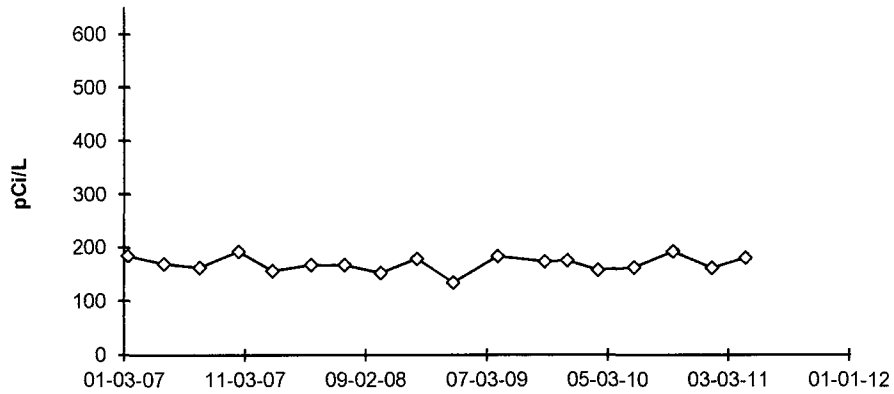
BD-51 Fatlan Well



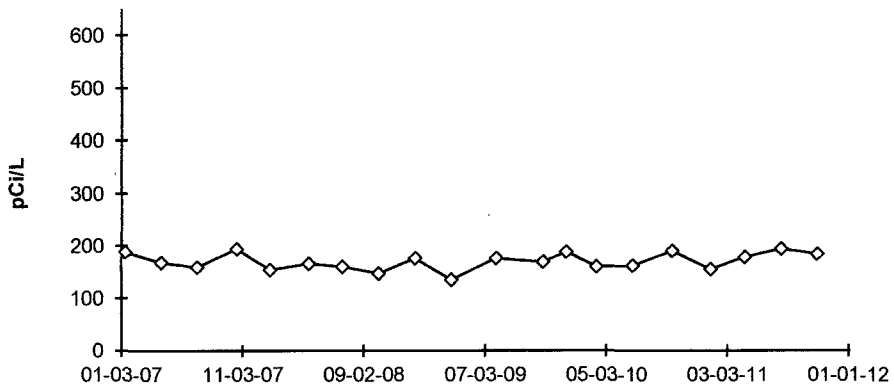
NEW STATIONS BD-50 AND BD-51 ADDED IN 2007
 STATION BD-50 WAS INITIALLY DISCONTINUED ON 10/18/07 AND RESUMED ON 04/08/10

FIGURE C-13
Ground/Well Water - Tritium - StationS BD-53 and BD-54
Collected in the Vicinity of Braidwood Station, 2007 - 2011

BD-53 Phelps Well



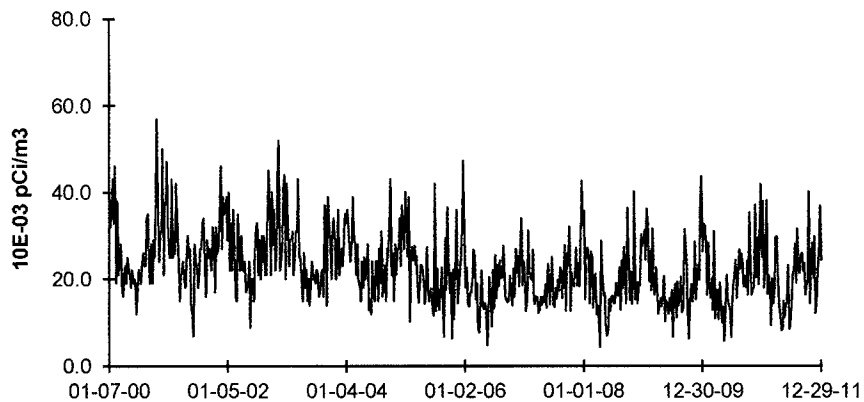
BD-54 Cash Well



BD-53 was removed from the program during the 3rd quarter of 2011

FIGURE C-14
Air Particulate - Gross Beta- Stations BD-03 (C) and
BD-06 Collected in the Vicinity of Braidwood Station, 2000 - 2011

BD-03 (C) County Line Road



BD-06 Godley

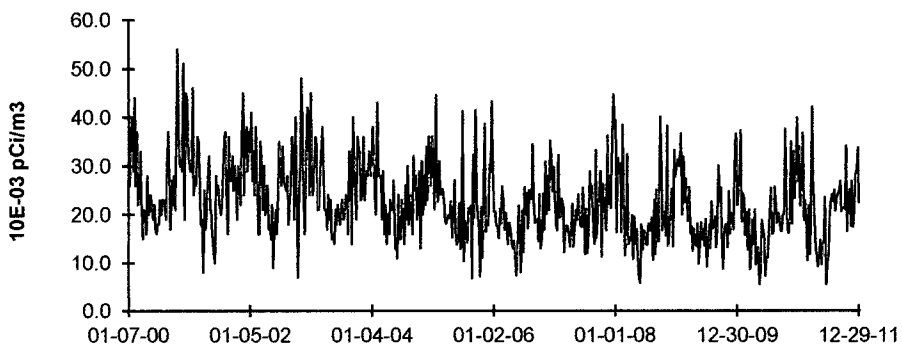
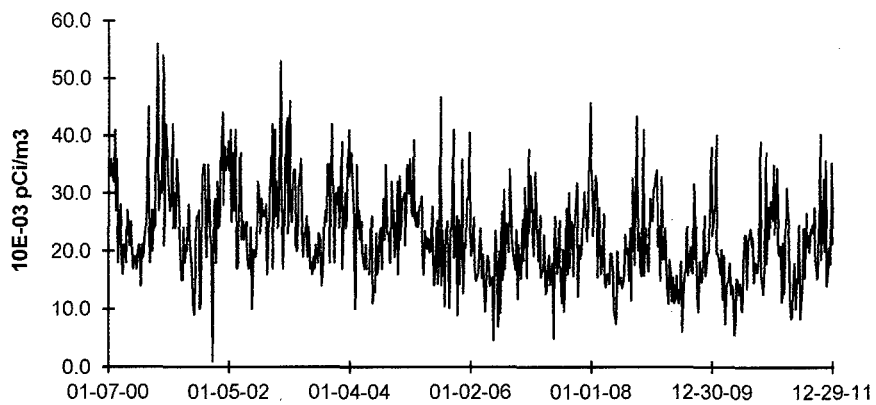


FIGURE C-15
Air Particulate - Gross Beta- Stations BD-19 and
BD-20 Collected in the Vicinity of Braidwood Station, 2000 - 2011

BD-19 Nearsite, NW



BD-20 Nearsite, N

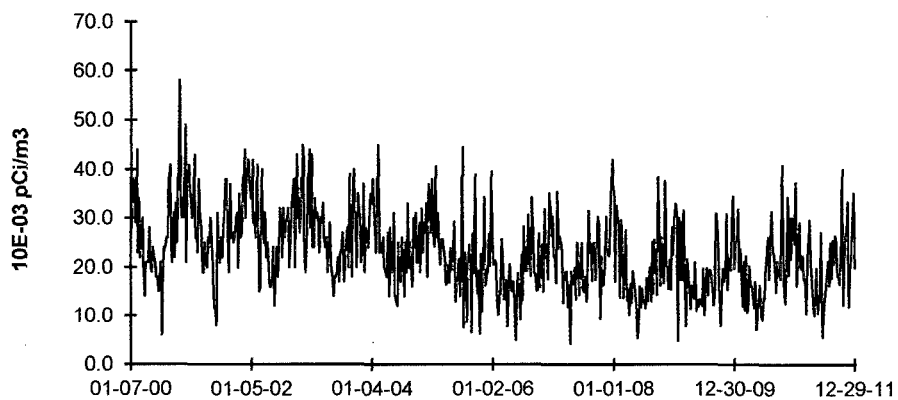


FIGURE C-16
Air Particulate - Gross Beta- Station BD-21
Collected in the Vicinity of Braidwood Station, 2000 - 2011

BD-21 Nearsite, NE

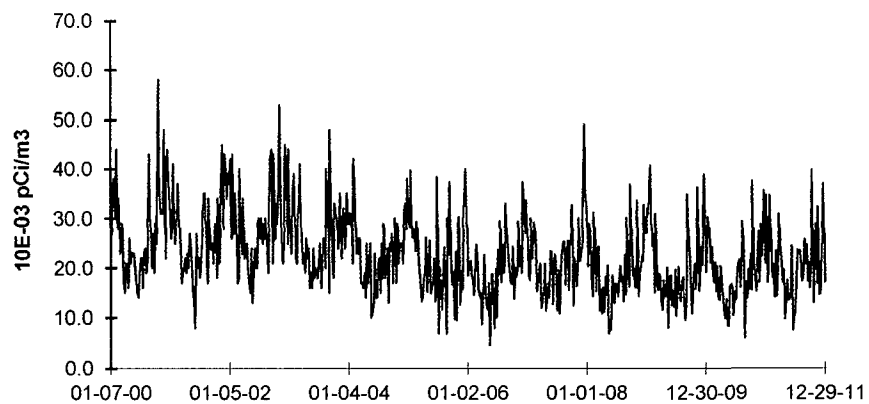
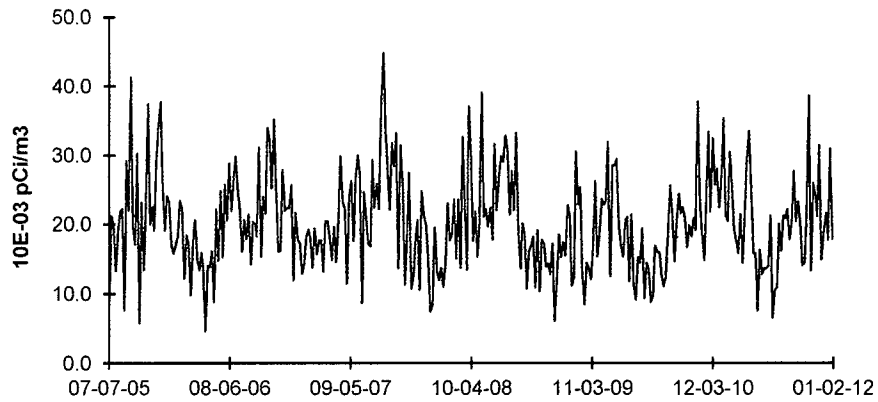


FIGURE C-17
Air Particulate - Gross Beta- Stations BD-02 and
BD-04 Collected in the Vicinity of Braidwood Station, 2005 - 2011

BD-02 Nearsite, NW



BD-04 Nearsite, N

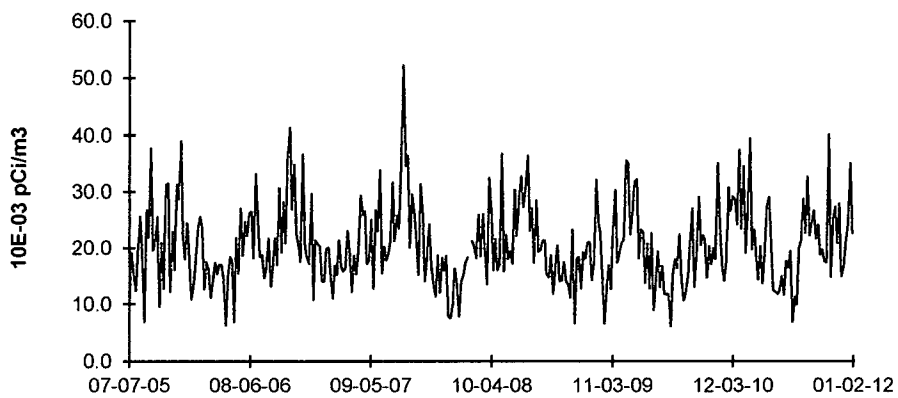
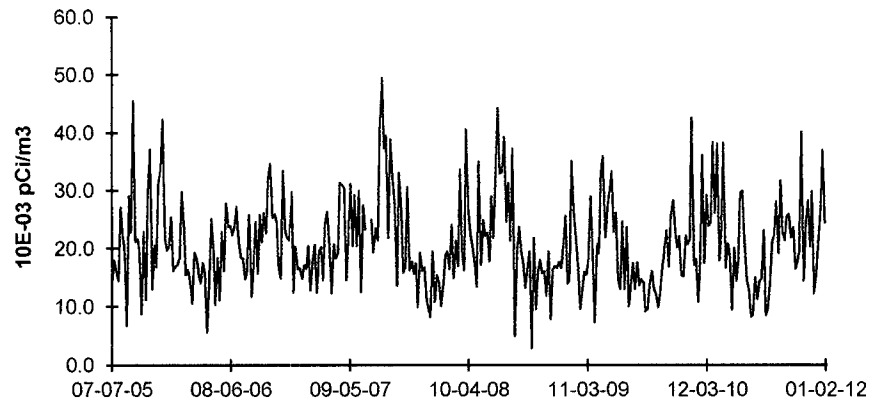


FIGURE C-18
Air Particulate - Gross Beta- Station BD-05
Collected in the Vicinity of Braidwood Station, 2005 - 2011

BD-05 Nearsite, NE



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APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

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TABLE D-1

**ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2011**

(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
March 2011	E7460-396	Milk	Sr-89	pCi/L	98.8	97.4	1.01	A			
			Sr-90	pCi/L	15.2	15.8	0.96	A			
March 2011	E7461-396	Milk	I-131	pCi/L	92.9	96.9	0.96	A			
			Ce-141	pCi/L	not provided by Analytics for this study				N ⁽¹⁾		
			Cr-51	pCi/L	398	298	1.34	A			
			Cs-134	pCi/L	130	130	1.00	A			
			Cs-137	pCi/L	232	205	1.13	A			
			Co-58	pCi/L	121	113	1.07	A			
			Mn-54	pCi/L	289	266	1.09	A			
			Fe-59	pCi/L	201	175	1.15	A			
			Zn-65	pCi/L	287	261	1.10	A			
			Co-60	pCi/L	186	172	1.08	A			
			March 2011	E7463-396	AP	Ce-141	pCi	not provided by Analytics for this study			
						Cr-51	pCi	243	215	1.13	A
						Cs-134	pCi	85.0	94.2	0.90	A
						Cs-137	pCi	168	148	1.14	A
Co-58	pCi	89.2				81.8	1.09	A			
Mn-54	pCi	171				192	0.89	A			
Fe-59	pCi	129				126	1.02	A			
Zn-65	pCi	159				189	0.84	A			
Co-60	pCi	132	124	1.06	A						
March 2011	E7462-396	Charcoal	I-131	pCi	96.5	96.3	1.00	A			
June 2011	E7851-396	Milk	Sr-89	pCi/L	96.7	103	0.94	A			
			Sr-90	pCi/L	13.8	15.6	0.88	A			
June 2011	E7852-396	Milk	I-131	pCi/L	110	103.0	1.07	A			
			Ce-141	pCi/L	68.1	79.9	0.85	A			
			Cr-51	pCi/L	186	206	0.90	A			
			Cs-134	pCi/L	164	190	0.86	A			
			Cs-137	pCi/L	140	138	1.01	A			
			Co-58	pCi/L	141	152	0.93	A			
			Mn-54	pCi/L	136	138	0.99	A			
			Fe-59	pCi/L	128	123	1.04	A			
			Zn-65	pCi/L	263	261	1.01	A			
			Co-60	pCi/L	189	195	0.97	A			
			June 2011	E7854-396	AP	Ce-141	pCi	49.9	42.9	1.16	A
						Cr-51	pCi	95.6	110	0.87	A
						Cs-134	pCi	104	102	1.02	A
Cs-137	pCi	83.8				74.0	1.13	A			
Co-58	pCi	90.7				81.3	1.12	A			
Mn-54	pCi	74.5				73.9	1.01	A			
Fe-59	pCi	62.0				66.1	0.94	A			
Zn-65	pCi	140				140	1.00	A			
Co-60	pCi	119	104	1.14	A						
June 2011	E7853-396	Charcoal	I-131	pCi	76.2	86.1	0.89	A			

TABLE D-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2011

(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
September 2011	E8070-396	Milk	Sr-89	pCi/L	102	90.8	1.12	A			
			Sr-90	pCi/L	13.2	14.7	0.90	A			
September 2011	E8071-396	Milk	I-131	pCi/L	74.2	89.2	0.83	A			
			Ce-141	pCi/L	66.9	66.7	1.00	A			
			Cr-51	pCi/L	249	226	1.10	A			
			Cs-134	pCi/L	116	128	0.91	A			
			Cs-137	pCi/L	106	114	0.93	A			
			Co-58	pCi/L	95.4	97.5	0.98	A			
			Mn-54	pCi/L	147	151	0.97	A			
			Fe-59	pCi/L	53.1	54.8	0.97	A			
			Zn-65	pCi/L	175	180	0.97	A			
			Co-60	pCi/L	150	157	0.96	A			
			September 2011	E8073-396	AP	Ce-141	pCi	66.6	67.5	0.99	A
						Cr-51	pCi	263	229	1.15	A
						Cs-134	pCi	139	130	1.07	A
						Cs-137	pCi	110	115	0.96	A
Co-58	pCi	108				98.6	1.10	A			
Mn-54	pCi	152				153	0.99	A			
Fe-59	pCi	57.5				55.5	1.04	A			
Zn-65	pCi	190				183	1.04	A			
September 2011	E8072-396	Charcoal	I-131	pCi	77.6	80.6	0.96	A			
December, 2011	E8230-396	Milk	Sr-89	pCi/L	93.3	93.1	1.00	A			
			Sr-90	pCi/L	12.7	15.4	0.82	A			
December, 2011	E8231-396	Milk	I-131	pCi/L	82.5	90.2	0.91	A			
			Ce-141	pCi/L	not provided by Analytics for this study						
			Cr-51	pCi/L	465	566	0.82	A			
			Cs-134	pCi/L	142	171	0.83	A			
			Cs-137	pCi/L	185	210	0.88	A			
			Co-58	pCi/L	177	221	0.80	A			
			Mn-54	pCi/L	208	241	0.86	A			
			Fe-59	pCi/L	164	183	0.90	A			
			Zn-65	pCi/L	259	291	0.89	A			
			Co-60	pCi/L	224	270	0.83	A			
			December, 2011	E8233-396	AP	Ce-141	pCi	not provided by Analytics for this study			
Cr-51	pCi	344				368	0.93	A			
Cs-134	pCi	105				111	0.95	A			
Cs-137	pCi	129				137	0.94	A			
Co-58	pCi	145				144	1.01	A			
Mn-54	pCi	137				157	0.87	A			
Fe-59	pCi	119				119	1.00	A			
Zn-65	pCi	145				190	0.76	W			
Co-60	pCi	168	176	0.95	A						

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
 TELEDYNE BROWN ENGINEERING, 2011
 (PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2011	E8232-396	Charcoal	I-131	pCi	100	89.5	1.12	A

(1) Sample appears to be biased high. Corrective Action evaluated after the 2nd Quarter Analytics PE sample; no action required. NCR 11-13

(a) Teledyne Brown Engineering reported result.

(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to Analytics results.

(d) Analytics evaluation based on TBE internal QC limits: A= Acceptable. Reported result falls within ratio limits of 0.80-1.20. W-Acceptable with warning. Reported result falls within 0.70-0.80 or 1.20-1.30. N = Not Acceptable. Reported result falls outside the ratio limits of < 0.70 and > 1.30.

TABLE D-2

**ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2011**

(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
May 2011	RAD-85	Water	Sr-89	pCi/L	59.8	63.2	51.1 - 71.2	A
			Sr-90	pCi/L	42.5	42.5	31.3 - 48.8	A
			Ba-133	pCi/L	73.3	75.3	63.0 - 82.8	A
			Cs-134	pCi/L	64.9	72.9	59.5 - 80.2	A
			Cs-137	pCi/L	74.6	77.0	69.3 - 87.4	A
			Co-60	pCi/L	87.8	88.8	79.9 - 100	A
			Zn-65	pCi/L	103	98.9	89.0 - 118	A
			Gr-A	pCi/L	64.1	50.1	26.1 - 62.9	N (1)
			Gr-B	pCi/L	51.8	49.8	33.8 - 56.9	A
			I-131	pCi/L	27.4	27.5	22.9 - 32.3	A
			U-Nat	pCi/L	38.5	39.8	32.2 - 44.4	A
			H-3	pCi/L	10057	10200	8870 - 11200	A
				MRAD-14	Filter	Gr-A	pCi/filter	79.7
November 2011	RAD-87	Water	Sr-89	pCi/L	81.0	69.7	56.9 - 77.9	N (2)
			Sr-90	pCi/L	35.5	41.4	30.2 - 47.2	A
			Ba-133	pCi/L	90.7	96.9	81.8 - 106	A
			Cs-134	pCi/L	36.6	33.4	26.3 - 36.7	A
			Cs-137	pCi/L	44.7	44.3	39.4 - 51.7	A
			Co-60	pCi/L	118.7	119	107 - 133	A
			Zn-65	pCi/L	80.2	76.8	68.9 - 92.5	A
			Gr-A	pCi/L	34.2	53.2	27.8 - 66.6	A
			Gr-B	pCi/L	39.3	45.9	30.9 - 53.1	A
			I-131	pCi/L	22.9	27.5	22.9 - 32.3	A
			U-Nat	pCi/L	46.8	48.6	39.4 - 54.0	A
			H-3	pCi/L	15733	17400	15200 - 19100	A
				MRAD-15	Filter	Gr-A	pCi/filter	44.6

(1) The solids on the planchet exceeded 100 mg, which was beyond the range of the efficiency curve. NCR 11-08

(2) Sr-89 TBE to known ratio of 1.16 fell within acceptable range of $\pm 20\%$. No action required. NCR 11-16

(a) Teledyne Brown Engineering reported result.

(b) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for Error. Reported result falls within the Control Limits and outside of the Warning Limit.

TABLE D-3

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2011

(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2011	11-MaW24	Water	Cs-134	Bq/L	19.1	21.5	15.1 - 28.0	A
			Cs-137	Bq/L	29.0	29.4	20.6 - 38.2	A
			Co-57	Bq/L	0.139		(1)	A
			Co-60	Bq/L	23.9	24.6	17.2 - 32.0	A
			H-3	Bq/L	265	243	170 - 316	A
			Mn-54	Bq/L	31.8	31.6	22.1 - 41.1	A
			K-40	Bq/L	94.8	91	64 - 118	A
			Sr-90	Bq/L	9.64	8.72	6.10 - 11.34	A
			Zn-65	Bq/L	-0.142		(1)	A
	11-GrW24	Water	Gr-A	Bq/L	0.767	1.136	0.341 - 1.931	A
			Gr-B	Bq/L	3.43	2.96	1.48 - 4.44	A
	11-MaS24	Soil	Cs-134	Bq/kg	612	680	476 - 884	A
			Cs-137	Bq/kg	772	758	531 - 985	A
			Co-57	Bq/kg	910	927	649 - 1205	A
			Co-60	Bq/kg	500	482	337 - 627	A
			Mn-54	Bq/kg	0.607		(1)	A
			K-40	Bq/kg	569	540	378 - 702	A
			Sr-90	Bq/kg	NR	160	112 - 208	N (2)
			Zn-65	Bq/kg	1497	1359	951 - 1767	A
	11-RdF24	AP	Cs-134	Bq/sample	3.26	3.49	2.44 - 4.54	A
			Cs-137	Bq/sample	2.36	2.28	1.60 - 2.96	A
			Co-57	Bq/sample	3.30	3.33	2.33 - 4.33	A
			Co-60	Bq/sample	0.0765		(1)	A
			Mn-54	Bq/sample	2.84	2.64	1.85 - 3.43	A
			Sr-90	Bq/sample	NR	1.36	0.95 - 1.77	N (2)
			Zn-65	Bq/sample	3.30	3.18	2.23 - 4.13	A
	11-GrF24	AP	Gr-A	Bq/sample	0.101	0.659	0.198 - 1.120	N (3)
			Gr-B	Bq/sample	1.23	1.323	0.662 - 1.985	A
11-RdV24	Vegetation	Cs-134	Bq/sample	4.97	5.50	3.85 - 7.15	A	
		Cs-137	Bq/sample	0.0356		(1)	A	
		Co-57	Bq/sample	10.8	9.94	6.96 - 12.92	A	
		Co-60	Bq/sample	4.89	4.91	3.44 - 6.38	A	
		Mn-54	Bq/sample	6.42	6.40	4.48 - 8.32	A	
		Sr-90	Bq/sample	NR	2.46	1.72 - 3.20	N (2)	
		Zn-65	Bq/sample	3.07	2.99	2.09 - 3.89	A	
September 2011	11-MaW25	Water	Cs-134	Bq/L	16.0	19.1	13.4 - 24.8	A
			Cs-137	Bq/L	0.0043		(1)	A
			Co-57	Bq/L	33.1	36.6	25.6 - 47.6	A
			Co-60	Bq/L	26.9	29.3	20.5 - 38.1	A
			H-3	Bq/L	1011	1014	710 - 1318	A
			Mn-54	Bq/L	23.2	25.0	17.5 - 32.5	A
			K-40	Bq/L	147	156	109 - 203	A
			Sr-90	Bq/L	15.8	14.2	9.9 - 18.5	A
			Zn-65	Bq/L	27.3	28.5	20.0 - 37.1	A

TABLE D-3

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2011

(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
September 2011	11-GrW25	Water	Gr-A	Bq/L	0.894	0.866	0.260 - 1.472	A
			Gr-B	Bq/L	5.87	4.81	2.41 - 7.22	A
	11-MaS25	Soil	Cs-134	Bq/kg	-0.213		(1)	A
			Cs-137	Bq/kg	1110	979	685 - 1273	A
			Co-57	Bq/kg	1290	1180	826 - 1534	A
			Co-60	Bq/kg	731	644	451 - 837	A
			Mn-54	Bq/kg	987	848	594 - 1102	A
			K-40	Bq/kg	753	625	438 - 813	W
			Sr-90	Bq/kg	276	320	224 - 416	A
			Zn-65	Bq/kg	1870	1560	1092 - 2028	A
September 2011	11-RdF25	AP	Cs-134	Bq/sample	-0.043		(1)	A
			Cs-137	Bq/sample	3.09	2.60	1.82 - 3.38	A
			Co-57	Bq/sample	5.36	5.09	3.56 - 6.62	A
			Co-60	Bq/sample	3.41	3.20	2.24 - 4.16	A
			Mn-54	Bq/sample	0.067		(1)	A
			Sr-90	Bq/sample	1.84	1.67	1.17 - 2.17	A
			Zn-65	Bq/sample	5.17	4.11	2.88 - 5.34	W
			11-GrF25	AP	Gr-A	Bq/sample	0.0058	
	Gr-B	Bq/sample			-0.01		(1)	A
	11-RdV25	Vegetation	Cs-134	Bq/sample	0.0081		(1)	A
			Cs-137	Bq/sample	4.94	4.71	3.30 - 6.12	A
			Co-57	Bq/sample	0.0639		(1)	A
			Co-60	Bq/sample	3.36	3.38	2.37 - 4.39	A
			Mn-54	Bq/sample	5.89	5.71	4.00 - 7.42	A
			Sr-90	Bq/sample	1.31	1.26	0.88 - 1.64	A
			Zn-65	Bq/sample	6.54	6.39	4.47 - 8.31	A

(1) False positive test.

(2) Evaluated as failed due to not reporting a previously reported analyte. NCR 11-11

(3) The filter for Gross Alpha was counted on the wrong side. Recounted on the correct side resulted in acceptable results. NCR 11-11

(a) Teledyne Brown Engineering reported result.

(b) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) DOE/MAPEP evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

TABLE D-4

**ERA (a) STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM^a
ENVIRONMENTAL, INC., 2011**

(Page 1 of 1)

Lab Code	Date	Analysis	Concentration (pCi/L)		Control Limits	Acceptance
			Laboratory Result ^b	ERA Result ^c		
STW-1243	04/04/11	Sr-89	68.2 ± 5.8	63.2	51.1 - 71.2	Pass
STW-1243	04/04/11	Sr-90	44.3 ± 2.4	42.5	31.3 - 48.8	Pass
STW-1244	04/04/11	Ba-133	69.8 ± 3.9	75.3	63.0 - 82.8	Pass
STW-1244	04/04/11	Co-60	87.9 ± 3.8	88.8	79.9 - 100.0	Pass
STW-1244	04/04/11	Cs-134	69.5 ± 3.7	72.9	59.5 - 80.2	Pass
STW-1244	04/04/11	Cs-137	77.9 ± 5.3	77.0	69.3 - 87.4	Pass
STW-1244	04/04/11	Zn-65	105.2 ± 8.4	98.9	89.0 - 118.0	Pass
STW-1245	04/04/11	Gr. Alpha	41.5 ± 2.3	50.1	26.1 - 62.9	Pass
STW-1245	04/04/11	Gr. Beta	48.9 ± 1.8	49.8	33.8 - 56.9	Pass
STW-1246	04/04/11	I-131	26.6 ± 1.7	27.5	22.9 - 32.3	Pass
STW-1248	04/04/11	H-3	10322 ± 285	10200.0	8870 - 11200	Pass
STW-1256	10/07/11	Sr-89	68.7 ± 6.0	69.7	56.9 - 77.9	Pass
STW-1256	10/07/11	Sr-90	36.9 ± 2.4	41.1	30.2 - 47.2	Pass
STW-1257	10/07/11	Ba-133	88.2 ± 7.8	96.9	81.8 - 106.0	Pass
STW-1257	10/07/11	Co-60	116.5 ± 7.1	119.0	107.0 - 133.0	Pass
STW-1257 ^d	10/07/11	Cs-134	38.8 ± 8.0	33.4	26.3 - 36.7	Fail
STW-1257	10/07/11	Cs-137	45.6 ± 7.3	44.3	39.4 - 51.7	Pass
STW-1257	10/07/11	Zn-65	84.9 ± 15.4	76.8	68.9 - 92.5	Pass
STW-1258	10/07/11	Gr. Alpha	35.7 ± 3.8	53.2	27.8 - 66.6	Pass
STW-1258	10/07/11	Gr. Beta	36.1 ± 3.3	45.9	30.9 - 53.1	Pass
STW-1259	10/07/11	I-131	25.0 ± 1.1	27.5	22.9 - 32.3	Pass
STW-1261	10/07/11	H-3	17435 ± 382	17400	15200 - 19100	Pass

^a Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing in drinking water conducted by Environmental Resources Associates (ERA).

^b Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

^c Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination) and control limits as provided by ERA.

^d The sample was reanalyzed. Result of reanalysis was acceptable, 32.9 ± 7.4 pCi/L.

TABLE D-5

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)^a
ENVIRONMENTAL, INC., 2011

(Page 1 of 2)

Lab Code ^c	Date	Analysis	Concentration ^b		Limits ^d	Acceptance
			Laboratory result	Activity		
STW-1237	02/01/11	Co-57	< 0.2	0.00	-	Pass
STW-1237	02/01/11	Co-60	24.10 ± 0.40	24.60	17.20 - 32.00	Pass
STW-1237	02/01/11	Cs-134	19.80 ± 0.40	21.50	15.10 - 28.00	Pass
STW-1237	02/01/11	Cs-137	29.40 ± 0.50	29.40	20.60 - 38.20	Pass
STW-1237	02/01/11	H-3	238.90 ± 8.80	243.00	170.00 - 316.00	Pass
STW-1237	02/01/11	K-40	95.40 ± 3.10	91.00	64.00 - 118.00	Pass
STW-1237	02/01/11	Mn-54	32.50 ± 0.60	31.60	22.10 - 41.10	Pass
STW-1237	02/01/11	Sr-90	8.70 ± 0.70	8.72	6.10 - 11.34	Pass
STW-1237	02/01/11	Zn-65	< 0.5	0.00	-	Pass
STW-1238	02/01/11	Gr. Alpha	0.82 ± 0.07	1.14	0.34 - 1.93	Pass
STW-1238	02/01/11	Gr. Beta	2.82 ± 0.07	2.96	1.48 - 4.44	Pass
STVE-1239	02/01/11	Co-57	11.27 ± 0.21	9.94	6.96 - 12.92	Pass
STVE-1239	02/01/11	Co-60	4.95 ± 0.16	4.91	3.44 - 6.38	Pass
STVE-1239	02/01/11	Cs-134	5.18 ± 0.19	5.50	3.85 - 7.15	Pass
STVE-1239	02/01/11	Cs-137	< 0.09	0.00	-	Pass
STVE-1239	02/01/11	Mn-54	6.91 ± 0.25	6.40	4.48 - 8.32	Pass
STVE-1239	02/01/11	Zn-65	3.10 ± 0.32	2.99	2.09 - 3.89	Pass
STSO-1240	02/01/11	Co-57	984.10 ± 4.10	927.00	649.00 - 1205.00	Pass
STSO-1240	02/01/11	Co-60	540.70 ± 3.00	482.00	337.00 - 627.00	Pass
STSO-1240	02/01/11	Cs-134	726.70 ± 5.92	680.00	476.00 - 884.00	Pass
STSO-1240	02/01/11	Cs-137	883.10 ± 4.70	758.00	531.00 - 985.00	Pass
STSO-1240	02/01/11	K-40	622.70 ± 16.70	540.00	378.00 - 702.00	Pass
STSO-1240	02/01/11	Mn-54	-0.30 ± 1.00	0.00	-	Pass
STSO-1240	02/01/11	Zn-65	1671.00 ± 13.10	1359.00	951.00 - 1767.00	Pass
STAP-1241	02/01/11	Co-57	3.48 ± 0.06	3.33	2.33 - 4.33	Pass
STAP-1241	02/01/11	Co-60	0.00 ± 0.02	0.00	-0.10 - 0.10	Pass
STAP-1241	02/01/11	Cs-134	3.44 ± 0.27	3.49	2.44 - 4.54	Pass
STAP-1241	02/01/11	Cs-137	2.46 ± 0.27	2.28	1.60 - 2.96	Pass
STAP-1241	02/01/11	Gr. Alpha	0.39 ± 0.05	0.66	0.20 - 1.12	Pass
STAP-1241	02/01/11	Gr. Beta	1.54 ± 0.07	1.32	0.66 - 1.99	Pass
STAP-1241	02/01/11	Mn-54	2.90 ± 0.10	2.64	1.85 - 3.43	Pass
STAP-1241 e	02/01/11	Sr-90	1.89 ± 0.15	1.36	0.95 - 1.77	Fail
STAP-1241	02/01/11	Zn-65	3.80 ± 0.18	3.18	2.23 - 4.13	Pass
STVE-1250	08/01/11	Co-57	0.01 ± 0.02	0.00	-	Pass
STVE-1250	08/01/11	Co-60	3.57 ± 0.13	3.38	2.37 - 4.39	Pass
STVE-1250	08/01/11	Cs-134	-0.02 ± 0.04	0.00	-0.10 - 0.10	Pass
STVE-1250	08/01/11	Cs-137	5.28 ± 0.20	4.71	3.30 - 6.12	Pass
STVE-1250	08/01/11	Mn-54	6.48 ± 0.22	5.71	4.00 - 7.42	Pass
STVE-1250	08/01/11	Zn-65	7.35 ± 0.34	6.39	4.47 - 8.31	Pass

TABLE D-5

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)^a
ENVIRONMENTAL, INC., 2011

(Page 2 of 2)

Lab Code ^c	Date	Analysis	Laboratory result	Concentration ^b		Acceptance
				Known Activity	Control Limits ^d	
STSO-1251	08/01/11	Co-57	1333.90 ± 4.20	1180.00	826.00 - 1534.00	Pass
STSO-1251	08/01/11	Co-60	701.30 ± 3.40	644.00	451.00 - 837.00	Pass
STSO-1251	08/01/11	Cs-134	0.71 ± 1.05	0.00	-	Pass
STSO-1251	08/01/11	Cs-137	1106.00 ± 5.60	979.00	685.00 - 1273.00	Pass
STSO-1251	08/01/11	K-40	749.20 ± 19.00	625.00	438.00 - 813.00	Pass
STSO-1251	08/01/11	Mn-54	984.30 ± 5.40	848.00	594.00 - 1102.00	Pass
STSO-1251 ^f	08/01/11	Sr-90	219.40 ± 16.70	320.00	224.00 - 416.00	Fail
STSO-1251	08/01/11	Zn-65	1639.90 ± 11.40	1560.00	1092.00 - 2028.00	Pass
STAP-1252	08/01/11	Co-57	5.06 ± 0.08	5.09	3.56 - 6.62	Pass
STAP-1252	08/01/11	Co-60	3.13 ± 0.09	3.20	2.24 - 4.16	Pass
STAP-1252	08/01/11	Cs-134	0.01 ± 0.03	0.00	-0.10 - 0.10	Pass
STAP-1252	08/01/11	Cs-137	2.61 ± 0.09	2.60	1.82 - 3.38	Pass
STAP-1252	08/01/11	Mn-54	0.01 ± 0.03	0.00	-0.10 - 0.10	Pass
STAP-1252	08/01/11	Sr-90	1.65 ± 0.16	1.67	1.17 - 2.17	Pass
STAP-1252	08/01/11	Zn-65	4.46 ± 0.23	4.11	2.88 - 5.34	Pass
STW-1254	08/01/11	Co-57	37.20 ± 0.50	36.60	25.60 - 47.60	Pass
STW-1254	08/01/11	Co-60	28.80 ± 0.40	29.30	20.50 - 38.10	Pass
STW-1254	08/01/11	Cs-134	18.00 ± 0.60	19.10	13.40 - 24.80	Pass
STW-1254	08/01/11	Cs-137	0.06 ± 0.13	0.00	-	Pass
STW-1254	08/01/11	H-3	1039.90 ± 17.90	1014.00	710.00 - 1318.00	Pass
STW-1254	08/01/11	K-40	161.40 ± 4.10	156.00	109.00 - 203.00	Pass
STW-1254	08/01/11	Mn-54	25.70 ± 0.50	25.00	17.50 - 32.50	Pass
STW-1254	08/01/11	Sr-90	15.60 ± 1.80	14.20	9.90 - 18.50	Pass
STW-1254	08/01/11	Zn-65	30.20 ± 0.90	28.50	20.00 - 37.10	Pass
STW-1255	08/01/11	Gr. Alpha	0.72 ± 0.12	0.87	0.26 - 1.47	Pass
STW-1255	08/01/11	Gr. Beta	4.71 ± 0.15	4.81	2.41 - 7.22	Pass

^a Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the Department of Energy's Mixed Analyte Performance Evaluation Program, Idaho Operations office, Idaho Falls, Idaho

^b Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

^c Laboratory codes as follows: STW (water), STAP (air filter), STSO (soil), STVE (vegetation).

^d MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP. A known value of "zero" indicates an analysis was included in the testing series as a "false positive". MAPEP does not provide control limits.

^e No errors found in calculation or procedure, results of reanalysis; 1.73 Bq/filter.

^f The analyses were repeated through a strontium column; mean result of triplicate analyses, 304.2 Bq/kg.

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APPENDIX E

EFFLUENT DATA

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INTRODUCTION

Braidwood Station, a two-unit PWR station, is located in Will County, Illinois, fifteen (15) miles south-southwest of Joliet, Illinois. Each reactor is designed to have a capacity of 3587 thermal megawatts. Unit No. 1 went critical on May 29, 1987, and Unit No. 2 went critical on March 8, 1988. The station has been designed to keep releases to the environment at levels below those specified in the regulations.

Liquid effluents from Braidwood Station are released to the Kankakee River in controlled batches after radioassay of each batch. Gaseous effluents are released to the atmosphere and are calculated on the basis of analyses of grab samples of noble gases and tritium, as well as continuously collected composite samples of iodine and particulate activity sampled during the course of the year. The results of effluent analyses are summarized on a monthly basis. Airborne concentrations of noble gases, I-131, and particulate radioactivity in offsite areas are calculated using effluent and meteorological data. Carbon-14 concentration in offsite areas is calculated based on industry-approved methodology for estimation of the amount released and meteorological data.

Environmental monitoring is conducted by sampling at indicator and control (background) locations in the vicinity of Braidwood Station to measure changes in radiation or radioactivity levels that may be attributable to station operations. If significant changes attributable to Braidwood Station are measured, these changes are correlated with effluent releases. An environmental monitoring program is conducted which also includes all potential pathways at the site. Gaseous pathways include ground plane (direct), inhalation, vegetation, meat, and milk. Liquid pathways include potable water and freshwater fish. The critical pathway for 2011 gaseous dose was vegetation. The critical pathway for 2011 liquid dose was potable water.

SUMMARY

Calculations based on gaseous and liquid effluents, Kankakee River Flow and meteorological data indicate that public dose due to radioactive material attributable to Braidwood Station during the period does not exceed regulatory or Offsite Dose Calculation Manual (ODCM) limits.

The Total Effective Dose Equivalent (TEDE) due to licensed activities at Braidwood Station calculated for the maximally exposed individual for the period is 2.62E+00 mrem. The annual limit on TEDE is 100 mrem.

The assessment of radiation doses to the public is performed in accordance with the ODCM. The results of these analyses confirm that the station is operating in compliance with 10CFR50 Appendix I, 10CFR20 and 40CFR190.

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

Measured concentrations of noble gases, radioiodine, and particulate radioactivity released to the atmosphere during the year, are listed in Table 1.1-1.

A total of $1.74\text{E}+00$ curies of fission and activation gases were released with a maximum quarterly average release rate of $7.40\text{E}-02$ $\mu\text{Ci}/\text{sec}$ at Unit 1 and $1.10\text{E}-01$ $\mu\text{Ci}/\text{sec}$ at Unit 2.

A total of $4.80\text{E}-04$ curies of radioiodine were released during the year with a maximum average quarterly release rate of $3.00\text{E}-05$ $\mu\text{Ci}/\text{sec}$ for Unit 1 and $2.95\text{E}-05$ $\mu\text{Ci}/\text{sec}$ for Unit 2.

A total of $9.16\text{E}+00$ curies of beta-gamma emitters were released as airborne particulate matter with a maximum average release rate of $1.44\text{E}-01$ $\mu\text{Ci}/\text{sec}$ at Unit 1 and $1.84\text{E}-01$ $\mu\text{Ci}/\text{sec}$ at Unit 2. Alpha-emitting radionuclides were below the lower limit of detection (LLD) for the year.

A total of $1.52\text{E}+03$ curies of tritium were released with a maximum average quarterly release rate of $5.31\text{E}+01$ $\mu\text{Ci}/\text{sec}$ at Unit 1 and $6.03\text{E}+01$ $\mu\text{Ci}/\text{sec}$ at Unit 2.

A total of $9.16\text{E}+00$ curies of C-14 was released with a maximum average quarterly release rate of $1.44\text{E}-01$ uCi/sec from Unit 1 and $1.66\text{E}-01$ uCi/sec from Unit 2.

1.2 Liquids Released to Kankakee River

A total of $2.48\text{E}+06$ liters of radioactive liquid wastes (prior to dilution) containing $1.34\text{E}-01$ curies (excluding tritium, noble gases and alpha) were discharged from the station. These wastes were released at a maximum quarterly diluted average concentration of $1.03\text{E}-08$ $\mu\text{Ci}/\text{ml}$. Alpha-emitting radionuclides were less than the LLD for the year. A total of $9.18\text{E}+02$ curies of tritium was released from the station. Quarterly release activities are given in Table 1.2-1.

2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck to the Envirocare of Utah disposal facility and various waste processors. For details, refer to the Braidwood Station 2011 Radioactive Effluent Release Report.

3.0 DOSE TO MAN

3.1 Gaseous Effluent Pathways

Table 3.1-1 summarizes the doses resulting from releases of airborne radioactivity via the different exposure pathways.

3.1.1 Noble Gases

3.1.1.1 Gamma Dose Rates

Offsite Gamma air and total body dose rates are shown in Table 3.1-1 and were calculated based on measured effluents and average meteorological data. Based on measured effluents and average meteorological data, the maximum total body dose to an individual would be 6.06E-01 mrem for the year (Table 3.1-1) with an occupancy or shielding factor of 0.7 used. The maximum total body dose based on measured effluents and concurrent meteorological data would be 7.89E-01 mrem (Table 3.4-1). The maximum gamma air dose was 1.87E-05 mrad (Table 3.1-1) based on measured effluents and average meteorological data and 2.95E-05 mrad based on concurrent meteorological data (Table 3.4-1).

3.1.1.2 Beta Air and Skin Dose Rates

The range of beta particles in air is relatively small (on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin and clothing covering sensitive tissues. For purposes of this report the skin is taken to have a thickness of 7.0 mg/cm² and an occupancy factor of 1.0 is used. The skin dose from beta and gamma radiation for the year was 5.01E-05 mrem based on concurrent meteorological data (Table 3.4-1). The maximum offsite beta air dose for the year was 7.48E-05 mrad (Table 3.1-1) based on measured

effluents and average meteorological data and $7.24\text{E-}05$ mrad based on concurrent meteorological data (Table 3.4-1).

3.1.2 Radioactive Iodine & Particulate

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. I-131 released during routine operation of the station may be made available to man resulting in a dose to the thyroid. C-14 is also included in this category. C-14 exhibits a capacity to concentrate in bone. C-14 is released in gaseous form and is absorbed into vegetation through photosynthesis. The principal pathways of interest for C-14 are the consumption of vegetation by humans and milk from which animals have ingested C-14 through the consumption of vegetation. With the inclusion of C-14 in plant effluent calculations, human dose in this category is primarily driven by the release of C-14 from the plant.

The hypothetical dose to the maximum exposed individual living near the station via ingestion of milk and vegetation was calculated. The source of milk and vegetation was assumed to be at the nearest site boundary with the cows pastured and vegetation grown from May through October. The maximum dose from radioactive iodine and particulate (including C-14) to any organ was $1.93\text{E+}00$ mrem (child/bone) based on measured effluents and average meteorological data and $2.37\text{E+}00$ mrem based on concurrent meteorological data. The maximum dose from radioactive iodine and particulate (including C-14) to the whole body was $6.06\text{E-}01$ mrem (child) based on measured effluents and average meteorological data and $7.89\text{E-}01$ mrem based on concurrent meteorological data.

3.2 Liquid Effluent Pathways

The three principal pathways through the aquatic environment for potential doses to man from liquid waste are ingestion of potable water, eating aquatic foods, and exposure while on the shoreline. Not all of these pathways are significant or applicable at a given time or station but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC developed equations* were used to calculate the doses to the whole body, lower GI tracts, thyroid, bone and skin; specific parameters for use in the equations are given in the Exelon Offsite Dose Calculation Manual. The maximum whole

body dose for the year was 2.98E-02 mrem and no organ dose exceeded 6.02E-02 mrem (Table 3.2-1 [child]).

3.3 Assessment of Dose to Member of Public

During the period January to December, 2011, Braidwood Station did not exceed the following limits as shown in Table 3.1-1 and Table 3.2-1 (based on annual average meteorological data), Table 3.4-1 (based on concurrent meteorological data), and Table 3.3-1:

- The RETS limits on dose or dose commitment to an individual due to radioactive materials in liquid effluents from each reactor unit (1.5 mrem to the whole body or 5 mrem to any organ during any calendar year; 3 mrem to the whole body or 10 mrem to any organ during the calendar year).
- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (5 mrad for gamma radiation or 10 mrad for beta radiation during any calendar quarter; 10 mrad for gamma radiation or 20 mrad for beta radiation during a calendar year).
- The RETS limits on dose to a member of the public due to iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released from each reactor unit (7.5 mrem to any organ during any calendar quarter; 15 mrem to any organ during any calendar year).
- The 10CFR20 limit on Total Effective Dose Equivalent to individual members of the public (100 mrem) during any calendar year.

4.0 SITE METEOROLOGY

A summary of the site meteorological measurements taken during each calendar quarter of the year is given in Appendix E. The data are presented as cumulative joint frequency distributions of the wind direction for the 203' level and wind speed class by atmospheric stability class determined from the temperature difference between the 199' and 30' levels. Data recovery for these measurements was 99.8% during 2011.

*Nuclear Regulatory Commission, Regulatory Guide 1.109 (Rev. 1)

APPENDIX E-1

DATA TABLES AND FIGURES

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Table 1.1-1

BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2011
GAS RELEASES
UNIT 1 (Docket Number 50-456)
SUMMATION OF ALL RELEASES

Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error%
-------	---------	---------	---------	---------	-------------------

A. Fission and Activation Gas Releases

1. Total Release Activity	Ci	1.39E-01	5.82E-01	5.03E-03	3.00E-03	7.59
2. Average Release Rate	μCi/sec	1.79E-02	7.40E-02	6.33E-04	3.77E-04	
3. Percent of ODCM Limit - gamma	%	2.56E-05	1.38E-04	8.02E-07	4.78E-07	
4. Percent of ODCM Limit - beta	%	5.67E-05	2.59E-04	1.95E-06	1.16E-06	

B. Iodine Releases

1. Total Iodine	Ci	1.41E-06	2.36E-04	7.57E-06	7.30E-07	33.20
2. Average Release Rate	μCi/sec	1.81E-07	3.00E-05	9.52E-07	9.18E-08	
3. Percent of ODCM Limit - gamma	%	1.45E-05	1.81E-04	1.45E-06	7.53E-06	

C. Particulate (> 8 day half-life) Releases

1. Particulates with half-lives > 8 days	Ci	1.04E+00	1.13E+00	1.08E+00	1.07E+00	19.80
2. Average Release Rate	μCi/sec	1.34E-01	1.44E-01	1.36E-01	1.35E-01	
3. Percent of ODCM Limit	%	2.91E+00	3.16E+00	3.03E+00	3.00E+00	
3. Gross Activity	Ci	<LLD	<LLD	<LLD	<LLD	

D. Tritium Releases

1. Total Release Activity	Ci	3.90E+01	4.17E+02	7.76E+01	1.86E+01	8.07
2. Average Release Rate	μCi/sec	5.02E+00	5.31E+01	9.76E+00	2.34E+00	
3. Percent of ODCM Limit	%	7.58E-02	8.09E-01	1.50E-01	3.61E-01	

E. Gross Alpha Releases

1. Total Release Activity	Ci	<LLD	<LLD	<LLD	<LLD	19.80
2. Average Release Rate	μCi/sec	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	N/A	N/A	N/A	N/A	

F. Carbon-14 Releases

1. Total Release Activity	Ci	1.04E+00	1.13E+00	1.08E+00	1.07E+00	
2. Average Release Rate	μCi/sec	1.34E-01	1.44E-01	1.36E-01	1.35E-01	

Note: LLD Values are included in Appendix A of this report.

Table 1.1-1 (cont.)

**BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2011
GAS RELEASES
UNIT 2 (Docket Number 50-457)
SUMMATION OF ALL RELEASES**

Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error%
-------	---------	---------	---------	---------	-------------------

A. Fission and Activation Gas Releases

1. Total Activity Released	Ci	1.39E-01	8.66E-01	5.03E-03	3.00E-03	7.59
2. Average Release Rate	μCi/sec	1.79E-02	1.10E-01	6.33E-04	3.77E-04	
3. Percent of ODCM Limit - gamma	%	2.56E-05	1.83E-04	8.02E-07	4.78E-07	
4. Percent of ODCM Limit - beta	%	5.67E-05	3.69E-04	1.95E-06	1.16E-06	

B. Iodine Releases

1. Total Iodine	Ci	8.41E-07	2.32E-04	1.77E-08	7.20E-07	33.20
2. Average Release Rate	μCi/sec	1.08E-07	2.95E-05	2.23E-09	9.06E-08	
3. Percent of ODCM Limit	%	8.66E-06	1.65E-04	1.81E-07	7.42E-06	

C. Particulate (> 8 day half-life) Releases

1. Particulates with half-lives > 8 days	Ci	1.13E+00	9.32E-01	1.32E+00	1.46E+00	19.80
2. Average Release Rate	μCi/sec	1.45E-01	1.19E-01	1.66E-01	1.84E-01	
3. Percent of ODCM Limit	%	3.16E+00	2.61E+00	3.69E+00	4.10E+00	
4. Gross Activity	Ci	<LLD	<LLD	<LLD	<LLD	

D. Tritium Releases

1. Total Release Activity	Ci	5.77E+01	4.74E+02	3.99E+02	3.69E+01	8.07
2. Average Release Rate	μCi/sec	7.42E+00	6.03E+01	5.02E+01	4.64E+00	
3. Percent of ODCM Limit	%	1.12E-01	9.19E-01	7.71E-01	7.17E-02	

E. Gross Alpha Releases

1. Total Release Activity	Ci	<LLD	<LLD	<LLD	<LLD	19.80
2. Average Release Rate	μCi/sec	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM Limit	%	N/A	N/A	N/A	N/A	

F. Carbon-14 Releases

1. Total Release Activity	Ci	1.13E+00	9.32E-01	1.32E+00	1.46E+00	
2. Average Release Rate	μCi/sec	1.45E-01	1.19E-01	1.66E-01	1.84E-01	

Note: LLD Values are included in Appendix A of this report.

Table 1.2-1

**BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2011
LIQUID RELEASES
UNIT 1 (Docket Number 50-456)
SUMMATION OF ALL RELEASES**

Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error %
-------	---------	---------	---------	---------	--------------------

A. Fission and Activation Products

1. Total Release	Ci	3.93E-02	2.54E-02	1.32E-03	1.14E-03	2.64
2. Average Diluted Concentration	μCi/ml	1.03E-08	4.55E-09	3.52E-10	3.20E-10	
3. Percent of applicable limit	%	*	*	*	*	

B. Tritium

1. Total Release	Ci	1.10E+02	2.05E+02	5.90E+01	8.50E+01	5.85
2. Average Diluted Concentration	μCi/ml	2.87E-05	3.67E-05	1.58E-05	2.38E-05	
3. % of Limit (1E-2 μCi/ml)	%	2.87E-01	3.67E-01	1.58E-01	2.38E-01	

C. Dissolved Noble Gases

1. Total Release	Ci	0.00E+00	3.77E-05	0.00E+00	0.00E+00	2.64
2. Average Diluted Concentration	μCi/ml	0.00E+00	6.77E-12	0.00E+00	0.00E+00	
3. % of Limit (2E-4 μCi/ml)	%	0.00E+00	3.38E-06	0.00E+00	0.00E+00	

D. Gross Alpha

1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	14.70
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E. Volume of Waste Released (prior to dilution)	liters	2.40E+05	4.52E+05	2.56E+05	2.90E+05	
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F. Volume of Dilution Water	liters	7.62E+09	1.11E+10	7.48E+09	7.14E+09	
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Note: LLD Values are included in Appendix A of this report.

Note: % Limit Values are included in Appendix B of this report.

*This limit is equal to 10 times the concentration values in Appendix B, Table 2, Column 2 to 10CFR20.1001-20.2402.

Table 1.2-1 (cont.)

**BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2011
LIQUID RELEASES
UNIT 2 (Docket Number 50-457)
SUMMATION OF ALL RELEASES**

Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error %
-------	---------	---------	---------	---------	--------------------

A. Fission and Activation Products

1. Total Release	Ci	3.93E-02	2.54E-02	1.32E-03	1.14E-03	2.64
2. Average Diluted Concentration	μCi/ml	1.03E-08	4.55E-09	3.52E-10	3.20E-10	
3. Percent of applicable limit	%	*	*	*	*	

B. Tritium

1. Total Release	Ci	1.10E+02	2.05E+02	5.90E+01	8.50E+01	5.85
2. Average Diluted Concentration	μCi/ml	2.87E-05	3.67E-05	1.58E-05	2.38E-05	
3. % of Limit (1E-2 μCi/ml)	%	2.87E-01	3.67E-01	1.58E-01	2.38E-01	

C. Dissolved Noble Gases

1. Total Activity Released	Ci	0.00E+00	3.77E-05	0.00E+00	0.00E+00	2.64
2. Average Diluted Concentration	μCi/ml	0.00E+00	6.77E-12	0.00E+00	0.00E+00	
3. % of Limit (2E-4 μCi/ml)	%	0.00E+00	3.38E-06	0.00E+00	0.00E+00	

D. Gross Alpha

1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	14.70
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E. Volume of Waste Released (prior to dilution)	liters	2.40E+05	4.52E+05	2.56E+05	2.90E+05	
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F. Volume of Dilution Water	liters	7.62E+09	1.11E+10	7.48E+09	7.14E+09	
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Note: LLD Values are included in Appendix A of this report.

Note: % Limit Values are included in Appendix B of this report.

*This limit is equal to 10 times the concentration values in Appendix B, Table 2, Column 2 to 10CFR20.1001-2402.

Table 3.1-1

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
 (Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
 Period Start Date....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 1

=== RELEASE DATA =====
 Total Release Duration (minutes)..... 5.921E+05
 Total Release Volume (cf)..... 7.529E+10
 Average Release Flowrate (cfm)..... 1.272E+05

 Average Period Flowrate (cfm)..... 1.432E+05

=== NUCLIDE DATA =====

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
AR-41	8.31E+01	3.90E-14	3.90E-06	1.00E-08
KR-85M	5.18E+00	2.43E-15	2.43E-08	1.00E-07
KR-85	0.00E+00	0.00E+00	0.00E+00	7.00E-07
XE-133M	1.28E+04	6.02E-12	1.00E-05	6.00E-07
KR-88	0.00E+00	0.00E+00	0.00E+00	9.00E-09
XE-131M	0.00E+00	0.00E+00	0.00E+00	2.00E-06
XE-135	6.79E+04	3.19E-11	4.55E-04	7.00E-08
XE-133	6.49E+05	3.04E-10	6.08E-04	5.00E-07

F&AG	7.30E+05	3.42E-10	1.08E-03	
I-131	1.96E+01	9.17E-15	4.58E-05	2.00E-10
I-132	2.19E+02	1.03E-13	5.13E-06	2.00E-08
I-133	7.72E+00	3.62E-15	3.62E-06	1.00E-09

Iodine	2.46E+02	1.15E-13	5.46E-05	
BR-82	2.75E+01	1.29E-14	2.58E-06	5.00E-09

Other	2.75E+01	1.29E-14	2.58E-06	
H-3	5.52E+08	2.59E-07	2.59E+00	1.00E-07

H-3	5.52E+08	2.59E-07	2.59E+00	
CO-57	1.10E+00	5.17E-16	5.75E-07	9.00E-10
C-14	4.32E+06	2.02E-09	6.75E-01	3.00E-09
CE-141	2.39E+00	1.12E-15	1.40E-06	8.00E-10

P>=8	4.32E+06	2.02E-09	6.75E-01	

Table 3.1-1 (cont.)

**GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)**

Release ID.....: 1 All Gas Release Types
Period Start Date....: 01/01/2011 00:00
Period End Date.....: 01/01/2012 00:00
Period Duration (min): 5.256E+05
Coefficient Type.....: Historical
Unit.....: 1

=== NUCLIDE DATA =====

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
Total	5.57E+08	2.61E-07	3.27E+00	

Table 3.1-1 (cont.)

**GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)**

Release ID.....: 1 All Gas Release Types
 Period Start Date....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 1
 Receptor.....: 5 Composite Crit. Receptor - IP
 Distance (meters)....: 0.0
 Compass Point.....: 0.0

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ===

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
AGPD	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	0.00E+00	3.44E-07
AINHL	2.89E-03	1.51E-02	1.52E-02	1.51E-02	1.51E-02	1.51E-02	0.00E+00	1.51E-02
AVEG	1.42E-01	5.46E-02	5.50E-02	5.46E-02	5.46E-02	5.46E-02	0.00E+00	5.46E-02
ACMEAT	5.29E-02	1.43E-02	1.44E-02	1.43E-02	1.43E-02	1.43E-02	0.00E+00	1.43E-02
ACMILK	5.77E-02	2.04E-02	2.18E-02	2.04E-02	2.04E-02	2.04E-02	0.00E+00	2.04E-02
TGPD	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	0.00E+00	3.44E-07
TINHL	4.13E-03	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	0.00E+00	1.55E-02
TVEG	2.30E-01	7.62E-02	7.65E-02	7.62E-02	7.62E-02	7.62E-02	0.00E+00	7.62E-02
TCMEAT	4.46E-02	1.12E-02	1.12E-02	1.12E-02	1.12E-02	1.12E-02	0.00E+00	1.12E-02
TCMILK	1.06E-01	3.28E-02	3.50E-02	3.28E-02	3.28E-02	3.28E-02	0.00E+00	3.28E-02
CGPD	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	0.00E+00	3.44E-07
CINHL	5.70E-03	1.41E-02	1.41E-02	1.41E-02	1.41E-02	1.41E-02	0.00E+00	1.41E-02
CVEG	5.56E-01	1.58E-01	1.58E-01	1.58E-01	1.58E-01	1.58E-01	0.00E+00	1.58E-01
CCMEAT	8.40E-02	1.96E-02	1.96E-02	1.96E-02	1.96E-02	1.96E-02	0.00E+00	1.96E-02
CCMILK	2.62E-01	7.05E-02	7.49E-02	7.05E-02	7.05E-02	7.05E-02	0.00E+00	7.05E-02
IGPD	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	0.00E+00	3.44E-07
IINHL	4.21E-03	8.33E-03	8.34E-03	8.33E-03	8.33E-03	8.33E-03	0.00E+00	8.33E-03
ICMILK	5.13E-01	1.37E-01	1.48E-01	1.37E-01	1.37E-01	1.37E-01	0.00E+00	1.37E-01

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ===

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	2.56E-01	1.05E-01	1.06E-01	1.05E-01	1.05E-01	1.05E-01	0.00E+00	1.05E-01
TEEN	3.86E-01	1.36E-01	1.38E-01	1.36E-01	1.36E-01	1.36E-01	0.00E+00	1.36E-01
CHILD	9.08E-01	2.62E-01	2.67E-01	2.62E-01	2.62E-01	2.62E-01	0.00E+00	2.62E-01
INFANT	5.17E-01	1.45E-01	1.56E-01	1.45E-01	1.45E-01	1.45E-01	0.00E+00	1.45E-01

Table 3.1-1 (cont.)

**GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)**

Release ID.....: 1 All Gas Release Types
 Period Start Date....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 1
 Receptor.....: 5 Composite Crit. Receptor - IP
 Distance (meters)....: 0.0
 Compass Point.....: 0.0

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	BONE	9.08E-01	31-day	2.25E-01	4.03E+02	3.00E-01	3.03E+02
Qrtr->End	CHILD	BONE	9.08E-01	Quarter	5.63E+00	1.61E+01	7.50E+00	1.21E+01
Year->End	CHILD	BONE	9.08E-01	Annual	1.13E+01	8.07E+00	1.50E+01	6.05E+00

Critical Pathway.....: 2 Vegetation (VEG)
 Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	0.00E+00
C-14	1.00E+02
I-131	1.66E-03
I-132	1.75E-05
I-133	1.08E-05
CE-141	2.36E-06

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	TBODY	2.62E-01	31-day	1.50E-01	1.75E+02	2.00E-01	1.31E+02
Qrtr->End	CHILD	TBODY	2.62E-01	Quarter	5.25E+00	4.99E+00	7.50E+00	3.49E+00
Year->End	CHILD	TBODY	2.62E-01	Annual	1.05E+01	2.50E+00	1.50E+01	1.75E+00

Critical Pathway.....: 2 Vegetation (VEG)
 Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	3.07E+01
C-14	6.95E+01
I-131	3.32E-03
I-132	5.99E-05
I-133	1.95E-05
CE-141	6.60E-06

Table 3.1-1 (cont.)

**GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)**

Release ID.....: 1 All Gas Release Types
 Period Start Date....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 1
 Receptor.....: 4 Composite Crit. Receptor - NG
 Distance (meters)....: 0.0
 Compass Point.....: 0.0

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Gamma) ===

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Gamma	8.22E-06	31-day	1.50E-01	5.48E-03	2.00E-01	4.11E-03
Qrtr->End	Gamma	8.22E-06	Quarter	3.75E+00	2.19E-04	5.00E+00	1.64E-04
Year->End	Gamma	8.22E-06	Annual	7.50E+00	1.10E-04	1.00E+01	8.22E-05

Major Contributors.....: 0.0 % or greater to total

Nuclide Percentage

AR-41	2.12E-01
KR-85M	1.75E-03
KR-85	0.00E+00
XE-133M	1.15E+00
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	3.58E+01
XE-133	6.28E+01

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Beta) ===

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Beta	3.19E-05	31-day	3.00E-01	1.06E-02	4.00E-01	7.98E-03
Qrtr->End	Beta	3.19E-05	Quarter	7.50E+00	4.26E-04	1.00E+01	3.19E-04
Year->End	Beta	3.19E-05	Annual	1.50E+01	2.13E-04	2.00E+01	1.60E-04

Major Contributors.....: 0.0 % or greater to total

Nuclide Percentage

AR-41	3.14E-02
KR-85M	1.18E-03
KR-85	0.00E+00
XE-133M	2.19E+00
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	1.93E+01
XE-133	7.85E+01

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
 Period Start Date.....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 2

=== RELEASE DATA =====
 Total Release Duration (minutes)..... 5.597E+05
 Total Release Volume (cf)..... 6.877E+10
 Average Release Flowrate (cfm)..... 1.229E+05

 Average Period Flowrate (cfm)..... 1.308E+05

=== NUCLIDE DATA =====

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
AR-41	8.31E+01	4.27E-14	4.27E-06	1.00E-08
KR-85M	5.18E+00	2.66E-15	2.66E-08	1.00E-07
KR-85	0.00E+00	0.00E+00	0.00E+00	7.00E-07
XE-133M	1.28E+04	6.59E-12	1.10E-05	6.00E-07
KR-88	0.00E+00	0.00E+00	0.00E+00	9.00E-09
XE-131M	0.00E+00	0.00E+00	0.00E+00	2.00E-06
XE-135	6.79E+04	3.49E-11	4.98E-04	7.00E-08
XE-133	9.33E+05	4.79E-10	9.58E-04	5.00E-07
F&AG	1.01E+06	5.20E-10	1.47E-03	
I-131	1.73E+01	8.90E-15	4.45E-05	2.00E-10
I-132	2.17E+02	1.11E-13	5.56E-06	2.00E-08
I-133	3.11E-03	1.60E-18	1.60E-09	1.00E-09
Iodine	2.34E+02	1.20E-13	5.01E-05	
BR-82	5.21E-01	2.68E-16	5.36E-08	5.00E-09
Other	5.21E-01	2.68E-16	5.36E-08	
H-3	9.67E+08	4.97E-07	4.97E+00	1.00E-07
H-3	9.67E+08	4.97E-07	4.97E+00	
SN-113	1.61E+00	8.24E-16	1.03E-06	8.00E-10
C-14	4.84E+06	2.48E-09	8.28E-01	3.00E-09
CO-60	1.96E-03	1.01E-18	2.01E-08	5.00E-11
P>=8	4.84E+06	2.48E-09	8.28E-01	

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
Period Start Date....: 01/01/2011 00:00
Period End Date.....: 01/01/2012 00:00
Period Duration (min): 5.256E+05
Coefficient Type.....: Historical
Unit.....: 2

=== NUCLIDE DATA =====

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
Total	9.73E+08	5.00E-07	5.80E+00	

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
 Period Start Date....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 2
 Receptor.....: 5 Composite Crit. Receptor - IP
 Distance (meters)....: 0.0
 Compass Point.....: 0.0

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ===

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
AGPD	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	0.00E+00	3.21E-07
AINHL	3.24E-03	2.62E-02	2.62E-02	2.62E-02	2.62E-02	2.62E-02	0.00E+00	2.62E-02
AVEG	1.60E-01	7.78E-02	7.81E-02	7.78E-02	7.78E-02	7.78E-02	0.00E+00	7.78E-02
ACMEAT	5.93E-02	1.85E-02	1.85E-02	1.85E-02	1.85E-02	1.85E-02	0.00E+00	1.85E-02
ACMILK	6.46E-02	2.84E-02	2.97E-02	2.84E-02	2.84E-02	2.84E-02	0.00E+00	2.84E-02
TGPD	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	0.00E+00	3.21E-07
TINHL	4.63E-03	2.67E-02	2.67E-02	2.67E-02	2.67E-02	2.67E-02	0.00E+00	2.67E-02
TVEG	2.58E-01	1.04E-01	1.05E-01	1.04E-01	1.04E-01	1.04E-01	0.00E+00	1.04E-01
TCMEAT	5.00E-02	1.39E-02	1.40E-02	1.39E-02	1.39E-02	1.39E-02	0.00E+00	1.39E-02
TCMILK	1.19E-01	4.40E-02	4.60E-02	4.40E-02	4.40E-02	4.40E-02	0.00E+00	4.40E-02
CGPD	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	0.00E+00	3.21E-07
CINHL	6.39E-03	2.40E-02	2.40E-02	2.40E-02	2.40E-02	2.40E-02	0.00E+00	2.40E-02
CVEG	6.23E-01	2.06E-01	2.07E-01	2.06E-01	2.06E-01	2.06E-01	0.00E+00	2.06E-01
CCMEAT	9.42E-02	2.36E-02	2.37E-02	2.36E-02	2.36E-02	2.36E-02	0.00E+00	2.36E-02
CCMILK	2.94E-01	9.05E-02	9.44E-02	9.05E-02	9.05E-02	9.05E-02	0.00E+00	9.05E-02
IGPD	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	3.21E-07	0.00E+00	3.21E-07
IINHL	4.72E-03	1.41E-02	1.41E-02	1.41E-02	1.41E-02	1.41E-02	0.00E+00	1.41E-02
ICMILK	5.75E-01	1.71E-01	1.81E-01	1.71E-01	1.71E-01	1.71E-01	0.00E+00	1.71E-01

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ===

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	2.87E-01	1.51E-01	1.52E-01	1.51E-01	1.51E-01	1.51E-01	0.00E+00	1.51E-01
TEEN	4.32E-01	1.89E-01	1.91E-01	1.89E-01	1.89E-01	1.89E-01	0.00E+00	1.89E-01
CHILD	1.02E+00	3.44E-01	3.49E-01	3.44E-01	3.44E-01	3.44E-01	0.00E+00	3.44E-01
INFANT	5.80E-01	1.85E-01	1.95E-01	1.85E-01	1.85E-01	1.85E-01	0.00E+00	1.85E-01

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
 Period Start Date....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 2
 Receptor.....: 5 Composite Crit. Receptor - IP
 Distance (meters)....: 0.0
 Compass Point.....: 0.0

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	BONE	1.02E+00	31-day	2.25E-01	4.52E+02	3.00E-01	3.39E+02
Qrtr->End	CHILD	BONE	1.02E+00	Quarter	5.63E+00	1.81E+01	7.50E+00	1.36E+01
Year->End	CHILD	BONE	1.02E+00	Annual	1.13E+01	9.04E+00	1.50E+01	6.78E+00

Critical Pathway.....: 2 Vegetation (VEG)
 Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	0.00E+00
C-14	1.00E+02
CO-60	2.46E-06
I-131	1.32E-03
I-132	1.54E-05
I-133	3.87E-09

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	TBODY	3.44E-01	31-day	1.50E-01	2.30E+02	2.00E-01	1.72E+02
Qrtr->End	CHILD	TBODY	3.44E-01	Quarter	5.25E+00	6.56E+00	7.50E+00	4.59E+00
Year->End	CHILD	TBODY	3.44E-01	Annual	1.05E+01	3.28E+00	1.50E+01	2.30E+00

Critical Pathway.....: 2 Vegetation (VEG)
 Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	4.09E+01
C-14	5.89E+01
CO-60	7.69E-06
I-131	2.24E-03
I-132	4.50E-05
I-133	5.98E-09

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
 Period Start Date....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (min): 5.256E+05
 Coefficient Type.....: Historical
 Unit.....: 2
 Receptor.....: 4 Composite Crit. Receptor - NG
 Distance (meters)....: 0.0
 Compass Point.....: 0.0

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Gamma) ===

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Gamma	1.05E-05	31-day	1.50E-01	6.99E-03	2.00E-01	5.24E-03
Qrtr->End	Gamma	1.05E-05	Quarter	3.75E+00	2.80E-04	5.00E+00	2.10E-04
Year->End	Gamma	1.05E-05	Annual	7.50E+00	1.40E-04	1.00E+01	1.05E-04

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
AR-41	1.66E-01
KR-85M	1.37E-03
KR-85	0.00E+00
XE-133M	9.03E-01
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	2.81E+01
XE-133	7.09E+01

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Beta) ===

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Beta	4.29E-05	31-day	3.00E-01	1.43E-02	4.00E-01	1.07E-02
Qrtr->End	Beta	4.29E-05	Quarter	7.50E+00	5.72E-04	1.00E+01	4.29E-04
Year->End	Beta	4.29E-05	Annual	1.50E+01	2.86E-04	2.00E+01	2.15E-04

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
AR-41	2.34E-02
KR-85M	8.75E-04
KR-85	0.00E+00
XE-133M	1.63E+00
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	1.43E+01
XE-133	8.40E+01

Table 3.2-1

LIQUID RELEASE AND DOSE SUMMARY REPORT
 ----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
 Period Start Date.....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (mins): 5.256E+05
 Unit.....: 1

=== MULTIPLE RELEASE POINT MESSAGE =====
 Undiluted and Diluted Flowrate(s) and Concentration(s) cannot be combined.

=== RELEASE DATA =====
 Total Release Duration (minutes)..... 1.186E+06
 Total Undiluted Volume Released (gallons)..... NA
 Average Undiluted Flowrate (gpm)..... NA

 Total Dilution Volume (gallons)..... NA
 Average Dilution Flowrate (gpm)..... NA

=== NUCLIDE DATA =====

Nuclide	uCi
CO-57	2.63E+02
NB-97	8.44E+02
AG-110	6.33E+00
SN-113	1.76E+02
SB-124	7.27E+00
SB-125	2.42E+03
BA-133	4.30E+00
TE-123M	2.94E+01
CR-51	2.09E+02
MN-54	1.56E+03
FE-59	4.50E+01
CO-58	1.17E+04
CO-60	2.69E+04
ZN-65	1.28E+02
ZR-95	1.28E+02
ZR-97	2.35E+01
NB-95	3.23E+02
AG-110M	9.57E+02
I-134	7.73E+00
CS-134	1.78E+00
CS-137	1.32E+01
LA-140	1.76E+00
CE-144	3.26E+01
-----	-----
Gamma	4.58E+04
AR-41	2.05E+00
XE-135M	3.35E+00
XE-133	3.23E+01

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
Period Start Date.....: 01/01/2011 00:00
Period End Date.....: 01/01/2012 00:00
Period Duration (mins): 5.256E+05

==== NUCLIDE DATA =====

Nuclide	uCi
-----	-----
D&EG	3.77E+01
H-3	4.58E+08
FE-55	2.11E+04
NI-63	2.62E+02
-----	-----
Beta	4.58E+08
-----	-----
Total	4.58E+08

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
 ----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
 Period Start Date.....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (mins): 5.256E+05
 Unit.....: 1
 Receptor.....: 0 Liquid Receptor

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ===

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
APWtr	1.29E-05	8.69E-03	8.68E-03	8.68E-03	8.68E-03	8.87E-03	0.00E+00	8.70E-03
AFWFSp	8.07E-04	4.72E-03	3.60E-03	3.89E-03	3.76E-03	2.12E-02	0.00E+00	4.42E-03
TPWtr	1.23E-05	6.13E-03	6.11E-03	6.12E-03	6.12E-03	6.23E-03	0.00E+00	6.14E-03
TFWFSp	8.35E-04	3.90E-03	2.76E-03	3.05E-03	2.96E-03	1.51E-02	0.00E+00	3.54E-03
CPWtr	3.73E-05	1.18E-02	1.17E-02	1.17E-02	1.17E-02	1.18E-02	0.00E+00	1.18E-02
CFWFSp	1.07E-03	3.27E-03	2.29E-03	2.51E-03	2.46E-03	6.68E-03	0.00E+00	3.07E-03
IPWtr	2.91E-05	1.16E-02	1.15E-02	1.15E-02	1.15E-02	1.16E-02	0.00E+00	1.16E-02

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ===

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	8.20E-04	1.34E-02	1.23E-02	1.26E-02	1.24E-02	3.01E-02	0.00E+00	1.31E-02
TEEN	8.47E-04	1.00E-02	8.88E-03	9.16E-03	9.08E-03	2.14E-02	0.00E+00	9.67E-03
CHILD	1.10E-03	1.50E-02	1.40E-02	1.43E-02	1.42E-02	1.85E-02	0.00E+00	1.49E-02
INFANT	2.91E-05	1.16E-02	1.15E-02	1.15E-02	1.15E-02	1.16E-02	0.00E+00	1.16E-02

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
 ----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
 Period Start Date.....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (mins): 5.256E+05
 Unit.....: 1
 Receptor.....: 0 Liquid Receptor

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	ADULT	GILLI	3.01E-02	31-day	1.50E-01	2.01E+01	2.00E-01	1.50E+01
Qrtr->End	ADULT	GILLI	3.01E-02	Quarter	3.75E+00	8.02E-01	5.00E+00	6.02E-01
Year->End	ADULT	GILLI	3.01E-02	Annual	7.50E+00	4.01E-01	1.00E+01	3.01E-01

Critical Pathway.....: 1 Fresh Water Fish - Sport (FFSP)
 Major Contributors.....: 0.0 % or greater to total

Nuclide Percentage

H-3	4.09E+01
CR-51	5.92E-03
MN-54	1.84E+00
FE-55	4.92E-01
FE-59	3.26E-02
CO-58	1.92E+00
CO-60	1.18E+01
NI-63	1.05E-02
ZN-65	5.19E-01
ZR-95	4.52E-03
ZR-97	2.82E-03
NB-95	4.26E+01
AG-110M	5.39E-02
I-134	6.95E-09
CS-134	1.92E-03
CS-137	1.17E-02
LA-140	9.24E-04
CE-144	3.56E-03

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	TBODY	1.49E-02	31-day	4.50E-02	3.30E+01	6.00E-02	2.48E+01
Qrtr->End	CHILD	TBODY	1.49E-02	Quarter	1.13E+00	1.32E+00	1.50E+00	9.91E-01
Year->End	CHILD	TBODY	1.49E-02	Annual	2.25E+00	6.61E-01	3.00E+00	4.95E-01

Critical Pathway.....: 0 Potable Water (PWtr)
 Major Contributors.....: 0.0 % or greater to total

Nuclide Percentage

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
Period Start Date.....: 01/01/2011 00:00
Period End Date.....: 01/01/2012 00:00
Period Duration (mins): 5.256E+05

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	9.42E+01
CR-51	5.29E-05
MN-54	2.50E-01
FE-55	5.79E-01
FE-59	8.68E-03
CO-58	4.88E-01
CO-60	3.19E+00
NI-63	6.93E-02
ZN-65	8.07E-01
ZR-95	3.19E-06
ZR-97	1.54E-08
NB-95	8.41E-03
AG-110M	2.68E-04
I-134	7.53E-06
CS-134	4.00E-02
CS-137	1.70E-01
LA-140	8.61E-09
CE-144	2.83E-06

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
Period Start Date.....: 01/01/2011 00:00
Period End Date.....: 01/01/2012 00:00
Period Duration (mins): 5.256E+05
Unit.....: 2

=== MULTIPLE RELEASE POINT MESSAGE =====
Undiluted and Diluted Flowrate(s) and Concentration(s) cannot be combined.

=== RELEASE DATA =====
Total Release Duration (minutes)..... 1.186E+06
Total Undiluted Volume Released (gallons)..... NA
Average Undiluted Flowrate (gpm)..... NA

Total Dilution Volume (gallons)..... NA
Average Dilution Flowrate (gpm)..... NA

=== NUCLIDE DATA =====
Nuclide uCi

CO-57 2.63E+02
NB-97 8.44E+02
AG-110 6.33E+00
SN-113 1.76E+02
SB-124 7.27E+00
SB-125 2.42E+03
BA-133 4.30E+00
TE-123M 2.94E+01
CR-51 2.09E+02
MN-54 1.56E+03
FE-59 4.50E+01
CO-58 1.17E+04
CO-60 2.69E+04
ZN-65 1.28E+02
ZR-95 1.28E+02
ZR-97 2.35E+01
NB-95 3.23E+02
AG-110M 9.57E+02
I-134 7.73E+00
CS-134 1.78E+00
CS-137 1.32E+01
LA-140 1.76E+00
CE-144 3.26E+01

Gamma 4.58E+04

AR-41 2.05E+00
XE-135M 3.35E+00
XE-133 3.23E+01

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
Period Start Date.....: 01/01/2011 00:00
Period End Date.....: 01/01/2012 00:00
Period Duration (mins): 5.256E+05

=== NUCLIDE DATA =====

Nuclide	uCi
-----	-----
D&EG	3.77E+01
H-3	4.58E+08
FE-55	2.11E+04
NI-63	2.62E+02
-----	-----
Beta	4.58E+08
-----	-----
Total	4.58E+08

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
 ----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
 Period Start Date.....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (mins): 5.256E+05
 Unit.....: 2
 Receptor.....: 0 Liquid Receptor

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ===

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
APWtr	1.29E-05	8.69E-03	8.68E-03	8.68E-03	8.68E-03	8.87E-03	0.00E+00	8.70E-03
AFWFSp	8.07E-04	4.72E-03	3.60E-03	3.89E-03	3.76E-03	2.12E-02	0.00E+00	4.42E-03
TPWtr	1.23E-05	6.13E-03	6.11E-03	6.12E-03	6.12E-03	6.23E-03	0.00E+00	6.14E-03
TFWFSp	8.35E-04	3.90E-03	2.76E-03	3.05E-03	2.96E-03	1.51E-02	0.00E+00	3.54E-03
CPWtr	3.73E-05	1.18E-02	1.17E-02	1.17E-02	1.17E-02	1.18E-02	0.00E+00	1.18E-02
CFWFSp	1.07E-03	3.27E-03	2.29E-03	2.51E-03	2.46E-03	6.68E-03	0.00E+00	3.07E-03
IPWtr	2.91E-05	1.16E-02	1.15E-02	1.15E-02	1.15E-02	1.16E-02	0.00E+00	1.16E-02

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ===

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	8.20E-04	1.34E-02	1.23E-02	1.26E-02	1.24E-02	3.01E-02	0.00E+00	1.31E-02
TEEN	8.47E-04	1.00E-02	8.88E-03	9.16E-03	9.08E-03	2.14E-02	0.00E+00	9.67E-03
CHILD	1.10E-03	1.50E-02	1.40E-02	1.43E-02	1.42E-02	1.85E-02	0.00E+00	1.49E-02
INFANT	2.91E-05	1.16E-02	1.15E-02	1.15E-02	1.15E-02	1.16E-02	0.00E+00	1.16E-02

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
 ----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
 Period Start Date.....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (mins): 5.256E+05
 Unit.....: 2
 Receptor.....: 0 Liquid Receptor

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	ADULT	GILLI	3.01E-02	31-day	1.50E-01	2.01E+01	2.00E-01	1.50E+01
Qrtr->End	ADULT	GILLI	3.01E-02	Quarter	3.75E+00	8.02E-01	5.00E+00	6.02E-01
Year->End	ADULT	GILLI	3.01E-02	Annual	7.50E+00	4.01E-01	1.00E+01	3.01E-01

Critical Pathway.....: 1 Fresh Water Fish - Sport (FFSP)
 Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	4.09E+01
CR-51	5.92E-03
MN-54	1.84E+00
FE-55	4.92E-01
FE-59	3.26E-02
CO-58	1.92E+00
CO-60	1.18E+01
NI-63	1.05E-02
ZN-65	5.19E-01
ZR-95	4.52E-03
ZR-97	2.82E-03
NB-95	4.26E+01
AG-110M	5.39E-02
I-134	6.95E-09
CS-134	1.92E-03
CS-137	1.17E-02
LA-140	9.24E-04
CE-144	3.56E-03

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body) ===

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	TBODY	1.49E-02	31-day	4.50E-02	3.30E+01	6.00E-02	2.48E+01
Qrtr->End	CHILD	TBODY	1.49E-02	Quarter	1.13E+00	1.32E+00	1.50E+00	9.91E-01
Year->End	CHILD	TBODY	1.49E-02	Annual	2.25E+00	6.61E-01	3.00E+00	4.95E-01

Critical Pathway.....: 0 Potable Water (PWtr)
 Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage

Table 3.2-1 (cont.)
 LIQUID RELEASE AND DOSE SUMMARY REPORT
 ----- (PERIOD BASIS - BY UNIT) -----

Release ID.....: 1 All Liquid Release Types
 Period Start Date.....: 01/01/2011 00:00
 Period End Date.....: 01/01/2012 00:00
 Period Duration (mins): 5.256E+05

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	9.42E+01
CR-51	5.29E-05
MN-54	2.50E-01
FE-55	5.79E-01
FE-59	8.68E-03
CO-58	4.88E-01
CO-60	3.19E+00
NI-63	6.93E-02
ZN-65	8.07E-01
ZR-95	3.19E-06
ZR-97	1.54E-08
NB-95	8.41E-03
AG-110M	2.68E-04
I-134	7.53E-06
CS-134	4.00E-02
CS-137	1.70E-01
LA-140	8.61E-09
CE-144	2.83E-06

Table 3-3.1

Braidwood Nuclear Station

Unit 1

10 CFR 20 Compliance Assessment

Period of Assessment: 1/1/11 through 12/31/11
Calculated 4/23/12

10 CFR 20.1301(a)(1) Compliance

Total Effective Dose Equivalent (TEDE)	mrem/year	9.60E-01
10 CFR 20.1301(a)(1) limit	mrem/year	100.00
	% of limit	0.96

Compliance Summary

	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	Total
TEDE (mrem)	2.42E-01	2.49E-01	2.33E-01	2.36E-01	9.60E-01

Table 3-3.1 (cont.)

Braidwood Nuclear Station

Unit 2

10 CFR 20 Compliance Assessment

Period of Assessment: 1/1/11 through 12/31/11
Calculated 4/23/12

10 CFR 20.1301(a)(1) Compliance

Total Effective Dose Equivalent (TEDE)	mrem/year	1.07E+00
10 CFR 20.1301(a)(1) limit	mrem/year	100.00
	% of limit	1.07

Compliance Summary

	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	Total
TEDE (mrem)	2.60E-01	2.08E-01	2.83E-01	3.19E-01	1.07E+00

Table 3.4-1

Doses Resulting from Airborne Releases

The following are the maximum annual calculated cumulative offsite doses resulting from Braidwood Station airborne releases.

Unit 1:

<u>Dose</u>	<u>Maximum Value</u>	<u>Sector Affected</u>
gamma air ⁽¹⁾	1.300 x 10 ⁻⁵ mrad	North
beta air ⁽²⁾	3.090 x 10 ⁻⁵ mrad	North
whole body ⁽³⁾	3.384 x 10 ⁻¹ mrem	North
skin ⁽⁴⁾	2.210 x 10 ⁻⁵ mrem	North
organ ⁽⁵⁾ (child-bone)	1.112 x 10 ⁺⁰ mrem	North

Unit 1 Compliance Status

10 CFR 50 Appendix I	Yearly Objective	% of Appendix I
gamma air	10.0 mrad	0.00
beta air	20.0 mrad	0.00
whole body	5.0 mrem	6.77
skin	15.0 mrem	0.00
organ	15.0 mrem	7.41

Unit 2:

<u>Dose</u>	<u>Maximum Value</u>	<u>Sector Affected</u>
gamma air ⁽¹⁾	1.650 x 10 ⁻⁶ mrad	North
beta air ⁽²⁾	4.150 x 10 ⁻⁵ mrad	North
whole body ⁽³⁾	4.508 x 10 ⁻¹ mrem	North
skin ⁽⁴⁾	2.800 x 10 ⁻⁵ mrem	North
organ ⁽⁵⁾ (child-bone)	1.258 x 10 ⁺⁰ mrem	North

Unit 2 Compliance Status

10 CFR 50 Appendix I	Yearly Objective	% of Appendix I
gamma air	10.0 mrad	0.00
beta air	20.0 mrad	0.00
whole body	5.0 mrem	9.02
skin	15.0 mrem	0.00
organ	15.0 mrem	8.39

- (1) Gamma Air Dose – GASPAR II, NUREG-0597
- (2) Beta Air Dose – GASPAR II, NUREG-0597
- (3) Whole Body Dose – GASPAR II, NUREG-0597
- (4) Skin Dose – GASPAR II, NUREG-0597
- (5) Inhalation and Food Pathways Dose – GASPAR II, NUREG-0597

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APPENDIX F

METEOROLOGICAL

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Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	1	0	0	1
NNE	0	2	2	0	0	0	4
NE	0	6	10	0	0	0	16
ENE	0	11	4	0	0	0	15
E	0	7	2	0	0	0	9
ESE	0	0	3	0	0	0	3
SE	0	0	1	2	0	0	3
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	3	3	0	0	6
SW	0	0	0	0	0	0	0
WSW	0	0	4	1	1	0	6
W	0	2	4	6	0	0	12
WNW	0	7	12	3	0	0	22
NW	0	8	13	0	0	0	21
NNW	0	0	4	3	0	0	7
Variable	0	0	0	0	0	0	0
Total	0	43	62	19	1	0	125

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	0	0	0	3
NNE	0	3	0	0	0	0	3
NE	0	1	5	0	0	0	6
ENE	0	3	3	0	0	0	6
E	0	5	1	0	0	0	6
ESE	0	2	0	0	0	0	2
SE	0	0	2	0	0	0	2
SSE	0	0	1	0	0	0	1
S	0	0	1	3	0	0	4
SSW	0	1	1	1	1	0	4
SW	0	0	2	1	0	0	3
WSW	0	0	5	1	0	0	6
W	0	2	1	2	0	0	5
WNW	0	3	1	0	0	0	4
NW	0	7	7	0	0	0	14
NNW	0	5	2	1	0	0	8
Variable	0	0	0	0	0	0	0
Total	0	33	34	9	1	0	77

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	1	0	0	0	2
NNE	0	6	1	0	0	0	7
NE	0	5	4	0	0	0	9
ENE	0	6	2	0	0	0	8
E	0	2	0	0	0	0	2
ESE	0	2	0	0	0	0	2
SE	0	0	3	0	0	0	3
SSE	0	0	4	3	0	0	7
S	0	0	0	2	0	0	2
SSW	0	0	4	3	1	0	8
SW	0	4	5	1	0	0	10
WSW	0	6	6	2	0	0	14
W	0	8	6	2	0	0	16
WNW	0	4	4	1	0	0	9
NW	0	4	2	0	0	0	6
NNW	0	5	2	2	0	0	9
Variable	0	1	0	0	0	0	1
Total	0	54	44	16	1	0	115

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	14	56	8	0	0	78
NNE	2	13	26	7	0	0	48
NE	2	46	45	1	0	0	94
ENE	8	65	23	0	0	0	96
E	5	32	8	0	0	0	45
ESE	1	12	9	0	0	0	22
SE	1	19	33	7	0	0	60
SSE	1	29	27	4	0	0	61
S	0	8	43	7	0	0	58
SSW	0	12	32	15	0	0	59
SW	1	26	55	9	1	0	92
WSW	3	35	16	6	0	0	60
W	7	31	17	8	1	0	64
WNW	11	63	39	0	0	0	113
NW	9	32	24	1	0	0	66
NNW	4	26	34	8	0	0	72
Variable	2	0	0	0	0	0	2
Total	57	463	487	81	2	0	1090

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	6	0	0	0	0	9
NNE	5	11	1	0	1	0	18
NE	11	22	1	7	5	0	46
ENE	18	35	3	0	0	0	56
E	22	10	0	0	0	0	32
ESE	5	10	6	0	0	0	21
SE	1	20	10	0	0	0	31
SSE	1	13	5	0	0	0	19
S	0	4	22	17	0	0	43
SSW	1	6	21	13	2	0	43
SW	0	20	47	10	0	0	77
WSW	4	25	7	3	0	0	39
W	11	22	12	7	0	0	52
WNW	18	43	12	3	0	0	76
NW	18	23	6	0	0	0	47
NNW	8	19	1	0	0	0	28
Variable	0	0	0	0	0	0	0
Total	126	289	154	60	8	0	637

Hours of calm in this stability class: 2
 Hours of missing wind measurements in this stability class: 13
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	1
NE	3	0	0	0	0	0	3
ENE	5	0	0	0	0	0	5
E	5	0	0	0	0	0	5
ESE	4	1	0	0	0	0	5
SE	1	0	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	1	0	0	0	0	0	1
SW	3	1	0	0	0	0	4
WSW	0	12	0	0	0	0	12
W	7	20	0	0	0	0	27
WNW	9	3	0	0	0	0	12
NW	7	0	0	0	0	0	7
NNW	3	1	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	49	38	0	0	0	0	87

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	2	0	0	0	0	0	2
NW	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	4	0	0	0	0	0	4

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	1	0	0	1
NNE	0	0	2	0	0	0	2
NE	0	0	10	5	0	0	15
ENE	0	5	8	5	0	0	18
E	0	1	7	3	0	0	11
ESE	0	0	0	3	0	0	3
SE	0	0	0	0	3	0	3
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	1	2	3	0	6
SW	0	0	0	0	0	0	0
WSW	0	0	1	2	0	1	4
W	0	0	6	1	0	0	7
WNW	0	3	4	7	6	3	23
NW	0	4	10	10	3	1	28
NNW	0	0	0	4	2	0	6
Variable	0	0	0	0	0	0	0
Total	0	13	49	43	17	5	127

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	2	0	0	0	4
NNE	0	2	1	1	0	0	4
NE	0	0	2	2	0	0	4
ENE	0	2	4	2	0	0	8
E	0	2	2	1	0	0	5
ESE	0	1	1	3	0	0	5
SE	0	0	0	1	0	0	1
SSE	0	0	1	0	0	0	1
S	0	0	0	1	3	0	4
SSW	0	1	1	1	0	1	4
SW	0	0	2	1	0	0	3
WSW	0	0	4	0	1	0	5
W	0	2	1	1	0	1	5
WNW	0	0	1	1	1	0	3
NW	0	3	6	6	1	0	16
NNW	0	1	3	2	0	0	6
Variable	0	0	0	0	0	0	0
Total	0	16	31	23	6	2	78

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	2	0	0	0	2
NNE	0	4	3	0	0	0	7
NE	0	3	2	1	0	0	6
ENE	0	5	2	3	0	0	10
E	0	1	1	0	0	0	2
ESE	0	0	3	0	0	0	3
SE	0	0	2	0	1	0	3
SSE	0	0	0	4	3	0	7
S	0	0	0	0	2	0	2
SSW	0	0	0	3	1	2	6
SW	0	4	4	4	1	0	13
WSW	0	6	3	2	2	0	13
W	0	2	6	2	0	1	11
WNW	0	3	6	2	2	1	14
NW	0	1	2	2	1	0	6
NNW	0	3	2	2	2	0	9
Variable	0	1	0	0	0	0	1
Total	0	33	38	25	15	4	115

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	8	23	40	8	0	80
NNE	1	6	12	16	7	1	43
NE	0	4	35	34	3	1	77
ENE	3	16	55	33	1	0	108
E	0	9	28	16	2	0	55
ESE	2	1	11	12	4	1	31
SE	0	2	14	27	13	2	58
SSE	0	4	24	13	9	0	50
S	0	0	26	34	5	2	67
SSW	0	2	16	28	15	2	63
SW	0	26	27	33	4	1	91
WSW	0	10	25	6	5	1	47
W	4	17	20	13	6	2	62
WNW	1	18	35	36	10	1	101
NW	2	13	33	39	9	0	96
NNW	1	9	21	23	6	2	62
Variable	0	1	0	0	0	0	1
Total	15	146	405	403	107	16	1092

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	9	1	0	0	12
NNE	3	4	7	3	0	1	18
NE	1	6	24	6	2	10	49
ENE	0	14	33	3	1	0	51
E	0	13	22	4	0	0	39
ESE	1	5	13	11	1	0	31
SE	0	1	8	18	3	0	30
SSE	0	3	10	8	1	0	22
S	0	0	4	10	22	1	37
SSW	0	0	6	26	22	4	58
SW	1	4	16	28	8	2	59
WSW	0	3	18	14	4	0	39
W	1	7	9	13	7	2	39
WNW	1	4	16	35	5	4	65
NW	2	3	37	28	1	0	71
NNW	2	2	25	3	0	0	32
Variable	0	0	0	0	0	0	0
Total	13	70	257	211	77	24	652

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	7	1	0	0	9
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	3	3	0	0	0	6
E	1	2	2	0	0	0	5
ESE	0	2	2	1	0	0	5
SE	0	0	1	0	0	0	1
SSE	0	2	0	0	0	0	2
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	1	0	0	0	0	1
WSW	1	0	3	2	0	0	6
W	0	0	5	11	0	0	16
WNW	0	1	9	10	0	0	20
NW	0	0	12	1	0	0	13
NNW	0	0	3	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	2	13	47	26	0	0	88

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: January - March 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	2	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	1	0	0	0	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	1	1	2	0	0	0	4

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)

Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	1	0	0	0	3
NNE	0	5	11	4	0	0	20
NE	0	7	20	1	0	0	28
ENE	0	13	1	0	0	0	14
E	0	13	0	0	0	0	13
ESE	1	12	3	0	0	0	16
SE	0	16	3	4	0	0	23
SSE	0	6	1	1	0	0	8
S	0	11	4	2	0	0	17
SSW	1	2	7	8	1	0	19
SW	1	2	11	7	0	0	21
WSW	0	4	4	3	0	0	11
W	1	7	19	10	0	0	37
WNW	0	13	18	1	0	0	32
NW	0	8	12	1	0	0	21
NNW	1	6	4	0	0	0	11
Variable	0	0	0	0	0	0	0
Total	5	127	119	42	1	0	294

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)

Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	2	0	0	0	4
NNE	1	1	4	0	0	0	6
NE	2	3	3	3	0	0	11
ENE	0	4	1	0	0	0	5
E	0	3	0	0	0	0	3
ESE	0	2	0	0	0	0	2
SE	1	4	3	1	0	0	9
SSE	1	2	6	0	1	0	10
S	0	4	2	1	0	0	7
SSW	0	2	4	3	1	0	10
SW	1	1	1	3	1	0	7
WSW	1	1	2	4	0	0	8
W	1	3	5	1	0	0	10
WNW	1	1	0	0	0	0	2
NW	0	1	0	0	0	0	1
NNW	0	4	2	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	9	38	35	16	3	0	101

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011
 Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	2	1	2	2	0	0	7
NE	0	5	1	2	0	0	8
ENE	0	5	3	0	0	0	8
E	0	5	0	0	0	0	5
ESE	0	3	2	0	0	0	5
SE	2	2	0	1	0	0	5
SSE	0	2	4	0	0	0	6
S	1	5	7	2	0	0	15
SSW	0	0	2	3	0	0	5
SW	0	1	1	7	2	0	11
WSW	0	1	5	0	0	0	6
W	0	1	3	4	0	0	8
WNW	0	3	4	0	0	0	7
NW	0	4	1	0	0	0	5
NNW	2	1	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	7	40	35	21	2	0	105

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	11	4	1	0	0	18
NNE	3	21	68	21	0	0	113
NE	5	46	48	10	0	0	109
ENE	8	51	25	0	0	0	84
E	5	19	15	0	0	0	39
ESE	2	26	12	1	0	0	41
SE	6	23	23	5	0	0	57
SSE	3	25	17	2	0	0	47
S	3	18	24	12	2	0	59
SSW	1	3	23	17	8	1	53
SW	1	7	46	20	1	0	75
WSW	0	7	27	0	0	0	34
W	0	23	33	7	0	0	63
WNW	5	18	15	11	0	0	49
NW	2	11	17	0	0	0	30
NNW	1	12	3	0	0	0	16
Variable	0	0	0	0	0	0	0
Total	47	321	400	107	11	1	887

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)

Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	6	11	3	0	0	0	20
NNE	3	24	6	0	0	0	33
NE	9	12	6	2	0	0	29
ENE	18	24	10	0	0	0	52
E	27	14	5	0	0	0	46
ESE	12	32	10	0	0	0	54
SE	3	39	19	0	0	0	61
SSE	11	28	7	2	0	0	48
S	3	23	33	5	0	0	64
SSW	1	8	16	3	5	3	36
SW	1	15	21	1	1	0	39
WSW	5	24	12	3	0	0	44
W	11	14	5	0	0	0	30
WNW	9	13	7	0	0	0	29
NW	8	4	3	0	0	0	15
NNW	5	4	0	0	0	0	9
Variable	1	0	0	0	0	0	1
Total	133	289	163	16	6	3	610

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	1	0	0	0	3
NNE	3	1	0	0	0	0	4
NE	6	1	0	0	0	0	7
ENE	4	0	2	0	0	0	6
E	12	0	0	0	0	0	12
ESE	8	3	0	0	0	0	11
SE	5	1	0	0	0	0	6
SSE	4	3	0	0	0	0	7
S	1	3	0	0	0	0	4
SSW	3	0	0	0	0	0	3
SW	0	1	0	0	0	0	1
WSW	5	4	0	0	0	0	9
W	12	12	0	0	0	0	24
WNW	1	1	0	0	0	0	2
NW	1	0	0	0	0	0	1
NNW	3	0	0	0	0	0	3
Variable	1	0	0	0	0	0	1
Total	70	31	3	0	0	0	104

Hours of calm in this stability class: 3
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	6	3	0	0	0	0	9
ENE	11	0	0	0	0	0	11
E	2	0	0	0	0	0	2
ESE	4	0	0	0	0	0	4
SE	3	0	0	0	0	0	3
SSE	1	1	0	0	0	0	2
S	1	0	0	0	0	0	1
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	2	0	0	0	0	0	2
W	5	0	0	0	0	0	5
WNW	3	0	0	0	0	0	3
NW	3	0	0	0	0	0	3
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	43	4	0	0	0	0	47

Hours of calm in this stability class: 6
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)

Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	1	0	0	4
NNE	0	1	9	6	1	0	17
NE	0	1	9	10	5	0	25
ENE	0	5	7	6	0	0	18
E	0	5	11	0	0	0	16
ESE	0	6	5	2	2	0	15
SE	0	8	7	4	0	3	22
SSE	0	3	3	0	0	2	8
S	0	3	7	3	2	0	15
SSW	0	4	5	6	5	2	22
SW	0	0	3	8	5	0	16
WSW	0	0	4	4	1	0	9
W	0	6	3	7	7	3	26
WNW	1	4	12	23	3	0	43
NW	0	4	9	9	5	0	27
NNW	1	2	3	5	0	0	11
Variable	0	0	0	0	0	0	0
Total	2	53	99	94	36	10	294

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	1	2	0	0	4
NNE	1	1	2	1	0	0	5
NE	0	1	3	5	2	0	11
ENE	0	2	3	0	0	0	5
E	0	2	0	2	0	0	4
ESE	0	1	1	0	0	0	2
SE	0	2	2	3	0	1	8
SSE	0	2	1	6	0	0	9
S	0	1	4	1	1	1	8
SSW	0	2	1	2	0	3	8
SW	2	1	2	1	3	1	10
WSW	0	0	2	1	0	0	3
W	1	2	0	4	5	0	12
WNW	1	1	2	1	0	0	5
NW	0	0	1	1	0	0	2
NNW	0	3	1	1	0	0	5
Variable	0	0	0	0	0	0	0
Total	5	22	26	31	11	6	101

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)

Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	1	0	0	0	3
NNE	0	2	2	0	2	0	6
NE	0	0	5	2	2	0	9
ENE	0	3	2	2	0	0	7
E	0	1	3	1	0	0	5
ESE	0	3	0	0	2	0	5
SE	0	2	2	0	1	0	5
SSE	0	3	1	3	0	0	7
S	0	3	1	6	1	0	11
SSW	0	1	1	4	2	1	9
SW	0	0	1	1	6	2	10
WSW	0	0	1	2	0	0	3
W	0	1	0	5	3	0	9
WNW	0	2	3	2	2	0	9
NW	0	0	4	3	0	0	7
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	1	22	27	31	21	3	105

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	4	3	1	0	12
NNE	0	8	19	45	25	5	102
NE	0	10	45	31	17	0	103
ENE	0	14	41	33	2	0	90
E	0	11	12	19	10	4	56
ESE	2	6	7	16	7	2	40
SE	1	4	10	20	13	3	51
SSE	1	5	16	18	3	1	44
S	0	7	15	22	8	4	56
SSW	1	1	6	20	16	12	56
SW	0	4	16	28	14	4	66
WSW	0	2	10	27	5	0	44
W	0	4	8	23	7	0	42
WNW	0	3	21	23	13	8	68
NW	0	5	10	20	4	0	39
NNW	1	5	10	2	0	0	18
Variable	0	0	0	0	0	0	0
Total	6	93	250	350	145	43	887

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011
 Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	6	5	0	0	16
NNE	0	4	13	16	0	0	33
NE	0	5	12	8	2	0	27
ENE	1	4	21	4	1	0	31
E	1	10	39	9	2	1	62
ESE	1	6	11	20	6	1	45
SE	0	8	16	37	7	0	68
SSE	0	4	14	13	6	0	37
S	0	3	25	18	17	1	64
SSW	0	4	9	24	1	12	50
SW	1	1	16	22	0	2	42
WSW	0	2	17	8	1	1	29
W	0	2	20	12	2	1	37
WNW	0	6	11	15	2	0	34
NW	0	5	10	7	0	0	22
NNW	0	4	8	1	0	0	13
Variable	0	0	0	0	0	0	0
Total	4	73	248	219	47	19	610

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011

Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)

Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	2	1	0	0	7
NNE	0	1	2	0	0	0	3
NE	0	2	3	1	0	0	6
ENE	1	1	1	0	0	0	3
E	0	2	7	2	0	0	11
ESE	0	3	2	1	0	0	6
SE	0	1	4	1	0	0	6
SSE	0	2	5	1	0	0	8
S	0	2	7	2	0	0	11
SSW	0	0	1	0	0	0	1
SW	0	3	1	0	0	0	4
WSW	0	1	3	0	0	0	4
W	0	1	5	2	0	0	8
WNW	0	1	10	8	0	0	19
NW	0	2	2	2	0	0	6
NNW	1	2	0	0	0	0	3
Variable	0	1	0	0	0	0	1
Total	2	29	55	21	0	0	107

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: April - June 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	2	0	0	0	6
NNE	1	1	2	0	0	0	4
NE	0	2	2	1	0	0	5
ENE	0	0	1	0	0	0	1
E	1	0	1	0	0	0	2
ESE	1	3	0	0	0	0	4
SE	0	0	2	0	0	0	2
SSE	0	0	1	1	0	0	2
S	1	5	1	0	0	0	7
SSW	0	2	0	0	0	0	2
SW	0	0	0	0	0	0	0
WSW	0	1	1	0	0	0	2
W	0	1	1	0	0	0	2
WNW	0	1	5	0	0	0	6
NW	1	0	0	1	0	0	2
NNW	1	1	3	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	6	21	22	3	0	0	52

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 27

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	7	3	2	0	0	13
NNE	0	8	16	5	0	0	29
NE	0	16	10	0	0	0	26
ENE	4	13	1	0	0	0	18
E	2	4	0	0	0	0	6
ESE	1	20	0	0	0	0	21
SE	0	17	0	0	0	0	17
SSE	0	27	2	0	0	0	29
S	0	15	14	0	0	0	29
SSW	0	13	16	7	0	0	36
SW	1	11	12	1	0	0	25
WSW	0	13	27	3	0	0	43
W	0	19	13	0	0	0	32
WNW	1	20	4	0	0	0	25
NW	1	22	2	0	0	0	25
NNW	0	25	13	2	0	0	40
Variable	0	0	0	0	0	0	0
Total	11	250	133	20	0	0	414

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	7	10	1	0	0	18
NNE	0	3	4	1	0	0	8
NE	1	4	2	0	0	0	7
ENE	5	6	0	0	0	0	11
E	4	1	0	0	0	0	5
ESE	0	2	0	0	0	0	2
SE	2	6	0	0	0	0	8
SSE	1	9	2	0	0	0	12
S	1	3	1	0	0	0	5
SSW	0	2	2	2	0	0	6
SW	0	3	7	0	0	0	10
WSW	0	2	6	0	0	0	8
W	1	10	1	0	0	0	12
WNW	4	5	0	0	0	0	9
NW	1	5	0	0	0	0	6
NNW	0	6	3	2	0	0	11
Variable	0	0	0	0	0	0	0
Total	20	74	38	6	0	0	138

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	7	5	0	0	0	13
NNE	0	6	3	0	0	0	9
NE	2	4	0	0	0	0	6
ENE	4	2	0	0	0	0	6
E	2	1	0	0	0	0	3
ESE	1	1	0	0	0	0	2
SE	2	1	1	0	0	0	4
SSE	0	4	1	0	0	0	5
S	0	3	2	0	0	0	5
SSW	0	2	1	0	0	0	3
SW	1	2	6	2	0	0	11
WSW	0	3	2	0	0	0	5
W	3	6	2	0	0	0	11
WNW	1	7	1	0	0	0	9
NW	2	5	1	0	0	0	8
NNW	0	12	3	0	1	0	16
Variable	1	0	0	0	0	0	1
Total	20	66	28	2	1	0	117

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	18	9	2	0	0	31
NNE	7	43	15	3	0	0	68
NE	14	20	0	0	0	0	34
ENE	16	15	0	0	0	0	31
E	7	4	0	0	0	0	11
ESE	5	14	1	0	0	0	20
SE	1	18	5	0	0	0	24
SSE	4	19	10	1	0	0	34
S	2	12	19	1	0	0	34
SSW	2	5	25	4	0	0	36
SW	1	13	22	2	0	0	38
WSW	0	13	7	1	0	0	21
W	8	15	2	0	0	0	25
WNW	11	14	3	0	0	0	28
NW	3	12	2	5	0	0	22
NNW	3	40	8	8	0	0	59
Variable	2	0	0	0	0	0	2
Total	88	275	128	27	0	0	518

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	20	26	3	0	0	0	49
NNE	15	22	3	0	0	0	40
NE	27	10	0	0	0	0	37
ENE	51	4	0	0	0	0	55
E	31	4	0	0	0	0	35
ESE	14	29	0	0	0	0	43
SE	13	20	0	0	0	0	33
SSE	8	31	0	0	0	0	39
S	5	40	7	0	0	0	52
SSW	3	14	27	0	0	0	44
SW	1	11	26	0	0	0	38
WSW	6	14	0	0	0	0	20
W	19	11	2	0	0	0	32
WNW	18	2	1	0	0	0	21
NW	17	4	4	0	0	0	25
NNW	13	24	0	0	0	0	37
Variable	0	0	0	0	0	0	0
Total	261	266	73	0	0	0	600

Hours of calm in this stability class: 2
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	18	6	0	0	0	0	24
NNE	11	0	0	0	0	0	11
NE	12	0	0	0	0	0	12
ENE	12	0	0	0	0	0	12
E	27	0	0	0	0	0	27
ESE	16	4	0	0	0	0	20
SE	7	1	0	0	0	0	8
SSE	7	6	0	0	0	0	13
S	4	0	0	0	0	0	4
SSW	7	2	0	0	0	0	9
SW	3	2	0	0	0	0	5
WSW	12	7	0	0	0	0	19
W	26	2	0	0	0	0	28
WNW	15	0	0	0	0	0	15
NW	17	0	0	0	0	0	17
NNW	18	0	0	0	0	0	18
Variable	0	0	0	0	0	0	0
Total	212	30	0	0	0	0	242

Hours of calm in this stability class: 16
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	0	0	0	0	0	7
NNE	6	0	0	0	0	0	6
NE	2	0	0	0	0	0	2
ENE	11	0	0	0	0	0	11
E	9	0	0	0	0	0	9
ESE	7	0	0	0	0	0	7
SE	3	0	0	0	0	0	3
SSE	1	0	0	0	0	0	1
S	2	0	0	0	0	0	2
SSW	1	0	0	0	0	0	1
SW	7	0	0	0	0	0	7
WSW	8	2	0	0	0	0	10
W	20	4	0	0	0	0	24
WNW	6	0	0	0	0	0	6
NW	6	0	0	0	0	0	6
NNW	3	0	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	99	6	0	0	0	0	105

Hours of calm in this stability class: 51
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	5	2	0	0	11
NNE	0	4	7	9	6	0	26
NE	1	8	12	7	0	0	28
ENE	1	14	2	2	0	0	19
E	0	5	0	0	0	0	5
ESE	1	10	10	0	0	0	21
SE	0	14	5	0	0	0	19
SSE	0	14	7	1	0	0	22
S	0	11	13	2	2	0	28
SSW	0	8	21	8	7	0	44
SW	1	5	13	3	0	0	22
WSW	0	4	13	11	0	0	28
W	0	5	25	12	1	0	43
WNW	0	16	11	1	4	0	32
NW	0	10	10	1	0	0	21
NNW	0	18	22	2	3	0	45
Variable	0	0	0	0	0	0	0
Total	4	150	176	61	23	0	414

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011

Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	8	6	1	0	16
NNE	0	3	2	3	1	0	9
NE	0	3	2	2	0	0	7
ENE	3	4	3	0	0	0	10
E	2	2	1	0	0	0	5
ESE	0	1	1	0	0	0	2
SE	0	5	1	0	0	0	6
SSE	0	9	3	2	0	0	14
S	0	3	0	0	0	0	3
SSW	0	4	0	2	1	0	7
SW	0	1	6	3	1	0	11
WSW	0	0	6	2	0	0	8
W	0	4	6	1	0	0	11
WNW	1	8	1	1	0	0	11
NW	0	3	3	0	0	0	6
NNW	1	3	5	2	1	0	12
Variable	0	0	0	0	0	0	0
Total	7	54	48	24	5	0	138

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	6	2	0	0	11
NNE	1	3	3	3	0	0	10
NE	1	2	0	1	0	0	4
ENE	2	4	1	0	0	0	7
E	0	4	0	0	0	0	4
ESE	0	1	1	0	0	0	2
SE	0	0	0	0	1	0	1
SSE	1	3	1	0	1	0	6
S	0	2	2	0	1	0	5
SSW	0	0	0	2	0	0	2
SW	0	2	4	1	2	0	9
WSW	0	2	5	2	0	0	9
W	1	2	0	3	0	0	6
WNW	1	7	3	1	0	0	12
NW	2	4	5	1	0	0	12
NNW	0	6	8	1	1	0	16
Variable	1	0	0	0	0	0	1
Total	10	45	39	17	6	0	117

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	6	8	8	3	0	26
NNE	2	15	12	14	3	0	46
NE	3	16	27	3	0	0	49
ENE	2	20	11	1	0	0	34
E	4	8	3	0	0	0	15
ESE	3	2	7	7	0	0	19
SE	2	3	7	9	1	0	22
SSE	0	8	11	11	1	1	32
S	0	4	10	10	8	0	32
SSW	1	3	5	19	5	0	33
SW	0	4	17	17	2	0	40
WSW	0	2	19	6	0	0	27
W	4	7	6	5	1	0	23
WNW	2	8	11	5	1	2	29
NW	4	6	13	2	1	5	31
NNW	1	8	35	8	7	0	59
Variable	1	0	0	0	0	0	1
Total	30	120	202	125	33	8	518

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	4	27	10	0	0	43
NNE	1	6	18	8	0	0	33
NE	1	10	26	2	0	0	39
ENE	1	30	25	0	0	0	56
E	3	19	27	0	0	0	49
ESE	1	4	17	16	0	0	38
SE	0	12	14	8	0	0	34
SSE	0	6	14	7	0	0	27
S	0	4	32	11	1	0	48
SSW	1	3	21	28	3	0	56
SW	0	4	17	27	2	0	50
WSW	0	4	13	1	0	0	18
W	1	4	11	2	1	0	19
WNW	0	8	16	2	0	1	27
NW	2	6	17	3	2	0	30
NNW	0	10	21	4	0	0	35
Variable	0	0	0	0	0	0	0
Total	13	134	316	129	9	1	602

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	2	24	3	0	0	32
NNE	1	7	9	0	0	0	17
NE	0	3	5	0	0	0	8
ENE	2	9	2	0	0	0	13
E	1	6	11	1	0	0	19
ESE	3	5	2	2	0	0	12
SE	0	7	10	2	0	0	19
SSE	2	4	6	0	0	0	12
S	1	8	5	1	0	0	15
SSW	1	11	5	0	0	0	17
SW	1	8	2	0	0	0	11
WSW	1	7	5	0	0	0	13
W	1	5	10	2	0	0	18
WNW	0	4	13	1	0	0	18
NW	0	9	12	1	0	0	22
NNW	0	6	6	0	0	0	12
Variable	0	0	0	0	0	0	0
Total	17	101	127	13	0	0	258

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: July - September 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	8	6	0	0	0	15
NNE	0	1	5	0	0	0	6
NE	0	1	1	0	0	0	2
ENE	1	4	0	0	0	0	5
E	0	3	0	1	0	0	4
ESE	1	3	7	3	0	0	14
SE	0	4	2	0	0	0	6
SSE	1	8	1	0	0	0	10
S	2	5	0	0	0	0	7
SSW	2	7	0	0	0	0	9
SW	5	12	1	0	0	0	18
WSW	4	9	9	1	0	0	23
W	3	9	8	0	0	0	20
WNW	2	3	0	0	0	0	5
NW	1	3	4	0	0	0	8
NNW	2	1	1	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	25	81	45	5	0	0	156

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	0	0	0	3
NNE	0	0	1	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	2	0	0	0	0	2
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	1	2	0	0	0	3
SSE	0	8	0	0	0	0	8
S	0	4	10	0	0	0	14
SSW	0	1	3	0	0	0	4
SW	0	0	2	0	0	0	2
WSW	0	0	0	1	0	0	1
W	0	1	2	10	0	0	13
WNW	0	7	5	0	0	0	12
NW	0	7	5	0	0	0	12
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	33	33	11	0	0	77

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011

Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)

Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	0	0	0	3
NNE	0	0	1	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	1	6	1	0	0	0	8
SSE	1	1	2	0	0	0	4
S	0	1	8	0	0	0	9
SSW	0	0	5	1	1	1	8
SW	0	1	3	0	0	0	4
WSW	0	2	3	2	0	0	7
W	0	6	4	2	0	0	12
WNW	1	6	2	0	0	0	9
NW	0	3	3	1	0	0	7
NNW	0	4	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	3	33	34	6	1	1	78

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	0	0	0	3
NNE	0	1	1	0	0	0	2
NE	0	0	2	0	0	0	2
ENE	0	0	0	0	0	0	0
E	1	0	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	1	0	0	0	0	1
SSE	0	5	2	0	0	0	7
S	1	2	7	2	2	0	14
SSW	2	2	5	11	0	0	20
SW	0	5	2	1	0	0	8
WSW	1	5	2	0	0	0	8
W	0	6	6	1	0	0	13
WNW	0	3	2	1	0	0	6
NW	1	1	1	0	0	0	3
NNW	0	4	3	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	6	36	35	16	2	0	95

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	26	42	15	4	0	89
NNE	3	17	36	6	1	0	63
NE	5	22	17	4	0	0	48
ENE	2	33	0	0	0	0	35
E	4	5	0	0	0	0	9
ESE	3	2	1	0	0	0	6
SE	1	10	7	2	0	0	20
SSE	2	30	39	1	0	0	72
S	0	11	42	68	11	0	132
SSW	0	12	27	46	14	2	101
SW	0	12	38	9	2	2	63
WSW	3	30	19	0	0	0	52
W	6	21	28	15	0	0	70
WNW	9	31	13	5	0	0	58
NW	7	28	37	0	0	0	72
NNW	3	33	34	17	0	0	87
Variable	0	0	0	0	0	0	0
Total	50	323	380	188	32	4	977

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 9
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	8	1	0	0	0	14
NNE	1	7	3	0	0	0	11
NE	6	10	0	1	0	0	17
ENE	12	10	0	0	0	0	22
E	7	3	0	0	0	0	10
ESE	1	6	0	0	0	0	7
SE	2	23	13	0	0	0	38
SSE	4	57	25	3	0	0	89
S	1	42	59	26	0	0	128
SSW	3	29	37	8	2	0	79
SW	4	29	9	1	0	0	43
WSW	10	53	8	0	0	0	71
W	19	39	22	0	0	0	80
WNW	17	15	2	0	0	0	34
NW	5	16	8	0	0	0	29
NNW	2	14	1	0	0	0	17
Variable	0	0	0	0	0	0	0
Total	99	361	188	39	2	0	689

Hours of calm in this stability class: 2
 Hours of missing wind measurements in this stability class: 3
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	1	1	0	0	0	0	2
NE	2	0	0	0	0	0	2
ENE	5	0	0	0	0	0	5
E	9	0	0	0	0	0	9
ESE	5	6	0	0	0	0	11
SE	8	12	0	0	0	0	20
SSE	4	7	0	0	0	0	11
S	4	0	0	0	0	0	4
SSW	4	5	4	0	0	0	13
SW	3	2	2	0	0	0	7
WSW	9	35	0	0	0	0	44
W	16	8	0	0	0	0	24
WNW	11	0	0	0	0	0	11
NW	4	0	0	0	0	0	4
NNW	4	1	0	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	89	78	6	0	0	0	173

Hours of calm in this stability class: 4
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	1	0	0	0	0	0	1
ENE	1	0	0	0	0	0	1
E	11	0	0	0	0	0	11
ESE	6	2	0	0	0	0	8
SE	13	0	0	0	0	0	13
SSE	2	0	0	0	0	0	2
S	4	1	0	0	0	0	5
SSW	4	4	0	0	0	0	8
SW	3	0	0	0	0	0	3
WSW	3	0	0	0	0	0	3
W	12	0	0	0	0	0	12
WNW	9	0	0	0	0	0	9
NW	4	0	0	0	0	0	4
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	74	7	0	0	0	0	81

Hours of calm in this stability class: 17
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	2	0	0	3
NNE	0	0	0	1	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	2	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	0	2	0	0	2
SSE	0	2	7	0	0	0	9
S	0	1	5	7	0	0	13
SSW	0	1	1	3	0	0	5
SW	0	0	0	2	0	0	2
WSW	0	0	0	0	0	0	0
W	0	0	0	0	2	1	3
WNW	0	4	5	3	10	2	24
NW	0	1	8	3	0	0	12
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	9	30	23	12	3	77

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	2	0	0	0	2
NNE	0	0	0	1	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	1	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	3	3	1	0	0	7
SSE	0	2	1	1	0	0	4
S	0	1	1	5	0	0	7
SSW	0	0	3	6	1	2	12
SW	1	0	1	1	0	0	3
WSW	0	1	2	1	1	0	5
W	0	2	4	3	2	1	12
WNW	0	1	5	2	1	0	9
NW	0	4	2	1	1	0	8
NNW	0	1	4	1	1	0	7
Variable	0	0	0	0	0	0	0
Total	1	15	29	23	7	3	78

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	0	0	0	3
NNE	0	0	1	1	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	0	1	1	0	0	2
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	1	2	3	1	0	0	7
S	2	1	3	5	0	0	11
SSW	0	4	4	3	7	4	22
SW	0	2	1	5	1	0	9
WSW	0	3	4	1	0	0	8
W	0	6	1	2	2	0	11
WNW	0	1	0	2	4	0	7
NW	0	3	3	0	0	0	6
NNW	0	0	4	3	0	0	7
Variable	0	0	0	0	0	0	0
Total	3	22	28	24	14	4	95

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	11	35	29	11	3	89
NNE	0	1	23	17	10	8	59
NE	3	4	15	23	9	1	55
ENE	0	7	24	4	1	0	36
E	0	6	14	0	0	0	20
ESE	2	1	2	1	0	0	6
SE	3	2	5	5	1	1	17
SSE	1	6	13	16	10	0	46
S	0	2	26	32	40	24	124
SSW	0	1	9	30	55	32	127
SW	0	4	27	24	13	10	78
WSW	0	12	19	13	1	1	46
W	2	14	11	20	6	2	55
WNW	0	11	13	19	13	9	65
NW	4	16	21	23	13	0	77
NNW	0	8	30	32	13	3	86
Variable	0	0	0	0	0	0	0
Total	15	106	287	288	196	94	986

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	8	2	0	0	14
NNE	0	3	1	5	1	0	10
NE	1	2	7	2	0	1	13
ENE	1	8	15	0	0	0	24
E	0	1	10	0	0	0	11
ESE	0	0	4	4	0	0	8
SE	0	2	5	14	0	0	21
SSE	0	1	20	30	9	1	61
S	0	1	31	42	39	3	116
SSW	2	3	25	39	35	4	108
SW	0	6	27	22	4	0	59
WSW	1	7	22	18	0	0	48
W	1	9	33	39	7	0	89
WNW	1	8	12	25	1	0	47
NW	0	6	15	11	0	0	32
NNW	0	6	15	11	1	0	33
Variable	0	0	0	0	0	0	0
Total	7	67	250	264	97	9	694

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	0	0	0	1
NNE	0	0	1	1	0	0	2
NE	0	2	0	2	0	0	4
ENE	0	1	3	0	0	0	4
E	0	2	1	0	0	0	3
ESE	0	0	3	2	0	0	5
SE	0	0	9	3	0	0	12
SSE	2	0	8	5	0	0	15
S	0	4	7	1	0	0	12
SSW	0	1	4	0	0	0	5
SW	0	5	3	6	2	0	16
WSW	0	0	2	4	0	0	6
W	0	6	16	25	0	0	47
WNW	1	2	15	1	0	0	19
NW	0	5	12	2	0	0	19
NNW	0	0	6	1	0	0	7
Variable	0	0	0	0	0	0	0
Total	3	28	91	53	2	0	177

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2011
 Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
 Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	0	0	0	3
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	1	1	1	0	0	0	3
E	1	2	0	0	0	0	3
ESE	1	2	1	1	0	0	5
SE	0	1	4	1	0	0	6
SSE	1	2	5	2	0	0	10
S	0	2	8	0	0	0	10
SSW	0	1	4	0	0	0	5
SW	0	2	10	0	0	0	12
WSW	1	1	2	0	0	0	4
W	1	3	0	0	0	0	4
WNW	1	2	3	0	0	0	6
NW	1	1	5	5	0	0	12
NNW	1	3	5	1	0	0	10
Variable	0	0	0	0	0	0	0
Total	9	25	50	10	0	0	94

Hours of calm in this stability class: 4
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

APPENDIX G

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

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Docket No: 50-456
50-457

BRAIDWOOD STATION UNITS 1 and 2

Annual Radiological
Groundwater Protection Program Report

1 January through 31 December 2011

Prepared By

Teledyne Brown Engineering
Environmental Services



Nuclear

Braidwood Station
Braceville, IL 60407

May 2012

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Appendices

Appendix A Location Designation

Tables

Table A-1 Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2011

Figures

Figure A-1 Sampling Locations near the Site Boundary of the Braidwood Station, 2011

Figure A-2 Intermediate Sampling Locations of the Braidwood Station, 2011

Figure A-3 Distant Sampling Locations of the Braidwood Station, 2011

Appendix B Data Tables

Tables

Table B-I.1 Concentrations of Tritium, Strontium, Gross Alpha and Gross Beta in Groundwater Samples Collected in the Vicinity of Braidwood Station, 2011.

Table B-I.2 Concentrations of Gamma Emitters in Groundwater Samples Collected in the Vicinity of Braidwood Station, 2011.

Table B-I.3 Concentrations of Hard-To-Detects in Groundwater Samples Collected in the Vicinity of Braidwood Station, 2011.

Table B-II.1 Concentrations of Tritium and Strontium in Surface Water Samples Collected in the Vicinity of Braidwood Station, 2011.

Table B-II.2 Concentrations of Gamma Emitters in Surface Water Samples Collected in the Vicinity of Braidwood Station, 2011.

I. Summary and Conclusions

In 2011, Exelon continued a comprehensive program that evaluates the impact of station operations on groundwater and surface water in the vicinity of Braidwood Station. This evaluation involved numerous station personnel and contractor support personnel. This report covers groundwater and surface water samples, collected from the environment, both on and off station property in 2011. During that time period, 839 analyses were performed on 538 samples from 168 locations.

In assessing all the data gathered for this report, it was concluded that the operation of Braidwood Station had no adverse radiological impact on the environment.

Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective Lower Limits of Detection (LLDs) as specified in the Offsite Dose Calculation Manual (ODCM) in any of the groundwater or surface water samples. In the case of tritium, Exelon specified that its laboratories achieve a lower limit of detection 10 times less than Braidwood's ODCM and 100 times less than federal regulation.

Strontium-89/90 was not detected at a concentration greater than the LLD of 1.0 picoCuries per liter (pCi/L) in any of the groundwater or surface water samples tested.

No tritium was detected in the groundwater or surface water samples at concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L. Low levels of tritium were detected in groundwater and surface water at concentrations greater than the LLD of 200 pCi/L in 159 of 538 analyses. The tritium concentrations ranged from 159 ± 99 pCi/L to $3,800 \pm 429$ pCi/L. The tritium that was detected in the groundwater is believed to be the result of isolated historical releases and/or background from external sources greater than 200 pCi/L.

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater samples throughout the sampling year in 2011. Gross Alpha (dissolved) was detected in four groundwater samples. The concentrations ranged from 0.9 to 8.3 pCi/L. Gross Alpha (suspended) was detected in 6 groundwater samples. The concentrations ranged from 0.9 to 1.9 pCi/L. Gross Beta (dissolved) was detected in 36 groundwater samples. The concentrations ranged from 1.5 to 100 pCi/L. Gross Beta (suspended) was detected in three groundwater samples. The concentrations ranged from 2.5 to 7.6 pCi/L.

Hard-To-Detect analyses were performed on three groundwater samples to establish background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235 and U-238. All hard-to-detect nuclides were not detected at concentrations greater than their

respective MDCs. The isotopes of U-234 and U-238 were detected in one sample affecting 1 of 1 groundwater monitoring locations analyzed. The U-234 concentration was 0.29 pCi/L and the U-238 concentration was 0.19 pCi/L. The levels detected are due to naturally occurring radioactive material in the environment.

II. Introduction

Braidwood Station, a two-unit PWR station, is located in Will County, Illinois, fifteen (15) miles south-southwest of Joliet, Illinois. Each reactor is designed to have a capacity of 3587 thermal megawatts. Units No. 1 went critical on May 29, 1987, and Unit No. 2 went critical on March 8, 1988. The station has been designed to keep releases to the environment at levels below those specified in the regulations.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) and Environmental Inc. Midwest Labs (EIML) on samples collected in 2011.

A. Objective of the RGPP

The long-term objectives of the RGPP are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations to preclude radiological impact to the environment and potential drinking water sources.
2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.
3. Perform routine water sampling and radiological analysis of water from selected locations.
4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
5. Regularly assess analytical results to identify adverse trends.
6. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

The objectives identified have been implemented at Braidwood Station as discussed below:

1. Exelon identified locations to monitor and evaluated potential impacts from station operations.
2. The Braidwood Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.

3. Braidwood Station will continue to perform routine sampling and radiological analysis of water from selected locations.
4. Braidwood Station has implemented procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.
5. Braidwood Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

C. Program Description

1. Sample Collection

Sample locations can be found in Table A-1 and Figures A-1 through A-3, Appendix A.

Groundwater and Surface Water

Samples of groundwater and surface water are collected, managed, transported and analyzed in accordance with EPA methods. Sample locations, sample collection frequencies, and analytical frequencies are managed in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs, as well as nuclear industry audits. Station personnel review and evaluate all analytical data as it is received. Additionally, analytical data results are reviewed by an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium is a radioactive isotope of hydrogen. It's chemical properties are the same as hydrogen. Tritiated water behaves the same as ordinary water in both the environment and the body. Tritiated water can be taken into the body by drinking water, breathing air, eating food, or absorption through the skin. Once tritiated water enters the body, it disperses quickly and is uniformly distributed. Tritiated water is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. With such a short biological half-life, an acute ingestion would be cleared rapidly. Organically bound tritium (tritium that is incorporated into carbon containing compounds) can remain in the body

for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays interact with air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as non tritiated groundwater water.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by Teledyne Brown Engineering (TBE) and Environmental Incorporated Midwest Laboratory (EIML) to analyze the environmental samples for radioactivity for the Braidwood Station RGPP in 2011. In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of gamma emitters in groundwater and surface water.
2. Concentrations of strontium in groundwater and surface water.
3. Concentrations of tritium in groundwater and surface water.
4. Concentrations of Gross Alpha and Gross Beta (Dissolved and Suspended) in groundwater.
5. Concentrations of Am-241 in groundwater.
6. Concentrations of Cm-242 and Cm-243/244 in groundwater.
7. Concentrations of Pu-238 and Pu-239/240 in groundwater.
8. Concentrations of U-234, U-235 and U-238 in groundwater.
9. Concentrations of Fe-55 in groundwater.
10. Concentrations of Ni-63 in groundwater.

B. Data Interpretation

The radiological data collected prior to Braidwood Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Braidwood Station was considered operational at initial criticality. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is specified by federal regulation as a minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus (\pm) the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

Gamma spectroscopy results for each type of sample were grouped as follows:

For groundwater and surface water 14 nuclides, Be-7, K-40, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, I-131, Cs-134, Cs-137, Ba-140 and La-140 were reported.

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-

operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Environmental Radiological Monitoring for Braidwood Nuclear Power Station, Commonwealth Edison Company, Annual Report 1986, May 1987.

At the upstream Kankakee River collection point, BD-25, monthly composites of weekly sample collections from all surface water locations indicated tritium concentrations were not detectable above the LLD (<200 pCi/L). Monthly composites of weekly sample collections from all surface water locations indicate strontium-89, strontium-90, cesium-134 and cesium-137 concentrations were less than their specified LLDs.

Groundwater was collected from one off-site well on a quarterly basis. Gamma isotopic, radiostrontium, and tritium analyses were performed on all samples. Strontium-89, strontium-90, tritium, and gamma emitters were below their respective LLDs.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others.

a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased

significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2011. RadNet provides tritium precipitation concentration data for samples collected at stations through out the U.S. from 1960 up to and including 2011. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations in Midwest precipitation have typically been below 100 pCi/L since around 1980. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Tritium concentrations are routinely measured in large surface water bodies, including Lake Michigan and the Mississippi River. Illinois surface water data were typically less than 100 pCi/L.

The USEPA RadNet surface water data typically has a reported 'Combined Standard Uncertainty' of 35 to 50 pCi/L. According to USEPA, this corresponds to a ± 70 to 100 pCi/L 95% confidence bound on each given measurement. Therefore, the typical background data provided may be subject to measurement uncertainty of approximately ± 70 to

100 pCi/L.

The radio-analytical laboratory is counting tritium results to an Exelon specified LLD of 200 pCi/L. Typically, the lowest positive measurement will be reported within a range of 40 – 240 pCi/L or 140 ± 100 pCi/L. Clearly, these sample results cannot be distinguished as different from background at this concentration.

IV. Results and Discussion

A. Missed Sample

Exelon maintains a Radiological Groundwater Protection Program (RGPP) as part of the nuclear industry's voluntary groundwater protection initiative as described in NEI 07-07. As part of this program, samples are obtained routinely from monitoring wells and surface waters at Braidwood based on the frequencies outlined in station procedures.

According to the Station RGPP, MW-6, MW-BW-143D, MW-BW-162D, MW-BW-201S, and MW-BW-2071 were designated as detection wells. The station RGPP requires the wells designated as detection wells to be sampled and analyzed for tritium on a quarterly basis. The aforementioned wells were not sampled during one or more of the quarters in 2011. Reasons for lack of sampling include well condition deficiencies, low well production, and frozen water preventing sampling.

The Station RGPP also requires designated detection wells be analyzed for gamma-radionuclides, gross-alpha and beta, and strontium 89/90 on an annual basis. MW-BW-162D did not have these analyses performed during 2011. The sample is pulled on an annual periodicity and the sample was not able to be obtained for the requisite analyses.

B. Groundwater Results

Groundwater

Samples were collected from on and off-site wells throughout the year in accordance with the Station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from all locations were analyzed for tritium activity. Tritium values ranged from the detection limit to 3,800 pCi/l. Some contamination still exists and monitoring is ongoing (Table B-I.1, Appendix B).

Strontium

Strontium-90 was analyzed for in 47 samples and was less than the required detection limit of 1.0 pCi/liter (Table B-I.1, Appendix B).

Gross Alpha and Beta (dissolved and suspended)

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater samples throughout the sampling year in 2011. Gross Alpha (dissolved) was detected in four groundwater samples. The concentrations ranged from 0.9 to 8.3 pCi/L. Gross Alpha (suspended) was detected in 6 groundwater samples. The concentrations ranged from 0.9 to 1.9 pCi/L. Gross Beta (dissolved) was detected in 36 groundwater samples. The concentrations ranged from 1.5 to 100 pCi/L. Gross Beta (suspended) was detected in three groundwater samples. The concentrations ranged from 2.5 to 7.6 pCi/L (Table B-I.1, Appendix B).

Hard-To-Detect

Hard-To-Detect analyses were performed on three groundwater samples to establish background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235 and U-238. None of hard-to-detect nuclides were detected at concentrations greater than their respective MDCs with the exception of U-234 and U-238 affecting one groundwater monitoring location analyzed. The U-234 concentration was 0.29 pCi/L and the U-238 concentration was 0.19 pCi/L. The levels detected are considered background (Table B-I.3, Appendix B).

Gamma Emitters

Naturally occurring K-40 was detected in 4 samples. The concentrations ranged from 50 to 86 pCi/L. No other gamma emitting nuclides were detected in any of the samples analyzed. (Table B-I.2, Appendix B)

C. Surface Water Results

Surface Water

Samples were collected from thirteen surface water locations throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from all locations were analyzed for tritium activity (Table B-II.1, Appendix B). Tritium values ranged from the minimum detection limit to 428 pCi/l.

Strontium

Strontium-90 was analyzed in one sample and was less than the required detection limit of 1.0 pCi/liter (Table B-II.1, Appendix B).

Gamma Emitters

Naturally occurring K-40 was detected in 2 samples. The concentrations ranged from 47 to 53 pCi/L. No other gamma emitting nuclides were detected in any of the samples analyzed. (Table B-II.2, Appendix B)

D. Drinking Water Well Survey

Drinking water wells near Braidwood Station were sampled weekly, monthly or quarterly in 2011.

E. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE are presented in the AREOR.

F. Leaks, Spills, and Releases

Previously identified contaminated groundwater plumes are being addressed by the Braidwood Station tritium remediation activities.

There were no liquid leaks, spills, or releases in 2011 that affected groundwater.

G. Trends and Analyses

Monitoring of remediation activities indicate that tritium concentrations in affected areas are trending down.

H. Investigations

Investigation of historic spills and the groundwater contamination has resulted in groundwater remediation activities at Braidwood Station.

I. Actions Taken

1. Compensatory Actions

All Circulating Water Blowdown valve vaults were coated to prevent any leakage of water from the vaults to the groundwater. A remote leakage detection system has been installed which provides continuous monitoring of the vaults. Operations procedures are in place for actions to take in the event the leak detection system alarms. Walkdowns of the Circulating Water Blowdown pipeline and vaults were performed weekly.

2. Installation of Monitoring Wells

Exelon has installed a permanent monitoring well network that ensures that ground water will be appropriately monitored around the plant and at the various remediation sites. Monitoring well locations were based on contamination source, ground flow direction, and source concentration. Some monitoring points are not primarily used for sampling but rather to measure ground water elevation. Water elevation is used extensively around active remediation sites to verify that ground water is still flowing toward remediation wells.

3. Actions to Recover/Reverse Plumes

Vacuum Breaker 1 area: Three remediation wells have been installed in this area to remove contaminated ground water. Monitoring of this activity indicates the remediation is proceeding acceptably.

Vacuum Breaker 2 area: Two remediation wells have been installed in this area to remove contaminated ground water. These wells, which became operational in 2008, discharge to the Exelon Pond. The wells are in place to remediate a previously identified contamination plume and were not installed to remediate contamination from a new spill.

Vacuum Breakers 4, 6, & 7: Monitoring wells have been installed within and down gradient of these plumes which originated from

vacuum breaker valves along the blowdown line. These sites are being remediated by monitored natural attenuation.

Exelon Pond area: The combination of groundwater sample monitoring and water level monitoring ensures that the active remedial pumping of Exelon Pond continues to capture the tritium that spilled from vacuum breakers 2 and 3 almost ten years ago. Monitoring to date has shown marked reduction in the most contaminated area and the station continues to monitor plume capture to determine whether adjustments are needed in the pumping rate.

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APPENDIX A

LOCATION DESIGNATION

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TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2011

Station Code	Sample Description
BL-03	Monitoring Well
BL-06	Monitoring Well
BL-06D	Monitoring Well
BL-09D	Monitoring Well
BL-10D	Monitoring Well
BL-11	Monitoring Well
BL-11D	Monitoring Well
BL-12D	Monitoring Well
BL-13D	Monitoring Well
BL-14D	Monitoring Well
BL-15D	Monitoring Well
BL-16D	Monitoring Well
BL-17D	Monitoring Well
BL-18D	Monitoring Well
BL-19R	Monitoring Well
BL-20D	Monitoring Well
BL-21	Monitoring Well
BL-22	Monitoring Well
BL-23	Monitoring Well
BL-24	Monitoring Well
BL-25	Monitoring Well
BL-26	Monitoring Well
BL-27	Monitoring Well
C-1D	Monitoring Well
C-2D	Monitoring Well
CD-1D	Monitoring Well
D-1D	Monitoring Well
D-2D	Monitoring Well
D-3D	Monitoring Well
DITCH (DS-2)	Surface Water
EXELON POND	Surface Water
F-1D	Monitoring Well
F-3D	Monitoring Well
F-4D	Monitoring Well
F-5D	Monitoring Well
F-6D	Monitoring Well
F-7D	Monitoring Well
F-8D	Monitoring Well
F-9D	Monitoring Well
FATLAN POND	Surface Water
G-2	Monitoring Well
G-2D	Monitoring Well
G-3	Monitoring Well
G-4S	Monitoring Well
G-5S	Monitoring Well
G-6S	Monitoring Well
H-DITCH	Surface Water
MW-102R	Monitoring Well
MW-103	Monitoring Well
MW-105	Monitoring Well
MW-105D	Monitoring Well

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2011

Station Code	Sample Description
MW-106D	Monitoring Well
MW-109D	Monitoring Well
MW-11	Monitoring Well
MW-110	Monitoring Well
MW-111DR	Monitoring Well
MW-112D	Monitoring Well
MW-113	Monitoring Well
MW-113DR	Monitoring Well
MW-13	Monitoring Well
MW-130D	Monitoring Well
MW-131D	Monitoring Well
MW-132D	Monitoring Well
MW-133D	Monitoring Well
MW-134D	Monitoring Well
MW-135D	Monitoring Well
MW-136D	Monitoring Well
MW-137D	Monitoring Well
MW-138D	Monitoring Well
MW-139D	Monitoring Well
MW-14	Monitoring Well
MW-140D	Monitoring Well
MW-141D	Monitoring Well
MW-142D	Monitoring Well
MW-143D	Monitoring Well
MW-144D	Monitoring Well
MW-145D	Monitoring Well
MW-148D	Monitoring Well
MW-149D	Monitoring Well
MW-150	Monitoring Well
MW-150D	Monitoring Well
MW-151D	Monitoring Well
MW-154	Monitoring Well
MW-155	Monitoring Well
MW-156	Monitoring Well
MW-157D	Monitoring Well
MW-158D	Monitoring Well
MW-159D	Monitoring Well
MW-160D	Monitoring Well
MW-161D	Monitoring Well
MW-162D	Monitoring Well
MW-2	Monitoring Well
MW-22	Monitoring Well
MW-4	Monitoring Well
MW-5	Monitoring Well
MW-6	Monitoring Well
MW-7	Monitoring Well
MW-9	Monitoring Well
MW-BW-201BD	Monitoring Well
MW-BW-201I	Monitoring Well

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2011

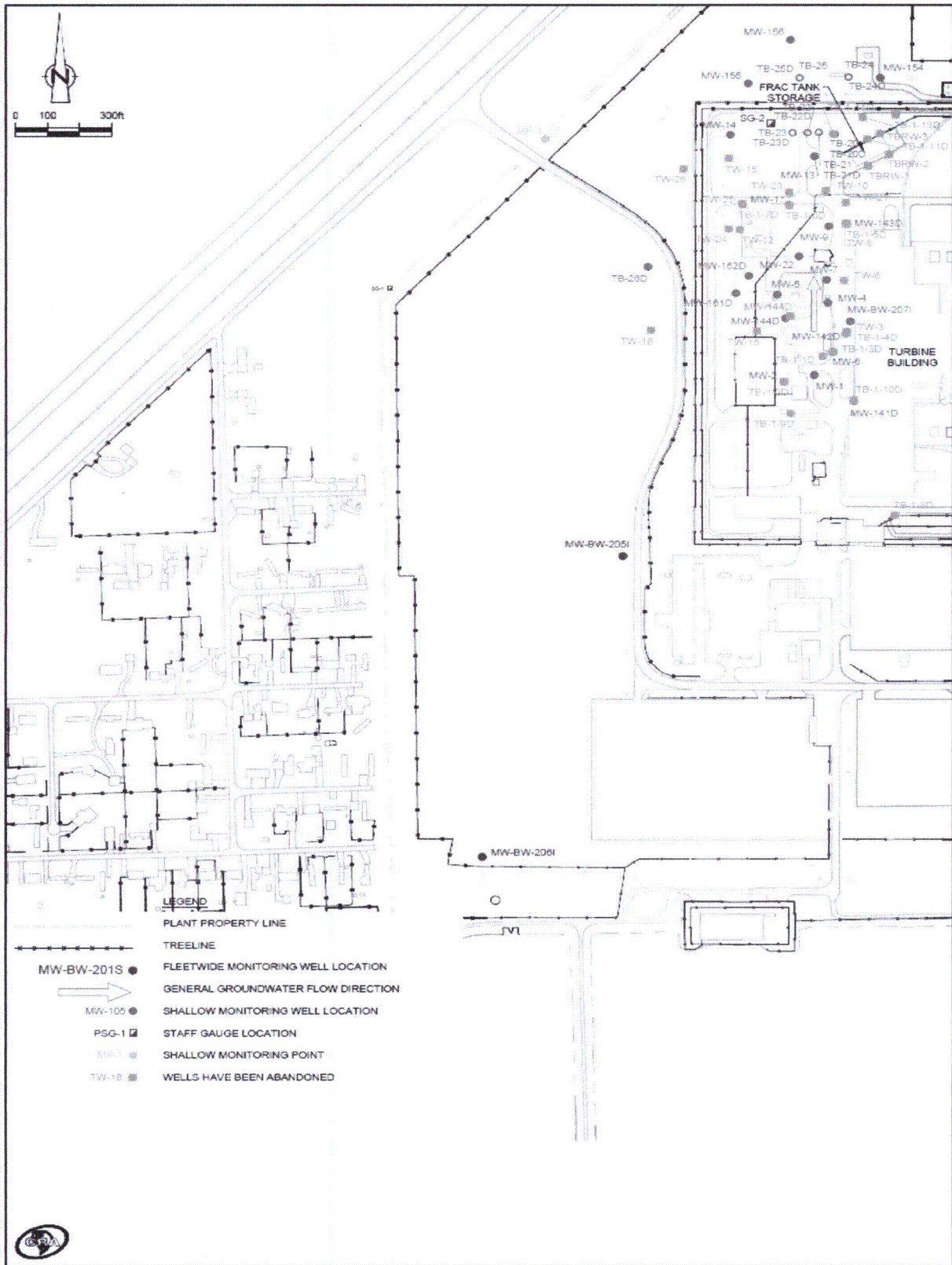
Station Code	Sample Description
MW-BW-201S	Monitoring Well
MW-BW-202I	Monitoring Well
MW-BW-202S	Monitoring Well
MW-BW-203I	Monitoring Well
MW-BW-203S	Monitoring Well
MW-BW-204I	Monitoring Well
MW-BW-205I	Monitoring Well
MW-BW-206I	Monitoring Well
MW-BW-207I	Monitoring Well
MW-BW-208BD	Monitoring Well
P-2D	Monitoring Well
P-4D	Monitoring Well
P-5D	Monitoring Well
P-13D	Monitoring Well
P-14D	Monitoring Well
PW-001	Monitoring Well
PW-002	Monitoring Well
PW-003	Monitoring Well
PW-004	Monitoring Well
PW-005	Monitoring Well
PW-006	Monitoring Well
PW-007	Monitoring Well
PW-008	Monitoring Well
PW-009	Monitoring Well
PW-006A	Monitoring Well
PW-006B	Monitoring Well
PW-006P	Surface Water
PW-011	Monitoring Well
PW-013	Monitoring Well
PW-014	Monitoring Well
PW-015	Monitoring Well
PW-016	Monitoring Well
PW-018	Monitoring Well
PW-485	Monitoring Well
PW-ALLISON	Monitoring Well
PWG-060	Monitoring Well
PWG-060-POND	Surface Water
PWN-115	Monitoring Well
PW-604	Monitoring Well
RW-10	Monitoring Well
RW-5	Monitoring Well
RW-6	Monitoring Well
RW-7	Monitoring Well
RW-9	Monitoring Well
S-1D	Monitoring Well
S-2D	Monitoring Well
S-4D	Monitoring Well
S-7D	Monitoring Well
S-8DR	Monitoring Well

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2011

Station Code	Sample Description
SC-1D	Monitoring Well
SC-2D	Monitoring Well
SG-BW-103	Surface Water
SG-BW-105	Surface Water
SG-BW-106	Surface Water
STARK POND	Surface Water
STARK SPIGOT	Monitoring Well
SW-05	Surface Water
SW-101	Surface Water
SW-102 POINT C	Surface Water
SW-103	Surface Water
SW-104 A DITCH	Surface Water
TB-20	Monitoring Well
TB-20D	Monitoring Well
TB-21	Monitoring Well
TB-21D	Monitoring Well
TB-22	Monitoring Well
TB-22D	Monitoring Well
TB-23	Monitoring Well
TB-23D	Monitoring Well
TB-24	Monitoring Well
TB-24D	Monitoring Well
TB-25	Monitoring Well
TB-25D	Monitoring Well
VB10-1	Monitoring Well
VB1-1	Monitoring Well
VB1-1D	Monitoring Well
VB1-10D	Monitoring Well
VB11-1	Monitoring Well
VB1-11D	Monitoring Well
VB1-12D	Monitoring Well
VB1-2D	Monitoring Well
VB1-3D	Monitoring Well
VB1-4D	Monitoring Well
VB1-5D	Monitoring Well
VB1-6D	Monitoring Well
VB1-7D	Monitoring Well
VB1-8D	Monitoring Well
VB1-9D	Monitoring Well
VB2-10	Monitoring Well
VB2-10D	Monitoring Well
VB2-11	Monitoring Well
VB2-11D	Monitoring Well
VB2-12	Monitoring Well
VB2-12D	Monitoring Well
VB2-13	Monitoring Well
VB2-13D	Monitoring Well
VB2-14	Monitoring Well
VB2-14D	Monitoring Well

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2011

Station Code	Sample Description
VB2-15D	Monitoring Well
VB2-16	Monitoring Well
VB2-16D	Monitoring Well
VB2-17	Monitoring Well
VB2-17D	Monitoring Well
VB2-2D	Monitoring Well
VB2-5D	Monitoring Well
VB2-6D	Monitoring Well
VB2-7D	Monitoring Well
VB2-9	Monitoring Well
VB2-9D	Monitoring Well
VB2-10D	Monitoring Well
VB3-10D	Monitoring Well
VB3-2	Monitoring Well
VB3-4D	Monitoring Well
VB3-7D	Monitoring Well
VB3-9D	Monitoring Well
VB4-1	Monitoring Well
VB4-5D	Monitoring Well
VB4-6D	Monitoring Well
VB5-2	Monitoring Well
VB6-1	Monitoring Well
VB7-1	Monitoring Well
VB8-2R	Monitoring Well
VB9-1	Monitoring Well
WCFPD-1D	Monitoring Well
WCFPD-2DR	Monitoring Well
WDFPD-1D	Monitoring Well
WDFPD-2DR	Monitoring Well
WELL D-1D	Monitoring Well



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Figure A-1
 Sampling Locations near the Site Boundary of Braidwood Station, 2011
 A-6

Figure A-2
Sampling Locations near the Site Boundary of Braidwood Station, 2011
A-7

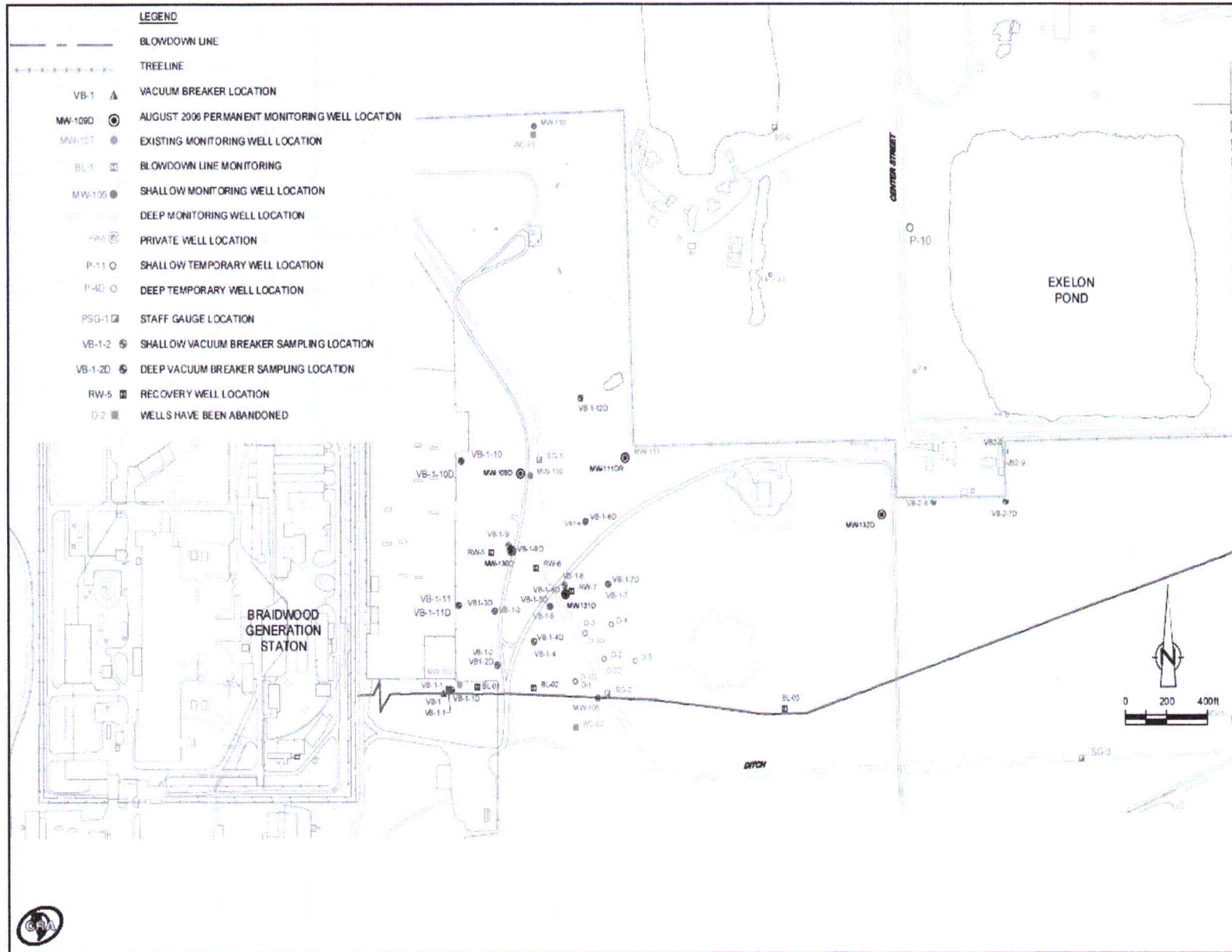
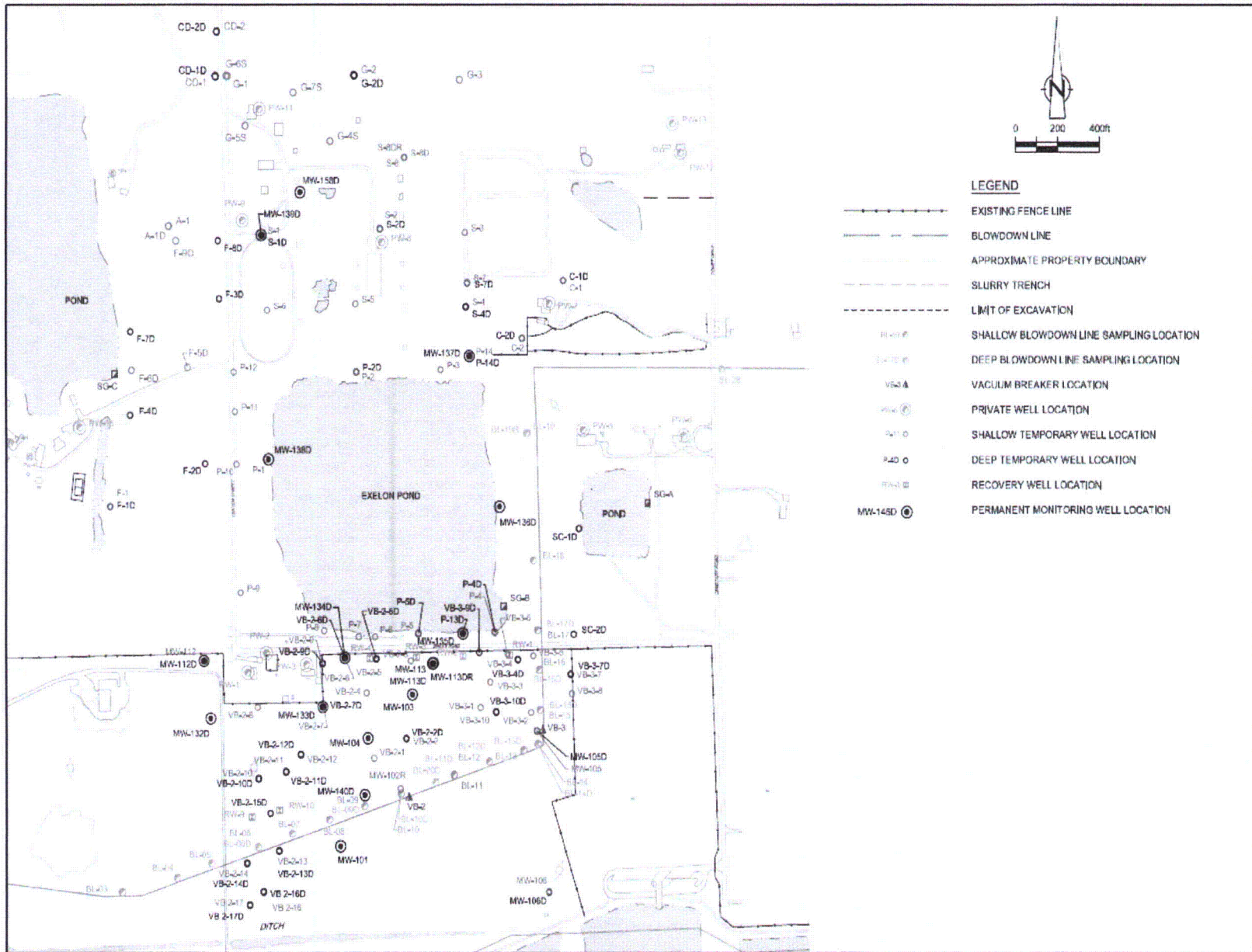


Figure A-3
Distant Sampling Locations of the Braidwood Station, 2011
A-8



APPENDIX B

DATA TABLES

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TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION						
	DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
BL-03	03/16/11	< 166					
BL-03	06/23/11	< 182					
BL-03	09/21/11	< 186					
BL-03	12/13/11	< 174					
BL-06	03/16/11	< 164					
BL-06	06/23/11	< 174					
BL-06D	03/15/11	< 167					
BL-06D	06/23/11	< 175					
BL-09D	06/23/11	< 171					
BL-10D	06/23/11	< 168					
BL-11	03/16/11	< 167					
BL-11	06/23/11	< 185					
BL-11	09/21/11	< 181					
BL-11	12/13/11	< 167					
BL-11D	06/23/11	< 188					
BL-12D	06/23/11	< 185					
BL-13D	06/23/11	< 185					
BL-14D	06/21/11	< 182					
BL-14D	06/24/11	< 187					
BL-15D	06/24/11	< 185					
BL-16D	06/24/11	< 184					
BL-17D	06/24/11	< 187					
BL-19R	03/16/11	< 173					
BL-19R	06/21/11	< 174					
BL-19R	09/21/11	< 185					
BL-19R	12/14/11	< 185					
BL-20D	06/23/11	< 187					
BL-21	03/16/11	< 167					
BL-21	06/21/11	< 177					
BL-21	09/21/11	< 181					
BL-21	12/13/11	< 165					
BL-22	03/15/11	< 169					
BL-22	06/20/11	< 172					
BL-22	09/19/11	< 186					
BL-22	12/15/11	< 174					
BL-23	03/15/11	< 169					
BL-23	06/20/11	< 171					
BL-23	09/19/11	< 179					
BL-23	12/13/11	< 167					
BL-24	03/15/11	< 168					
BL-24	06/20/11	< 173					
BL-24	09/19/11	< 182					
BL-24	12/13/11	< 198					
BL-25	03/15/11	< 167					
BL-25	09/19/11	< 177					
BL-25	12/15/11	< 167					
BL-26	03/15/11	< 168					
BL-26	06/20/11	< 171					
BL-26	09/19/11	< 181					
BL-26	12/12/11	< 194					
BL-27	03/15/11	< 167					
BL-27	06/20/11	< 172					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
	DATE							
BL-27	09/19/11		< 181					
BL-27	12/13/11		< 197					
C-1D	06/23/11		< 191					
C-2D	06/23/11		< 188					
CD-1D	06/22/11		< 176					
D-2D	06/23/11		< 177					
D-3D	06/23/11		< 181					
F-1D	06/21/11		< 181					
F-3D	06/23/11		< 191					
F-5D	01/11/11		415 \pm 134					
F-5D	02/11/11		609 \pm 127					
F-5D	03/14/11		616 \pm 136					
F-5D	04/13/11		594 \pm 141					
F-5D	05/09/11		657 \pm 143					
F-5D	06/21/11		577 \pm 145					
F-5D	07/22/11		574 \pm 141					
F-5D	08/16/11		519 \pm 136					
F-5D	09/21/11		527 \pm 141					
F-5D	10/19/11		615 \pm 148					
F-5D	11/22/11		675 \pm 143					
F-5D	12/14/11		529 \pm 141					
F-6D	01/11/11		< 183					
F-6D	02/11/11		< 162					
F-6D	03/16/11		< 167					
F-6D	04/13/11		< 177					
F-6D	05/09/11		< 170					
F-6D	06/21/11		< 179					
F-6D	07/22/11		< 184					
F-6D	08/16/11		< 179					
F-6D	09/21/11		< 186					
F-6D	10/19/11		< 189					
F-6D	11/22/11		< 177					
F-6D	12/13/11		< 196					
F-7D	06/21/11		315 \pm 130					
F-7D	12/13/11		190 \pm 111					
F-8D	06/23/11		240 \pm 126					
F-8D	12/14/11		352 \pm 134					
F-9D	01/11/11		392 \pm 131					
F-9D	02/11/11		457 \pm 121					
F-9D	03/16/11		466 \pm 128					
F-9D	04/13/11		475 \pm 137					
F-9D	05/09/11		531 \pm 135					
F-9D	06/21/11		371 \pm 133					
F-9D	07/22/11		300 \pm 128					
F-9D	08/16/11		263 \pm 125					
F-9D	09/22/11		< 198					
F-9D	10/19/11		< 189					
F-9D	11/23/11		< 174					
F-9D	12/13/11		< 200					
G-2D	06/24/11		< 187					
MW-102R	03/16/11		< 167					
MW-102R	06/20/11		< 170					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
	DATE							
MW-102R	09/21/11	< 180						
MW-102R	12/13/11	< 170						
MW-103	03/17/11	< 171						
MW-103	06/24/11	175 \pm 116						
MW-105	03/15/11	< 169						
MW-105	06/24/11	< 188						
MW-105D	06/24/11	< 186						
MW-109D	03/28/11	< 169						
MW-109D	06/27/11	< 189						
MW-109D	11/16/11	< 182	< 0.6	< 0.8	< 0.3	1.5 \pm 0.9	< 1.5	
MW-11	03/09/11	317 \pm 124						
MW-11	06/29/11	782 \pm 143						
MW-11	09/13/11	606 \pm 152						
MW-11	11/09/11	437 \pm 124						
MW-11	12/06/11	274 \pm 129	< 0.8	< 0.8	< 0.5	6.6 \pm 1.2	< 1.7	
MW-110	03/15/11	< 170						
MW-110	06/23/11	< 176						
MW-110	09/22/11	< 188						
MW-110	11/15/11	< 181	< 0.7	< 1.0	< 0.3	18.7 \pm 1.6	< 1.5	
MW-110	12/15/11	< 173						
MW-111DR	03/14/11	< 166						
MW-111DR	06/20/11	< 183						
MW-111DR	09/22/11	< 189						
MW-111DR	11/15/11	< 179	< 0.7	< 0.4	< 0.6	< 0.9	< 1.8	
MW-111DR	12/15/11	< 173						
MW-112D	02/22/11	< 174						
MW-112D	03/15/11	< 170						
MW-112D	06/21/11	< 181						
MW-112D	09/22/11	< 187						
MW-112D	11/15/11	< 182	< 0.7	< 0.9	< 0.6	3.1 \pm 1.1	< 1.8	
MW-112D	12/15/11	< 171						
MW-113	03/17/11	< 171						
MW-113	06/24/11	< 189						
MW-113	09/22/11	< 188						
MW-113	11/30/11	< 181	< 0.7	< 0.5	< 0.6	2.0 \pm 0.8	< 1.8	
MW-113DR	03/16/11	< 172						
MW-113DR	06/24/11	< 173						
MW-13	01/20/11	204 \pm 121						
MW-13	04/28/11	< 172	< 0.8	< 0.6	< 0.9	2.0 \pm 1.0	< 2.0	
MW-13	09/13/11	290 \pm 133						
MW-13	11/09/11	435 \pm 122						
MW-13	12/06/11	289 \pm 130	< 0.7	< 0.6	< 0.5	2.4 \pm 0.9	< 1.7	
MW-130D	03/28/11	169 \pm 110						
MW-130D	11/16/11	< 180	< 0.6	1.1 \pm 0.6	< 0.6	2.9 \pm 1.1	< 1.8	
MW-131D	03/14/11	< 167						
MW-131D	06/20/11	< 171						
MW-131D	09/22/11	< 188						
MW-131D	11/15/11	< 180	< 0.6	< 0.6	< 0.6	4.2 \pm 1.1	< 1.8	
MW-132D	03/15/11	< 169						
MW-132D	06/20/11	< 191						
MW-133D	03/16/11	< 172						
MW-133D	06/24/11	< 190						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
	DATE							
MW-134D	03/16/11	< 168						
MW-134D	06/24/11	< 192						
MW-134D	09/22/11	< 186						
MW-134D	11/23/11	< 177		< 0.6	< 0.4	< 0.6	2.4 ± 0.7	< 1.6
MW-135D	03/16/11	< 165						
MW-135D	06/22/11	< 174						
MW-135D	09/22/11	< 189						
MW-135D	11/22/11	< 178		< 0.5	< 0.8	< 0.6	< 1.4	< 1.6
MW-135D	12/14/11	< 170						
MW-136D	03/16/11	< 168						
MW-136D	06/22/11	< 173						
MW-136D	09/22/11	< 185						
MW-136D	11/22/11	< 181		< 0.6	< 0.8	< 0.6	2.6 ± 0.9	< 1.6
MW-136D	12/14/11	< 186						
MW-137D	06/23/11	< 172						
MW-137D	11/22/11	< 178		< 0.6	< 0.8	< 0.9	2.4 ± 1.0	< 2.1
MW-138D	03/16/11	< 169						
MW-138D	06/22/11	< 170						
MW-138D	09/22/11	< 183						
MW-138D	11/22/11	< 181		< 0.6	< 1.1	< 0.6	8.2 ± 1.3	< 1.6
MW-138D	12/14/11	< 170						
MW-139D	03/14/11	< 173						
MW-139D	06/21/11	< 181						
MW-139D	09/22/11	< 188						
MW-139D	11/22/11	< 177		< 0.6	0.9 ± 0.5	< 0.5	19.1 ± 1.5	< 1.6
MW-139D	12/14/11	< 163						
MW-14	03/09/11	274 ± 119						
MW-14	09/13/11	318 ± 137						
MW-14	11/09/11	340 ± 118						
MW-14	12/06/11	298 ± 130						
MW-140D	03/15/11	< 168						
MW-140D	06/21/11	< 182						
MW-141D	03/09/11	315 ± 122						
MW-141D	06/29/11	329 ± 120						
MW-141D	09/12/11	892 ± 144						
MW-141D	11/10/11	1120 ± 164						
MW-141D	12/02/11	1280 ± 196		< 0.8	< 3.4	< 3.6	100 ± 7.5	7.6 ± 2.9
MW-142D	01/18/11	1160 ± 174						
MW-142D	04/28/11	1370 ± 194		< 0.8	< 13.2	< 2.0	66.4 ± 12.6	< 7.9
MW-142D	09/12/11	1710 ± 219						
MW-142D	11/10/11	1740 ± 219						
MW-142D	12/02/11	1290 ± 197		< 0.6	< 9.5	< 3.5	59.3 ± 7.9	< 4.3
MW-143D	09/14/11	< 195						
MW-143D	11/07/11	238 ± 129						
MW-143D	12/01/11	< 191		< 0.6	< 0.5	< 0.3	9.5 ± 0.9	< 1.5
MW-144D	03/10/11	3800 ± 429						
MW-144D	06/29/11	2600 ± 307		< 0.7				
MW-144D	09/13/11	3350 ± 389						
MW-144D	11/07/11	3430 ± 395						
MW-144D	12/01/11	2940 ± 354		< 0.7	< 0.6	< 0.3	5.6 ± 0.9	< 1.5
MW-145D	03/16/11	666 ± 138						
MW-145D	06/22/11	< 180						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION						
	DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-145D	09/21/11	181 \pm 118					
MW-145D	11/23/11	387 \pm 128	< 0.7	< 0.5	< 0.5	< 1.4	< 1.6
MW-145D	12/13/11	< 198					
MW-154	03/10/11	197 \pm 123					
MW-154	11/16/11	221 \pm 128					
MW-155	03/10/11	186 \pm 121					
MW-155	11/16/11	< 191					
MW-157D	03/16/11	< 171					
MW-157D	06/22/11	< 179					
MW-157D	09/21/11	< 179					
MW-157D	12/13/11	< 191					
MW-158D	01/11/11	< 187					
MW-158D	02/11/11	< 160					
MW-158D	03/14/11	< 173					
MW-158D	04/13/11	< 176					
MW-158D	05/09/11	< 170					
MW-158D	06/21/11	< 174					
MW-158D	07/22/11	< 186					
MW-158D	08/16/11	< 193					
MW-158D	09/21/11	< 186					
MW-158D	10/19/11	< 185					
MW-158D	11/22/11	< 175	< 0.6	< 0.4	< 0.5	12.5 \pm 1.2	< 1.6
MW-158D	12/14/11	< 179					
MW-159D	03/09/11	< 171					
MW-159D	12/05/11	< 191					
MW-160D	06/24/11	297 \pm 131					
MW-161D	01/13/11	1030 \pm 163					
MW-161D	04/28/11	814 \pm 147	< 0.9	< 0.9	< 0.9	6.3 \pm 1.4	< 2.0
MW-161D	09/14/11	709 \pm 160					
MW-161D	11/10/11	565 \pm 131					
MW-161D	12/07/11	514 \pm 140	< 0.7	< 1.0	< 0.7	5.4 \pm 1.2	< 1.7
MW-162D	02/23/11	904 \pm 152					
MW-162D	09/14/11	877 \pm 166					
MW-162D	11/10/11	780 \pm 139					
MW-2	03/09/11	855 \pm 148					
MW-2	05/23/11	1330 \pm 198	< 0.7				
MW-2	08/18/11	1340 \pm 187					
MW-2	11/10/11	1370 \pm 185					
MW-2	12/05/11	918 \pm 160	< 0.8	2.0 \pm 0.7	< 0.8	3.7 \pm 0.9	< 1.6
MW-22	02/23/11	852 \pm 149					
MW-22	06/29/11	866 \pm 168	< 0.7				
MW-22	09/13/11	1060 \pm 173					
MW-22	11/09/11	1180 \pm 170					
MW-22	12/05/11	898 \pm 161	< 0.6	< 2.4	1.2 \pm 0.7	8.6 \pm 1.6	< 1.6
MW-4	01/13/11	1740 \pm 237					
MW-4	04/28/11	1360 \pm 194	< 0.9	< 3.9	< 0.4	4.4 \pm 1.8	< 2.1
MW-4	08/18/11	1790 \pm 241					
MW-4	11/10/11	1080 \pm 160					
MW-4	12/02/11	967 \pm 164	< 0.6	< 0.9	< 0.8	4.3 \pm 1.1	< 1.6
MW-5	02/23/11	1120 \pm 171					
MW-5	05/16/11	1130 \pm 168	< 0.7				
MW-5	09/13/11	920 \pm 163					

TABLE B-1.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
	DATE							
MW-5	11/07/11		1040 ± 171					
MW-5	12/01/11		855 ± 156	< 0.6	< 0.7	1.4 ± 0.8	2.4 ± 0.8	2.7 ± 1.3
MW-6	03/09/11		1190 ± 177					
MW-6	06/29/11		1270 ± 181					
MW-6	11/10/11		1490 ± 197					
MW-6	12/01/11		248 ± 125	< 0.6	< 0.6	1.2 ± 0.7	< 1.1	< 1.7
MW-7	01/13/11		1010 ± 163					
MW-7	04/28/11		1050 ± 165	< 0.9	< 2.7	1.9 ± 1.1	5.0 ± 1.8	2.5 ± 1.5
MW-7	09/13/11		1170 ± 182					
MW-7	11/07/11		1040 ± 169					
MW-7	12/01/11		414 ± 136		< 1.6	1.1 ± 0.7	3.0 ± 1.2	< 1.7
MW-7	12/01/11		601 ± 155	< 0.6				
MW-9	02/23/11		408 ± 128					
MW-9	05/16/11		484 ± 140	< 0.5				
MW-9	09/13/11		629 ± 153					
MW-9	11/07/11		507 ± 143					
MW-9	12/01/11		492 ± 138	< 0.6	< 1.4	< 0.5	20.5 ± 1.8	< 1.7
MW-BW-201S	03/10/11		< 177					
MW-BW-201S	09/14/11		277 ± 139					
MW-BW-201S	11/09/11		342 ± 117					
MW-BW-201S	12/05/11		< 200	< 0.7	< 1.1	< 0.6	8.9 ± 1.3	< 1.6
MW-BW-202I	04/28/11		216 ± 117	< 0.7	< 5.0	< 0.4	9.1 ± 2.0	< 2.1
MW-BW-202S	01/20/11		237 ± 120					
MW-BW-202S	05/23/11		197 ± 129	< 0.7				
MW-BW-202S	09/14/11		218 ± 115					
MW-BW-202S	11/09/11		406 ± 123					
MW-BW-202S	12/05/11		232 ± 130	< 0.8	< 3.2	0.9 ± 0.6	12.9 ± 1.8	< 1.5
MW-BW-203S	02/23/11		< 173					
MW-BW-203S	05/23/11		< 184	< 0.6				
MW-BW-203S	09/14/11		< 182					
MW-BW-203S	11/09/11		< 185					
MW-BW-203S	12/06/11		< 190	< 0.6	< 1.8	< 0.6	10.2 ± 1.5	< 1.6
MW-BW-207I	03/10/11		644 ± 140					
MW-BW-207I	09/13/11		554 ± 145					
MW-BW-207I	11/10/11		744 ± 137					
MW-BW-207I	12/02/11		574 ± 148	< 0.6	8.3 ± 5.4	< 2.2	24.9 ± 6.1	< 4.3
P-13D	06/22/11		681 ± 140					
P-13D	12/14/11		704 ± 142					
P-14D	06/21/11		< 177					
P-2D	06/22/11		< 184					
P-2D	11/22/11		< 176					
P-4D	03/16/11		1120 ± 167					
P-4D	04/13/11		1050 ± 168					
P-4D	06/21/11		1080 ± 169					
P-4D	12/14/11		945 ± 154					
P-5D	06/22/11		< 173					
PW-003	01/11/11		< 161					
PW-006	01/11/11		< 187					
PW-006	04/14/11		< 185					
PW-006	06/21/11		< 182					
PW-006	10/19/11		< 188					
PW-006A	10/19/11		< 184					

TABLE B-1.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION						
	DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
PW-006P	04/14/11	< 183					
PW-006P	06/21/11	< 183					
PW-006P	10/19/11	< 183					
PW-011	01/12/11	< 161					
PW-011	04/14/11	< 185					
PW-011	07/22/11	< 181					
PW-011	10/19/11	< 186					
PW-015	06/21/11	< 181					
PW-015	10/19/11	< 186					
PW-016	01/12/11	< 161					
PW-016	04/14/11	< 187					
PW-016	07/22/11	< 184					
PW-016	10/19/11	< 185					
PW-013	01/11/11	< 189					
PW-013	04/14/11	< 187					
PW-013	07/22/11	< 183					
PW-013	10/19/11	< 189					
PW-604	04/13/11	< 184					
PWG-060	09/22/11	< 183					
RW-10	06/22/11	< 184					
RW-5	02/11/11	179 \pm 115					
RW-5	04/21/11	< 181					
RW-5	07/13/11	< 199					
RW-6	04/21/11	754 \pm 154					
RW-6	06/27/11	587 \pm 136					
RW-6	07/13/11	441 \pm 148					
RW-7	04/21/11	< 186					
RW-7	06/23/11	< 183					
RW-9	06/22/11	< 179					
S-1D	01/11/11	< 183					
S-1D	02/11/11	< 161					
S-1D	03/14/11	< 171					
S-1D	04/13/11	251 \pm 126					
S-1D	05/09/11	< 172					
S-1D	06/21/11	< 180					
S-1D	07/22/11	< 181					
S-1D	08/16/11	< 179					
S-1D	10/19/11	239 \pm 127					
S-1D	11/22/11	< 179					
S-1D	12/14/11	< 180					
S-2D	06/21/11	< 179					
S-2D	12/14/11	< 184					
S-4D	06/21/11	< 193					
S-7D	01/11/11	< 188					
S-7D	03/14/11	< 170					
S-7D	04/13/11	< 187					
S-7D	05/09/11	< 172					
S-7D	06/21/11	< 181					
S-7D	07/22/11	< 183					
S-7D	08/18/11	< 181					
S-8DR	01/11/11	< 184					
S-8DR	03/14/11	< 174					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
	DATE							
S-8DR	04/13/11		< 185					
S-8DR	05/09/11		< 174					
S-8DR	06/21/11		< 177					
S-8DR	07/22/11		< 180					
S-8DR	08/18/11		< 180					
SC-1D	06/21/11		< 175					
SC-2D	06/21/11		< 182					
VB10-1	03/15/11		< 165					
VB10-1	06/20/11		< 174					
VB10-1	09/19/11		< 182					
VB10-1	12/12/11		< 195					
VB1-1	01/18/11		< 162					
VB1-1	02/22/11		< 174					
VB1-1	03/16/11		< 167					
VB1-1	04/21/11		< 182					
VB1-1	06/24/11		< 197					
VB1-1	12/13/11		< 171					
VB11-1	03/15/11		< 168					
VB11-1	06/20/11		< 171					
VB11-1	09/19/11		< 178					
VB11-1	12/13/11		< 199					
VB1-12D	03/15/11		< 168					
VB1-12D	06/20/11		< 178					
VB1-1D	01/18/11		< 163					
VB1-1D	04/21/11		< 181					
VB1-6D	06/20/11		< 179					
VB1-7D	06/20/11		< 183					
VB1-8D	06/20/11		< 181					
VB1-9D	03/17/11		1290 \pm 185					
VB1-9D	03/28/11		1640 \pm 211					
VB1-9D	06/24/11		3680 \pm 417					
VB2-10	01/12/11		< 161					
VB2-10	03/16/11		< 164					
VB2-10	04/12/11		< 187					
VB2-10D	01/12/11		< 160					
VB2-10D	03/16/11		< 167					
VB2-10D	04/12/11		< 187					
VB2-10D	06/27/11		< 175					
VB2-11	01/12/11		< 160					
VB2-11	03/16/11		< 164					
VB2-11	04/21/11		< 171					
VB2-11D	01/12/11		< 161					
VB2-11D	03/16/11		< 164					
VB2-11D	04/21/11		< 174					
VB2-11D	06/27/11		< 172					
VB2-12	01/12/11		< 162					
VB2-12	03/16/11		< 164					
VB2-12	04/21/11		< 171					
VB2-12D	01/12/11		< 163					
VB2-12D	03/16/11		< 162					
VB2-12D	04/21/11		< 175					
VB2-12D	06/27/11		< 172					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
	DATE							
VB2-13	03/15/11	<	168					
VB2-13	03/20/11	<	176					
VB2-13D	06/20/11	<	172					
VB2-14	03/15/11	<	166					
VB2-14	06/20/11	<	171					
VB2-14D	03/15/11	<	171					
VB2-14D	06/20/11	<	172					
VB2-15D	03/15/11	<	170					
VB2-15D	06/22/11	<	180					
VB2-16	03/17/11	<	170					
VB2-16	06/23/11	<	190					
VB2-16D	03/17/11	<	169					
VB2-16D	06/23/11	<	191					
VB2-17	03/17/11	<	170					
VB2-17	06/23/11	<	180					
VB2-17D	03/17/11	<	174					
VB2-17D	06/23/11	<	181					
VB2-2D	06/24/11	<	190					
VB2-5D	03/16/11		485 \pm 130					
VB2-5D	06/27/11		346 \pm 123					
VB2-5D	12/15/11		318 \pm 122					
VB2-6D	03/16/11		192 \pm 112					
VB2-6D	06/24/11	<	193					
VB2-6D	11/30/11		197 \pm 119	< 0.7	< 0.4	< 0.5	2.3 \pm 0.8	< 1.6
VB2-7D	06/24/11	<	191					
VB2-9D	03/17/11		1040 \pm 163					
VB2-9D	04/13/11		967 \pm 166					
VB2-9D	06/21/11		501 \pm 139					
VB2-9D	12/15/11	<	171					
VB3-10D	06/24/11	<	172					
VB3-2	03/16/11	<	168					
VB3-2	06/20/11	<	169					
VB3-2	09/21/11	<	180					
VB3-2	12/13/11	<	172					
VB3-4D	06/27/11		381 \pm 127					
VB3-4D	12/15/11		249 \pm 119					
VB3-7D	06/24/11	<	172					
VB3-9D	06/24/11	<	186					
VB4-1	03/16/11	<	173					
VB4-1	06/21/11	<	178					
VB4-1	09/21/11	<	180					
VB4-1	12/15/11	<	172					
VB4-5D	03/16/11	<	172					
VB4-5D	06/23/11	<	192					
VB4-6D	03/16/11		422 \pm 127					
VB4-6D	04/13/11		349 \pm 135					
VB4-6D	06/23/11		408 \pm 137					
VB5-2	03/16/11	<	170					
VB5-2	06/22/11	<	174					
VB5-2	09/19/11	<	182					
VB5-2	12/15/11	<	170					
VB6-1	03/15/11	<	167					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION						
	DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
VB6-1	06/20/11	< 170					
VB6-1	09/19/11	< 181					
VB6-1	12/13/11	< 198					
VB7-1	03/15/11	209 \pm 115					
VB7-1	06/20/11	172 \pm 113					
VB7-1	09/19/11	< 180					
VB7-1	12/13/11	< 200					
VB8-2R	03/15/11	< 168					
VB8-2R	06/20/11	< 170					
VB8-2R	09/19/11	< 180					
VB8-2R	12/12/11	< 194					
VB9-1	03/15/11	< 166					
VB9-1	06/20/11	< 173					
VB9-1	09/19/11	< 177					
VB9-1	12/13/11	< 196					

TABLE B-I.2

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-109D	11/16/11	< 13	< 8	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 29	< 8
MW-11	12/06/11	< 38	< 88	< 4	< 5	< 9	< 4	< 9	< 5	< 7	< 13	< 4	< 4	< 27	< 9
MW-110	11/15/11	< 11	< 7	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 24	< 5
MW-111DR	11/15/11	< 11	< 26	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 22	< 7
MW-112D	11/15/11	< 12	< 21	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 11	< 1	< 1	< 27	< 7
MW-113	11/30/11	< 8	< 6	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 8	< 1	< 1	< 11	< 3
MW-13	04/28/11	< 20	< 43	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 40	< 15
MW-13	12/06/11	< 36	< 67	< 3	< 4	< 9	< 4	< 6	< 4	< 6	< 12	< 3	< 4	< 26	< 8
MW-130D	11/16/11	< 12	< 6	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 30	< 8
MW-131D	11/15/11	< 12	< 20	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 31	< 12
MW-134D	11/23/11	< 8	< 5	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 13	< 1	< 1	< 17	< 5
MW-135D	11/22/11	< 11	< 26	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 22	< 4
MW-136D	11/22/11	< 11	< 8	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 20	< 7
MW-137D	11/22/11	< 9	< 6	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 12	< 1	< 1	< 18	< 4
MW-138D	11/22/11	< 11	< 25	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 22	< 7
MW-139D	11/22/11	< 11	< 8	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 23	< 6
MW-14	12/06/11	< 40	< 42	< 4	< 4	< 9	< 5	< 7	< 5	< 8	< 14	< 4	< 4	< 30	< 9
MW-141D	12/02/11	< 31	86 \pm 47	< 3	< 3	< 7	< 3	< 7	< 4	< 6	< 14	< 3	< 3	< 28	< 11
MW-142D	04/28/11	< 12	63 \pm 35	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 22	< 8
MW-142D	12/02/11	< 28	85 \pm 48	< 3	< 3	< 6	< 3	< 5	< 3	< 5	< 15	< 2	< 3	< 27	< 8
MW-143D	12/01/11	< 27	< 31	< 3	< 3	< 7	< 2	< 5	< 3	< 5	< 14	< 2	< 3	< 26	< 10
MW-144D	06/29/11	< 81	< 20	< 3	< 7	< 28	< 2	< 7	< 8	< 13	(1)	< 2	< 2	(1)	(1)
MW-144D	12/01/11	< 28	< 28	< 3	< 3	< 7	< 3	< 5	< 3	< 5	< 15	< 2	< 3	< 26	< 9
MW-145D	11/23/11	< 12	< 8	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 18	< 1	< 1	< 21	< 7
MW-154	11/16/11	< 12	< 9	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 22	< 5
MW-155	11/16/11	< 16	< 30	< 1	< 1	< 3	< 1	< 2	< 2	< 3	< 10	< 1	< 1	< 27	< 9
MW-158D	11/22/11	< 11	50 \pm 29	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 22	< 6
MW-159D	12/05/11	< 35	< 34	< 4	< 4	< 9	< 3	< 7	< 4	< 7	< 15	< 3	< 4	< 31	< 9

(1) RESULT UNABLE TO BE CALCULATED DUE TO AGE OF SAMPLE AT TIME OF RECEIPT

TABLE B-I.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-161D	04/28/11	< 16	< 38	< 2	< 2	< 5	< 1	< 3	< 2	< 3	< 5	< 1	< 1	< 38	< 15
MW-161D	12/07/11	< 39	< 75	< 4	< 4	< 10	< 3	< 7	< 5	< 8	< 14	< 4	< 4	< 30	< 9
MW-2	05/23/11	< 111	< 34	< 2	< 8	< 42	< 2	< 5	< 11	< 16	(1)	< 2	< 2	(1)	(1)
MW-2	12/05/11	< 41	< 33	< 5	< 4	< 11	< 4	< 8	< 5	< 7	< 15	< 4	< 4	< 28	< 10
MW-22	06/29/11	< 73	< 30	< 2	< 5	< 23	< 2	< 4	< 6	< 11	(1)	< 2	< 2	(1)	(1)
MW-22	12/05/11	< 37	< 33	< 3	< 4	< 8	< 4	< 7	< 4	< 7	< 14	< 4	< 4	< 28	< 9
MW-4	04/28/11	< 21	< 13	< 2	< 2	< 3	< 1	< 3	< 2	< 4	< 9	< 1	< 1	< 33	< 14
MW-4	12/02/11	< 23	< 20	< 2	< 2	< 5	< 2	< 4	< 3	< 5	< 10	< 2	< 2	< 20	< 6
MW-5	05/16/11	< 149	< 33	< 2	< 10	< 54	< 2	< 6	< 11	< 19	(1)	< 2	< 2	(1)	(1)
MW-5	12/01/11	< 20	< 38	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 6
MW-6	12/01/11	< 17	< 16	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 8	< 2	< 2	< 15	< 5
MW-7	04/28/11	< 18	< 12	< 1	< 2	< 4	< 1	< 4	< 1	< 3	< 7	< 1	< 1	< 36	< 15
MW-7	12/01/11	< 19	< 38	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 16	< 5
MW-9	05/16/11	< 143	< 17	< 3	< 10	< 56	< 2	< 6	< 13	< 20	(1)	< 2	< 2	(1)	(1)
MW-9	12/01/11	< 22	< 21	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 7
MW-BW-201S	12/05/11	< 30	< 82	< 3	< 3	< 8	< 3	< 6	< 3	< 6	< 12	< 2	< 4	< 28	< 10
MW-BW-202I	04/28/11	< 26	< 48	< 2	< 2	< 6	< 2	< 3	< 3	< 5	< 11	< 2	< 2	< 53	< 15
MW-BW-202S	05/23/11	< 134	< 16	< 3	< 9	< 44	< 2	< 6	< 11	< 19	(1)	< 2	< 2	(1)	(1)
MW-BW-202S	12/05/11	< 34	< 27	< 4	< 4	< 9	< 3	< 7	< 4	< 7	< 14	< 3	< 4	< 29	< 10
MW-BW-203S	05/23/11	< 132	< 16	< 3	< 10	< 50	< 2	< 6	< 12	< 19	(1)	< 2	< 2	(1)	(1)
MW-BW-203S	12/06/11	< 39	< 70	< 4	< 4	< 11	< 4	< 7	< 5	< 7	< 13	< 3	< 4	< 29	< 9
MW-BW-207I	12/02/11	< 30	< 64	< 3	< 3	< 8	< 3	< 6	< 4	< 6	< 14	< 3	< 3	< 29	< 9
P-2D	11/22/11	< 8	< 5	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 13	< 1	< 1	< 16	< 5
VB2-6D	11/30/11	< 9	< 20	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 9	< 1	< 1	< 12	< 4

(1) RESULT UNABLE TO BE CALCULATED DUE TO AGE OF SAMPLE AT TIME OF RECEIPT

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TABLE B-I.3

CONCENTRATIONS OF HARD-TO-DETECTS IN GROUNDWATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION DATE	AM-241	CM-242	CM-243/244	PU-238	PU-239/240	U-234	U-235	U-238	FE-55	NI-63
MW-13	04/28/11	< 0.04	< 0.07	< 0.08	< 0.05	< 0.11	< 0.04	< 0.05	< 0.05	< 169	< 3.50
MW-145D	11/23/11	< 0.10	< 0.05	< 0.05	< 0.12	< 0.18	0.29 \pm 0.14	< 0.03	0.19 \pm 0.11	< 154	< 4.06
VB2-6D	11/30/11	< 0.11	< 0.08	< 0.12	< 0.15	< 0.10	< 0.10	< 0.07	< 0.07	< 108	< 4.08

TABLE B-II.1 CONCENTRATIONS OF TRITIUM AND STRONTIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		SR-90
	DATE	H-3	
DITCH (DS-2)	03/28/11	< 169	
DITCH (DS-2)	07/13/11	< 191	
DITCH (DS-2)	09/12/11	< 191	
DITCH (DS-2)	11/08/11	< 196	
DITCH (DS-2)	11/30/11	< 182	
EXELON POND	03/15/11	< 167	
EXELON POND	06/22/11	< 174	
EXELON POND	09/12/11	252 \pm 114	
EXELON POND	11/08/11	< 196	
EXELON POND	11/08/11	< 183	
EXELON POND	12/14/11	< 172	
FATLAN POND	06/23/11	< 192	
FATLAN POND	12/13/11	< 197	
H DITCH	08/10/11	363 \pm 135	
H DITCH	11/08/11	< 193	
H DITCH	11/09/11	< 188	
H-DITCH	03/10/11	159 \pm 99	
H-DITCH	04/28/11	417 \pm 129	
H-DITCH	07/13/11	< 167	
H-DITCH	11/08/11	< 159	
PWG-060-POND	09/22/11	< 185	
SG-BW-103	07/13/11	< 191	
SG-BW-105	02/22/11	< 172	
SG-BW-105	06/30/11	< 167	< 0.7
SG-BW-105	08/18/11	< 165	
SG-BW-105	11/08/11	< 190	
SG-BW-105	11/30/11	< 190	
SG-BW-106	01/18/11	< 163	
SG-BW-106	04/21/11	< 187	
SG-BW-106	07/13/11	< 165	
SG-BW-106	08/18/11	< 162	
SG-BW-106	11/08/11	< 190	
SG-BW-106	11/16/11	< 190	
SW-05	04/14/11	< 187	
SW-05	07/22/11	< 179	
SW-05	10/19/11	< 186	
SW-101	01/18/11	315 \pm 115	
SW-101	04/21/11	< 173	
SW-101	07/13/11	< 199	
SW-101	08/18/11	258 \pm 116	
SW-101	11/08/11	< 193	
SW-102	02/22/11	< 174	
SW-102	08/18/11	< 185	
SW-102	11/08/11	< 195	
SW-102	11/30/11	< 194	
SW-103	03/10/11	218 \pm 119	
SW-103	06/30/11	174 \pm 112	
SW-103	08/18/11	367 \pm 120	

TABLE B-II.1 CONCENTRATIONS OF TRITIUM AND STRONTIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
SW-103	11/08/11	226 \pm 130	
SW-103	11/16/11	< 194	
SW-104 A DITCH	01/18/11	< 174	
SW-104 A DITCH	04/21/11	254 \pm 122	
SW-104 A DITCH	08/18/11	428 \pm 123	
SW-104 A DITCH	11/08/11	< 190	
SW-104 A DITCH	11/16/11	< 180	

TABLE B-II.2

**CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2011**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
DITCH (DS-2)	11/30/11	< 11	< 23	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 13	< 4
EXELON POND	11/08/11	< 12	< 7	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 28	< 10
SG-BW-105	06/30/11	< 74	< 32	< 2	< 6	< 25	< 2	< 5	< 7	< 11	(1)	< 2	< 2	(1)	(1)
SG-BW-105	11/30/11	< 23	53 \pm 34	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 14	< 2	< 2	< 24	< 7
SG-BW-106	04/21/11	< 9	< 5	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 11	< 0.5	< 0.5	< 46	< 13
SG-BW-106	11/16/11	< 12	< 21	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 20	< 7
SW-101	04/21/11	< 10	< 16	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 11	< 1	< 1	< 51	< 14
SW-102	11/30/11	< 13	47 \pm 30	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 13	< 4
SW-103	11/16/11	< 12	< 8	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 32	< 9
SW-104	04/21/11	< 8	< 6	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 14	< 1	< 1	< 15	< 4
SW-104	11/16/11	< 13	< 9	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 26	< 9

(1) RESULT UNABLE TO BE CALCULATED DUE TO AGE OF SAMPLE AT TIME OF RECEIPT