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Byron Station, Units 1 and 2
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Subject: 2007 Annual Radiological Environmental Operating Report (AREOR)

In accordance with Technical Specification 5.6.2, "Annual Radiological Environmental Operating Report," we are submitting the Annual Radiological Environmental Operating Report (AREOR) for Byron Station. This report is required to be submitted to the NRC by May 15th of each year. This report contains the results of the radiological environmental and meteorological monitoring programs. The Radioactive Effluent Release Report was submitted under separate cover.

Also included are the results of groundwater monitoring conducted in accordance with Exelon's Radiological Groundwater Protection Program (RGPP), which is a voluntary program implemented in 2006. This information is being reported in accordance with a nuclear industry initiative.

If you have any questions regarding this information, please contact W. Grundmann, Regulatory Assurance Manager, at (815) 406-2800.

Respectfully,



David M. Hoots
Site Vice President
Byron Nuclear Generating Station

DMH/JG/TLH/vym

Attachments: AREOR

Docket No: 50-454
50-455

BYRON NUCLEAR GENERATING STATION UNITS 1 and 2

Annual Radiological
Environmental Operating Report

1 January Through 31 December 2007

Prepared By

Teledyne Brown Engineering
Environmental Services



Nuclear

Byron Nuclear Generating Station
Byron, IL 61010

May 2008

Table Of Contents

I. Summary and Conclusions	1
II. Introduction.....	3
A. Objectives of the REMP	3
B. Implementation of the Objectives	3
III. Program Description.....	3
A. Sample Collection.....	3
B. Sample Analysis	6
C. Data Interpretation.....	6
D. Program Exceptions	7
E. Program Changes	10
IV. Results and Discussion	10
A. Aquatic Environment	10
1. Surface Water	10
2. Ground Water	11
3. Fish	11
4. Sediment.....	12
B. Atmospheric Environment	12
1. Airborne	12
a. Air Particulates	12
b. Airborne Iodine	13
2. Terrestrial.....	13
a. Milk	13
b. Vegetation	13
C. Ambient Gamma Radiation.....	14
D. Land Use Survey.....	14
E. Errata Data	15
F. Summary of Results – Inter-laboratory Comparison Program.....	16

Appendices

Appendix A Radiological Environmental Monitoring Report Summary

Tables

Table A-1 Radiological Environmental Monitoring Program Summary for Byron Nuclear Generating Station, 2007

Appendix B Location Designation, Distance & Direction, and Sample Collection & Analytical Methods

Tables

Table B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Byron Nuclear Generating Station, 2007

Table B-2: Radiological Environmental Monitoring Program - Summary of Sample Collection and Analytical Methods, Byron Nuclear Generating Station, 2007

Figures

Figure B-1: Inner and Outer Ring TLD Locations of the Byron Nuclear Generating Station, 2007

Figure B-2: Onsite Air Sampling Locations of the Byron Nuclear Generating Station, 2007

Figure B-3: Offsite Air Sampling Locations of the Byron Nuclear Generating Station, 2007

Figure B-4: Ingestion and Waterborne Exposure Pathway Sampling Locations of the Byron Nuclear Generating Station, 2007

Appendix C Data Tables and Figures - Primary Laboratory

Tables

Table C-I.1 Concentrations of Gross Beta in Surface Water Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.

Table C-I.2 Concentrations of Tritium in Surface Water Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.

Table C-I.3	Concentrations of Gamma Emitters in Surface Water Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-II.1	Concentrations of Tritium in Ground Water Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-II.2	Concentrations of Gamma Emitters in Ground Water Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-III.1	Concentrations of Gamma Emitters in Fish Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-IV.1	Concentrations of Gamma Emitters in Sediment Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-V.1	Concentrations of Gross Beta in Air Particulate Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-V.2	Monthly and Yearly Mean Values of Gross Beta Concentrations (E-3 pCi/cu meter) in Air Particulate Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-V.3	Concentrations of Gamma Emitters in Air Particulate Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-VI.1	Concentrations of I-131 in Air Iodine Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-VII.1	Concentrations of I-131 in Milk Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-VII.2	Concentrations of Gamma Emitters in Milk Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-VIII.1	Concentrations of Gamma Emitters in Vegetation Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.
Table C-IX.1	Quarterly TLD Results for Byron Nuclear Generating Station, 2007.
Table C-IX.2	Mean Quarterly TLD Results for the Inner Ring, Outer Ring, Other and Control Locations for Byron Nuclear Generating Station, 2007.
Table C-IX.3	Summary of the Ambient Dosimetry Program for Byron Nuclear Generating Station, 2007.

Figures

Figure C-1	Surface Water - Gross Beta – Stations BY-12 and BY-29 (C) Collected in the Vicinity of BNGS, 2000 - 2007.
Figure C-2	Surface Water - Tritium – Stations BY-12 and BY-29 (C) Collected in the Vicinity of BNGS, 2000 - 2007.
Figure C-3	Ground Water - Tritium – Stations BY-14-1 and BY-18 Collected in the Vicinity of BNGS, 2000 - 2007.

- Figure C-4 Ground Water - Tritium – Station BY-32 Collected in the Vicinity of BNGS, 2000 - 2007.
- Figure C-5 Ground Water - Tritium – Station BY-35 and BY-36 Collected in the Vicinity of BNGS, 2000 - 2007.
- Figure C-6 Ground Water - Tritium – Station BY-37 Collected in the Vicinity of BNGS, 2000 - 2007.
- Figure C-7 Air Particulate – Gross Beta – Stations BY-08 (C) and BY-21 Collected in the Vicinity of BNGS, 2000 - 2007.
- Figure C-8 Air Particulate – Gross Beta – Stations BY-22 and BY-23 Collected in the Vicinity of BNGS, 2000 - 2007.
- Figure C-9 Air Particulate – Gross Beta – Station BY-24 Collected in the Vicinity of BNGS, 2000 - 2007.
- Figure C-10 Air Particulate – Gross Beta – Station BY-01 and BY-04 Collected in the Vicinity of BNGS, 2000 - 2007.
- Figure C-11 Air Particulate – Gross Beta – Station BY-06 Collected in the Vicinity of BNGS, 2000 - 2007.

Appendix D Inter-Laboratory Comparison Program
Tables

- Table D-1 Analytics Environmental Radioactivity Cross Check Program
 Teledyne Brown Engineering, 2007
- Table D-2 ERA Environmental Radioactivity Cross Check Program
 Teledyne Brown Engineering, 2007
- Table D-3 DOE's Mixed Analyte Performance Evaluation Program (MAPEP)
 Teledyne Brown Engineering, 2007
- Table D-4 ERA Statistical Summary Proficiency Testing Program
 Environmental, Inc., 2007
- Table D-5 DOE's Mixed Analyte Performance Evaluation Program (MAPEP)
 Environmental, Inc., 2007

Appendix E Effluent Report

Appendix F Meteorological Data

Appendix G Annual Radiological Groundwater Protection Program Report
(ARGPPR)

I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Byron Nuclear Generating Station (BNGS) by Exelon covers the period 1 January 2007 through 31 December 2007. During that time period, 1,454 analyses were performed on 1,293 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of BNGS had no adverse radiological impact on the environment.

Surface water samples were analyzed for concentrations of gross beta, tritium and gamma emitting nuclides. Ground water samples were analyzed for concentrations of tritium and gamma emitting nuclides. Second quarter composite surface water sample from point BY-12, Rock River downstream of the plant liquid effluent discharge, had a tritium result of 964 pCi/L. Although this result is well below the reportable limit of 30,000 pCi/L, tritium is not typically observed above the detection limit in this sample under normal operating conditions. The positive tritium result was likely due to the increase in liquid releases performed during the refueling outage in March/April 2007. Gross beta 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. Cesium-137 activity was found at both sediment locations and was consistent with data from previous years. No plant produced fission or activation products were found in fish or 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 activity.

Cow milk samples were analyzed for concentrations of I-131 and gamma emitting nuclides. All I-131 results were below the minimum detectable activity. No fission or activation products were found.

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

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

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II. Introduction

Byron Station, a two-unit PWR station, is located about two miles east of the Rock River and approximately three miles southwest of Byron in Ogle County, Illinois. The reactors are designed to have capacities of 1280 and 1254 MW gross, respectively. Unit One loaded fuel in November 1984 and went on line February 2, 1985. Unit Two went on line January 9, 1987. 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 Global Dosimetry on samples collected during the period 1 January 2007 through 31 December 2007.

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 BNGS REMP were collected for Exelon Nuclear by Environmental Inc. (Midwest Labs). This section describes the general

collection methods used by Environmental Inc. to obtain environmental samples for the BNGS REMP in 2007. Sample locations and descriptions can be found in Tables B-1 and Figures B-1 through B-4, Appendix B.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, well water, fish, and sediment. Two gallon water samples were collected weekly from two surface water locations (BY-12 and BY-29 [Control location]) and quarterly from six well water locations (BY-14-1, BY-18, BY-32, BY-35, BY-36 and BY-37). All samples were collected in new unused plastic bottles, which were rinsed with source water prior to collection. Fish samples comprising the flesh of channel catfish, river carpsucker, freshwater drum and silver redhorse were collected semiannually at two locations, BY-29 (control) and BY-31. Sediment samples composed of recently deposited substrate were collected at two locations semiannually, BY-12 and BY-34.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulate, airborne iodine, and milk. Airborne iodine and particulate samples were collected and analyzed weekly at eight locations (BY-01, BY-04, BY-06, BY-08, BY-21, BY-22, BY-23, and BY-24). The control location was BY-08. 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.

Milk samples were collected biweekly at four locations (BY-20-1, BY-26-1, BY-30 and BY-38) from May through October, and monthly from November through April. The control location was BY-26-1. 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 (BY-Control, BY-Quad 1, BY-Quad 2, BY-Quad 3, and BY-Quad 4). 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 CaF₂ thermoluminescent dosimeters (TLD). Each location consisted of 2 TLD sets. The TLD locations were placed on and around the BNGS site as follows:

An inner ring consisting of 16 locations (BY-101, BY-102, BY-103, BY-104, BY-105, BY-106, BY-107, BY-108, BY-109, BY-110, BY-111, BY-112, BY-113, BY-114, BY-115, and BY-116) near and within the site perimeter representing fence post doses (i.e., at locations where the doses will be potentially greater than maximum annual off-site doses) from BNGS release.

An outer ring consisting of 16 locations (BY-201, BY-202, BY-203, BY-204, BY-205, BY-206, BY-207, BY-208, BY-209, BY-210, BY-211, BY-212, BY-213, BY-214, BY-215 and BY-216) extending to approximately 5 miles from the site designed to measure possible exposures to close-in population.

An other set consisting of seven locations (BY-01, BY-04, BY-06, BY-21, BY-22, BY-23 and BY-24).

The balance of one location (BY-08) representing 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 BNGS, if any, would be most significant;
3. On hills free from local obstructions and within sight of the vents (where practical);
4. And near the closest dwelling to the vents in the prevailing downwind direction.

Two TLDs – each comprised of two CaF₂ thermoluminescent phosphors enclosed in plastic – were placed at each location in a PVC conduit located at a minimum of five feet above ground level. The TLDs were exchanged quarterly and sent to Global Dosimetry for analysis.

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 BNGS REMP in 2007. 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 surface water and air particulates.
2. Concentrations of gamma emitters in ground and surface water, air particulates, milk, fish, sediment and vegetation.
3. Concentrations of tritium in ground and surface water.
4. Concentrations of I-131 in air and milk.
5. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

The radiological and direct radiation data collected prior to Byron Nuclear Generating Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Byron Nuclear Generating Station was considered operational at initial criticality. In addition, data were 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 BNGS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is defined above with the exception that the measurement is an after-the-fact estimate of the presence of activity.

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 effecting 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 water, ground water and vegetation twelve 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 fish, sediment, air particulate, milk and vegetation eleven 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 2007 the BNGS REMP had a sample recovery rate in excess of 99%. 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
A/I	BY-23	01/02/07	Timer not running; estimated time and replaced
A/I	BY-23	03/06/07	Timer not running; estimated time and replaced
A/I	BY-21	03/13/07	Pump failed leak test; replaced
A/I	BY-21	03/20/07	Low timer reading due to pump replacement previous week

Table D-1 LISTING OF SAMPLE ANOMALIES (cont'd)

Sample Type	Location Code	Collection Date	Reason
A/I	BY-23	04/24/07	Timer would not reset; replaced
M	BY-20-1, BY-30	05/01/07	Milk damaged in shipment; milk re-collected on 05/08/07
TLD	BY-209-1	05/01/07	Found TLD on ground near pole; remounted
A/I	BY-01	05/22/07	Electricity was off; low timer value
TLD	BY-209-1	06/05/07	Missing TLD element; replaced with new
A/I	BY-23	08/21/07	Run time short due to potential power loss from storms
A/I	BY-04	08/28/07	Timer not running; estimated time, replaced and tested
A/I	BY-04	10/23/07	Timer would not reset; collector replaced timer.
A/I	BY-04	12/04/07	Low timer reading due to power outage from ice storm
A/I	BY-23	12/04/07	Low timer reading due to power outage from ice storm
A/I	BY-24	12/04/07	Low timer reading due to power outage from ice storm
A/I	BY-22	12/12/07	Timer not running; estimated time, replaced and tested

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
M	BY-38	01/02/07	No sample; goats not producing milk
SW	BY-29	01/16/07	No sample; water frozen
SW	BY-29	01/23/07	No sample; ice on river
SW	BY-12	01/30/07	No sample; ice on river

Table D-2 LISTING OF MISSED SAMPLES (continued)

Sample Type	Location Code	Collection Date	Reason
SW	BY-29	01/30/07	No sample; ice on river
M	BY-38	02/06/07	No sample; goats not producing milk
SW	BY-12	02/06/07	No sample; ice on river
SW	BY-29	02/06/07	No sample; ice on river
SW	BY-12	02/13/07	No sample; ice on river
SW	BY-29	02/13/07	No sample; ice on river
SW	BY-12	02/20/07	No sample; ice on river
SW	BY-29	02/20/07	No sample; ice on river
SW	BY-29	02/27/07	No sample; ice on river
M	BY-38	03/06/07	No sample; goats not producing milk
SW	BY-29	03/06/07	No sample; ice on river
TLD	BY-214-4	03/31/07	Could not read due to damaged element
V	BY-CONTROL	08/27/07	Sample not obtained within required distance – collector did not verify
M	BY-38	11/13/07	Milk not available until the spring
M	BY-38	12/04/07	Milk not available until the spring
SW	BY-12	12/04/07	No sample; ice on river
SW	BY-29	12/04/07	No sample; ice on river
SW	BY-12	12/12/07	No sample; ice on river
SW	BY-29	12/12/07	No sample; ice on river
SW	BY-12	12/18/07	No sample; ice on river
SW	BY-29	12/18/07	No sample; ice on river
SW	BY-29	12/26/07	No sample; ice on river
TLD	BY-205-2	12/31/07	4 th quarter TLD missing; may be buried under the snow

Each program exception was reviewed to understand the causes of the program exception. Sampling and maintenance errors were reviewed with the personnel involved to prevent recurrence. Occasional equipment breakdowns and power outages 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 2007, the mean and two standard deviation values are calculated using the positive values only.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken weekly and composited monthly at two locations (BY-12 and BY-29). Of these locations only BY-12 located downstream, could be affected by Byron Nuclear Generating Station's effluent releases. The following analyses were performed.

Gross Beta

Samples from both locations were analyzed for concentrations of gross beta (Table C-1.1, Appendix C). The values ranged from 3.5 to 7.5 pCi/l. Concentrations detected were consistent with those detected in previous years (Figure C-1, Appendix C).

Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C-1.2, Appendix C). Tritium was detected in one sample at a concentration of 964 pCi/l. Second quarter composite surface water sample from point BY-12, Rock River downstream of the plant liquid effluent discharge, had a tritium result of 964 pCi/L. Although this result is well below the reportable limit of 30,000 pCi/L, tritium is not typically observed above the detection limit in this sample under normal operating conditions. The positive tritium result was likely due to the increase in liquid

releases performed during the refueling outage in March/April 2007. (Figure C-2, Appendix C).

Gamma Spectrometry

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

2. Ground Water

Quarterly grab samples were collected at six locations (BY-14-1, BY-18, BY-32, BY-35, BY-36 and BY-37). These locations could be affected by Byron Nuclear Generating Station's effluent releases. The following analyses were performed:

Tritium

Quarterly grab samples from the locations were analyzed for tritium activity (Table C-II.1, Appendix C). No tritium was detected, and the required LLD was met (Figures C-3 and C-6, Appendix C).

Gamma Spectrometry

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

3. Fish

Fish samples comprised of smallmouth bass, channel catfish, river carpsucker, freshwater drum and silver redhorse were collected at two locations (BY-29 and BY-31) semiannually. Location BY-31 could be affected by Byron Nuclear Generating Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma emitting nuclides (Table C-III.1, Appendix C). No nuclides were detected, and all required LLDs were met.

4. Sediment

Aquatic sediment samples were collected at two locations (BY-12 and BY-34) semiannually. Both locations, located downstream, could be affected by Byron Nuclear Generating Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from both locations were analyzed for gamma emitting nuclides (Table C-IV.1, Appendix C). Cesium-137 was detected in both locations. The values ranged from 82 to 208 pCi/kg dry. Concentrations detected were consistent with those detected in previous years. No other nuclides were detected, 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: Nearsite samplers (BY-21, BY-22, BY-23 and BY-24), Far Field samplers within 4 km of the site (BY-01, BY-04, and BY-06) and the Control sampler between 10 and 30 km from the site (BY-08). The following analyses were performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C-V.1 and C-V.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 BNGS. The results from the Nearsite locations (Group I) ranged from 9 to 49 E-3 pCi/m³ with a mean of 21 E-3 pCi/m³. The results from the Far Field locations (Group II) ranged from 9 to 43 E-3 pCi/m³ with a mean of 21 E-3 pCi/m³. The results from the Control location (Group III) ranged from 11 to 42 E-3 pCi/m³ with a mean of 21 E-3 pCi/m³. Comparison of the 2007 air particulate data with

previous years data indicate no effects from the operation of BNGS. In addition a comparison of the weekly mean values for 2007 indicate no notable differences among the three groups (Figures C-7 through C-11, Appendix C).

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma emitting nuclides (Table C-V.3, Appendix C). No nuclides were detected, and all required LLDs were met.

b. Airborne Iodine

Continuous air samples were collected from eight locations (BY-01, BY-04, BY-06, BY-08, BY-21, BY-22, BY-23, and BY-24) and analyzed weekly for I-131 (Table C-VI.1, Appendix C). No I-131 was detected and the required LLD was met.

2. Terrestrial

a. Milk

Samples were collected from four locations (BY-20-1, BY-26-1, BY-30 and BY-38) biweekly May through October and monthly November through April. The following analyses were performed:

Iodine-131

Milk samples from all locations were analyzed for concentrations of I-131 (Table C-VII.1, Appendix C). No nuclides were detected, and all required LLDs were met.

Gamma Spectrometry

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

b. Vegetation

Vegetation samples were collected at five locations (BY-Control, BY-Quad 1, BY-Quad 2, BY-Quad 3 and BY-Quad 4) when available. Four locations (BY-Quad 1, BY-Quad 2,

BY-Quad 3 and BY-Quad 4) could be affected by Byron Nuclear Generating Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

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

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Panasonic 814 (CaF₂) thermoluminescent dosimeters. Forty TLD locations were established around the site. Results of TLD measurements are listed in Tables C–IX.1 to C–IX.3, Appendix C.

Most TLD measurements were below 30 mR/standard month, with a range of 15 to 31 mR/standard month. A comparison of the Inner Ring, Outer Ring, Other and Control Location data indicate that the ambient gamma radiation levels were comparable among the groups.

D. Land Use Survey

A Land Use Survey conducted during August 2007 around the Byron Nuclear Generating Station (BNGS) was performed by Environmental Inc. (Midwest Labs) for Exelon Nuclear to comply with the Byron Nuclear Generating 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. There were no changes required to the BNGS REMP, as a result of this survey. The results of this survey are summarized below.

Distance in Miles from the BNGS Vent Stacks			
Sector	Residence Miles	Livestock Miles	Milk Farm Miles
A N	1.0	5.0	12.0
B NNE	0.9	1.5	-
C NE	1.1	1.9	-
D ENE	1.3	6.5	5.0
E E	1.3	1.3	-
F ESE	1.5	1.5	-
G SE	0.8	4.5	5.1
H SSE	0.6	3.2	-
J S	0.5	4.0	-
K SSW	0.6	2.2	-
L SW	0.8	2.0	-
M WSW	1.7	4.5	-
N W	1.8	2.5	4.5
P WNW	0.8	5.5	-
Q NW	1.3	4.5	-
R NNW	1.0	1.4	-

E. Errata Data

The following items include corrections or additions to the 2006 AREOR:

- 1 In Table A-1, REMP 1st Quarter Summary, on pages 27-28, Byron Surface Water sample point BY-29 location is incorrectly described as being 3.0 miles SSW of site. The correction location should read "3.0 miles N of site," as described in the Byron Offsite Dose Calculation Manual (ODCM), CY-BY-170-301.
- 2 In August 2006, there was a minor change in location made to air sampling station BY-06 that was not documented in the 2006 AREOR. During 2006, it was noted that a telephone pole was located approximately eight feet in front of the air intake to the sampler and about 5 degrees off centerline to the plant. The ability of the air sampler to obtain representative sample with the pole directly in front was called into question. An evaluation was performed and concluded that while the ability of the air sampling station to perform its function had not been compromised, its location was not optimum. On 8/22/06, a new pole connecting the air station to the ground was placed a few feet from the old location where the telephone pole is no longer in front of the air sampler. The movement of the air sampler did not affect the location coordinates as described in the ODCM and is indistinguishable on a large-scale map.

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, 17 out of 19 analytes met the specified acceptance criteria. Two samples did not meet the specified acceptance criteria for the following reasons:

1. Teledyne Brown Engineering's Analytics March 2007 I-131 in charcoal result of 34.7 pCi was lower than the known value of 71.3, resulting in a found-to-known ratio of 0.49. A new technician counted the charcoal cartridge on the back rather than the face side. Due to decay of the I-131, recounting could not be performed. Counting the 2nd quarter Analytics charcoal cartridge on the face and the back resulted in approximately 220% more activity on the face of the cartridge. This indicates that we would have had acceptable results (ratio approximately 1.07) if the cartridge had been counted on the face side.
2. Teledyne Brown Engineering's ERA July 2007 Cs-134 result of 57.6 pCi/L exceeded the lower acceptance limit of 60.2 pCi/L. The high activity of the sample resulted in the lower acceptance limit of 8.66, although the ratio of found to known was 83.6%, which is considered acceptable by TBE.

For the secondary laboratory, 18 out of 19 analytes met the specified acceptance criteria. One sample did not meet the specified acceptance criteria for the following reasons:

1. Environmental Inc.'s ERA March 2007 air particulate Cs-137 result of 345.3 pCi/L exceeded the upper control limit of 336 pCi/L. The reported result was calculated using composite filter geometry rather than the single filter geometry. The recalculated result of 305.8 pCi/filter fell within the acceptance limits.

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

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
BYRON NUCLEAR GENERATION STATION, 2007**

Name of Facility: BYRON Location of Facility: BYRON; IL				DOCKET NUMBER: 50-454 & 50-455 REPORTING PERIOD: 2007				
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	22	4	5.2 (12/12) (3.5/7.3)	4.8 (9/10) (3.2/7.5)	5.2 (12/12) (3.5/7.3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	H-3	8	200	964 (1/4)	<LLD	964 (1/4)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	1
	GAMMA MN-54	22	15	<LLD	<LLD	-		0
	CO-58		15	<LLD	<LLD	-		0
	FE-59		30	<LLD	<LLD	-		0
	CO-60		15	<LLD	<LLD	-		0

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

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SURFACE WATER (PCI/LITER)	ZN-65		30	<LLD	<LLD	-		0
	NB-95		15	<LLD	<LLD	-		0
	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0

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					LOCATION MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
SURFACE WATER (PCI/LITER)	BA-140		60	<LLD	<LLD	-			0
	LA-140		15	<LLD	<LLD	-			0
GROUND WATER (PCI/LITER)	H-3	24	200	<LLD	NA	-			0
	GAMMA MN-54	24	15	<LLD	NA	-			0
	CO-58		15	<LLD	NA	-			0
	FE-59		30	<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)	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

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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)	CS-137		18	<LLD	NA	-		0
	BA-140		60	<LLD	NA	-		0
	LA-140		15	<LLD	NA	-		0
FISH (PCI/KG WET)	GAMMA MN-54	8	130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<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)	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0
	CS-137		130	<LLD	<LLD	-		0
	BA-140		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)	LA-140		NA	<LLD	<LLD	-			0
SEDIMENT (PCI/KG DRY)	GAMMA MN-54	4	NA	<LLD	NA	-			0
	CO-58		NA	<LLD	NA	-			0
	FE-59		NA	<LLD	NA	-			0
	CO-60		NA	<LLD	NA	-			0
	ZN-65		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)	NB-95		NA	<LLD	NA	-			0
	ZR-95		NA	<LLD	NA	-			0
	CS-134		150	<LLD	NA	-			0
	CS-137		180	138 (3/4) (82/208)	NA	145 (2/2) (82/208)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE		0
	BA-140		NA	<LLD	NA	-			0
	LA-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			
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	416	10	21 (364/364) (9/49)	21 (52/52) (11/42)	22 (52/52) (11/49)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW 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

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				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)	NB-95		NA	<LLD	<LLD	-			0
	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	<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	NUMBER OF NONROUTINE REPORTED MEASUREMENTS	
MILK (PCI/LITER)	I-131	75	1	<LLD	<LLD	-			0
	GAMMA MN-54	75	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

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				LOCATIONS MEAN(M) (F) RANGE	LOCATION MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
MILK (PCI/LITER)	NB-95		NA	<LLD	<LLD	-			0
	ZR-95		NA	<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

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				LOCATIONS MEAN(M) (F) RANGE	LOCATION MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
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

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				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
	I-131		60	<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

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				LOCATIONS MEAN(M) (F) RANGE	LOCATION MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	318	NA	22 (310/310) (15/31)	17.8 (8/8) (15/21)	25.5 (4/4) (23/31)	BY-208-1 INDICATOR 4.0 MILES SSE	0	

A - 15

41 of 211

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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

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Byron Nuclear Generating Station, 2007

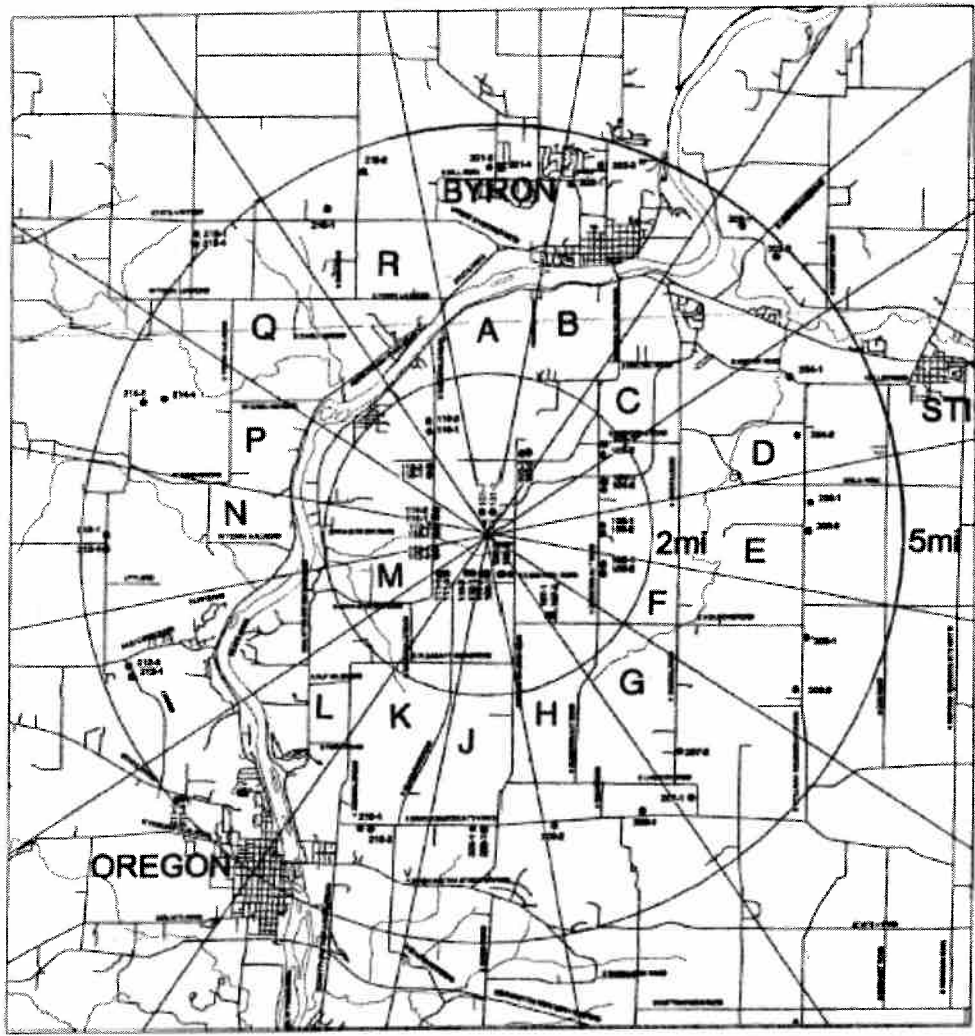
Location	Location Description	Distance & Direction From Site
<u>A. Surface Water</u>		
BY-12	Oregon Pool of Rock River, Downstream (indicator)	4.5 miles SSW
BY-29	Byron, Upstream (control)	3.0 miles N
<u>B. Ground/Well Water</u>		
BY-14-1	3200 North German Church Road (indicator)	1.0 miles SSE
BY-18	McCoy Farmstead (indicator)	0.7 miles SW
BY-32	Ron Wolford Well (indicator)	1.8 miles W
BY-35	Vancko Well	2.0 miles WNW
BY-36	Blanchard Well	1.0 miles NW
BY-37	Alexander Well	1.8 miles WNW
<u>C. Milk</u>		
BY-20-1	Ron Snodgrass Farm (indicator)	4.7 miles WSW
BY-26-1	Dennis Herbert (control)	12.8 miles N
BY-30	Don Roos Dairy (indicator)	5.3 miles SE
BY-38	Larson Goat Farm	5.0 miles ENE
<u>D. Air Particulates / Air Iodine</u>		
BY-01	Byron (indicator)	3.0 miles N
BY-04	Paynes Point (indicator)	5.0 miles SE
BY-06	Oregon (indicator)	4.7 miles SSW
BY-08	Leaf River (control)	6.8 miles WNW
BY-21	Byron Nearsite North (indicator)	0.3 miles N
BY-22	Byron Nearsite East-Southeast (indicator)	0.4 miles ESE
BY-23	Byron Nearsite South (indicator)	0.6 miles S
BY-24	Byron Nearsite Southwest (indicator)	0.6 miles SW
<u>E. Fish</u>		
BY-29	Byron, Upstream (control)	3.0 miles N
BY-31	Byron, Discharge (indicator)	2.2 miles WNW
<u>F. Sediment</u>		
BY-12	Oregon Pool of Rock River, Downstream (indicator)	4.5 miles SSW
BY-34	Rock River, Downstream (indicator)	0.6 miles W
<u>G. Vegetation</u>		
Quadrant 1	5186 N. Cox Road, Stillman Valley	4.9 miles ENE
Quadrant 2	6402 Brick Road, Oregon	4.9 miles SE
Quadrant 3	555 Park Road, Oregon	3.4 miles SW
Quadrant 4	880 E. Equestrian Pointe Road, Oregon	2.0 miles W
Control	5453 Armour Road, Stillman Valley	6.8 miles ENE
<u>H. Environmental Dosimetry - TLD</u>		
<u>Inner Ring</u>		
BY-101-1 and -2		0.3 miles N
BY-102-1		0.9 miles NNE
BY-102-2		1.0 miles NNE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Byron Nuclear Generating Station, 2007

Location	Location Description	Distance & Direction From Site
BY-103-1 and -2		1.7 miles NE
BY-104-1 and -2		1.5 miles ENE
BY-105-1 and -2		1.3 miles E
BY-106-1 and -2		1.4 miles ESE
BY-107-1 and -2		1.4 miles SE
BY-108-1		0.7 miles SSE
BY-108-2		0.6 miles SSE
BY-109-1 and -2		0.6 miles S
BY-110-1 and -2		0.6 miles SSW
BY-111-3		0.7 miles SW
BY-111-4		0.8 miles SW
BY-112-3 and -4		0.8 miles WSW
BY-113-1 and -2		0.7 miles W
BY-114-1 and -2		0.8 miles WNW
BY-115-1 and -2		1.0 miles NW
BY-116-1 and -2		1.4 miles NNW
<u>Outer Ring</u>		
BY-201-3		4.5 miles N
BY-201-4		4.4 miles N
BY-202-1		4.3 miles NNE
BY-202-2		4.8 miles NNE
BY-203-1		4.8 miles NE
BY-203-2		4.7 miles NE
BY-204-1		4.2 miles ENE
BY-204-2		4.1 miles ENE
BY-205-1 and -2		3.8 miles E
BY-206-1		4.1 miles ESE
BY-206-2		4.4 miles ESE
BY-207-1		4.2 miles SE
BY-207-2		3.6 miles SE
BY-208-1		4.0 miles SSE
BY-208-2		3.7 miles SSE
BY-209-1 and -4		3.7 miles S
BY-210-3 and -4		3.9 miles SSW
BY-211-1 and -4		4.9 miles SW
BY-212-1 and -4		4.7 miles WSW
BY-213-1		4.7 miles W
BY-213-4		4.6 miles W
BY-214-1		4.6 miles WNW
BY-214-4		4.9 miles WNW
BY-215-1		5.3 miles NW
BY-215-4		5.2 miles NW
BY-216-1		4.6 miles NNW
BY-216-2		4.8 miles NNW
<u>Other</u>		
BY-01-1 and -2		3.0 miles N
BY-04-1 and -2		5.0 miles SE
BY-06-1 and -2		4.7 miles SSW
BY-21-1 and -2		0.3 miles N
BY-22-1 and -2		0.4 miles ESE
BY-23-1 and -2		0.6 miles S
BY-24-1 and -2		0.6 miles SW
<u>Control and Special Interest</u>		
BY-08-1 and -2		6.8 miles WNW

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Byron Nuclear Generating Station, 2007

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 Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Surface Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices Env. Inc., W(DS)-01 Determination of gross alpha and/or gross beta in water (dissolved solids or total residue)
Surface Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Ground Water	Gamma Spectroscopy	Quarterly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Ground Water	Tritium	Quarterly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Sediment	Gamma Spectroscopy	Semi-annual grab samples	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
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 Env. Inc., AP-02 Determination of gross alpha and/or gross beta in air particulate filters
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Air Iodine	Gamma Spectroscopy	One-week composite of continuous air sampling through charcoal filter	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., I-131-02 Determination of I-131 in charcoal canisters by gamma spectroscopy (batch method)
Milk	I-131	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2012 Radioiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by anion exchange
Milk	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Vegetation	Gamma Spectroscopy	Annual grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two Global Dosimetry CaF ₂ elements.	Global Dosimetry



● TLD LOCATION



Figure B-1
 Inner and Outer Ring TLD Locations of the
 Byron Nuclear Generating Station, 2007

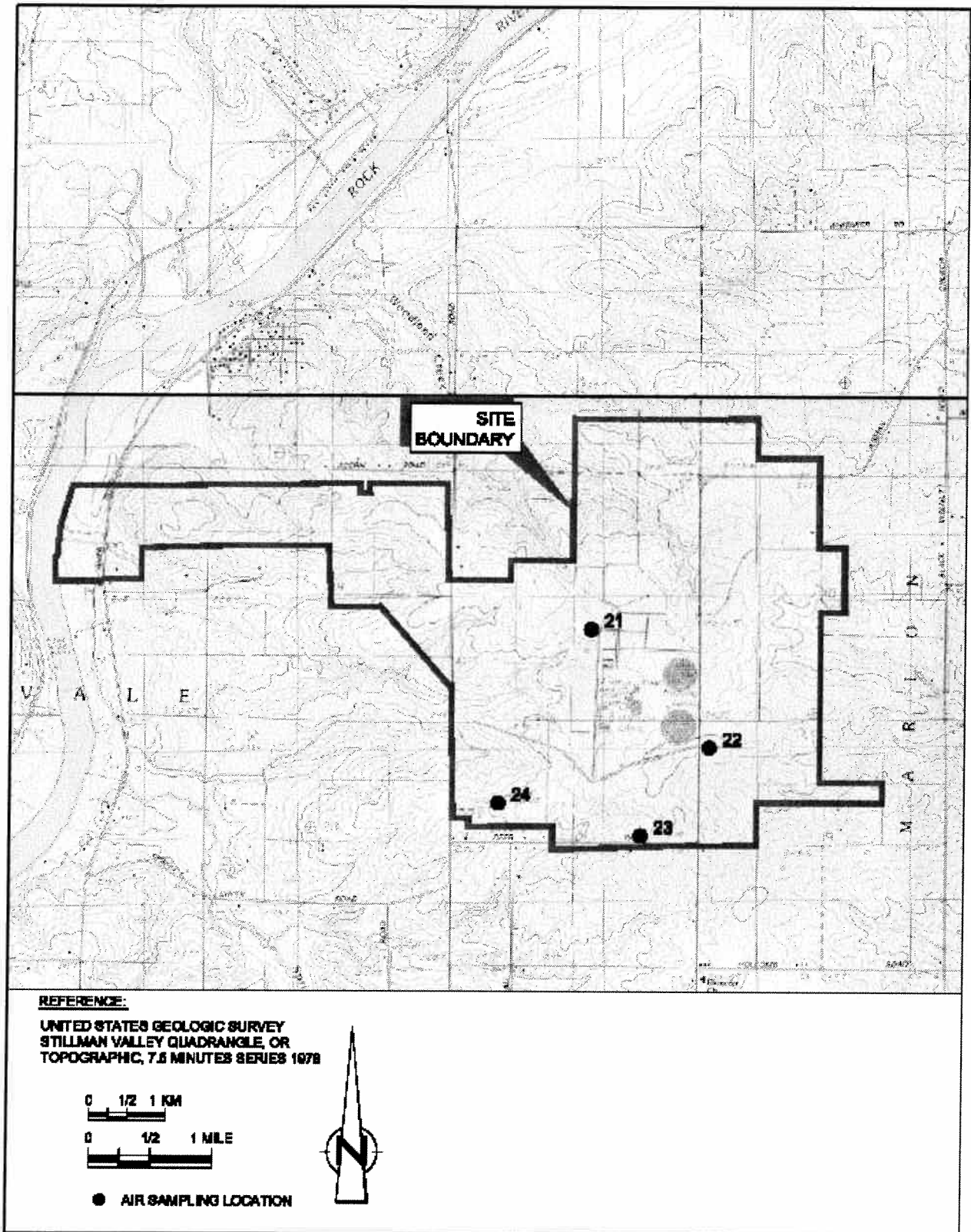
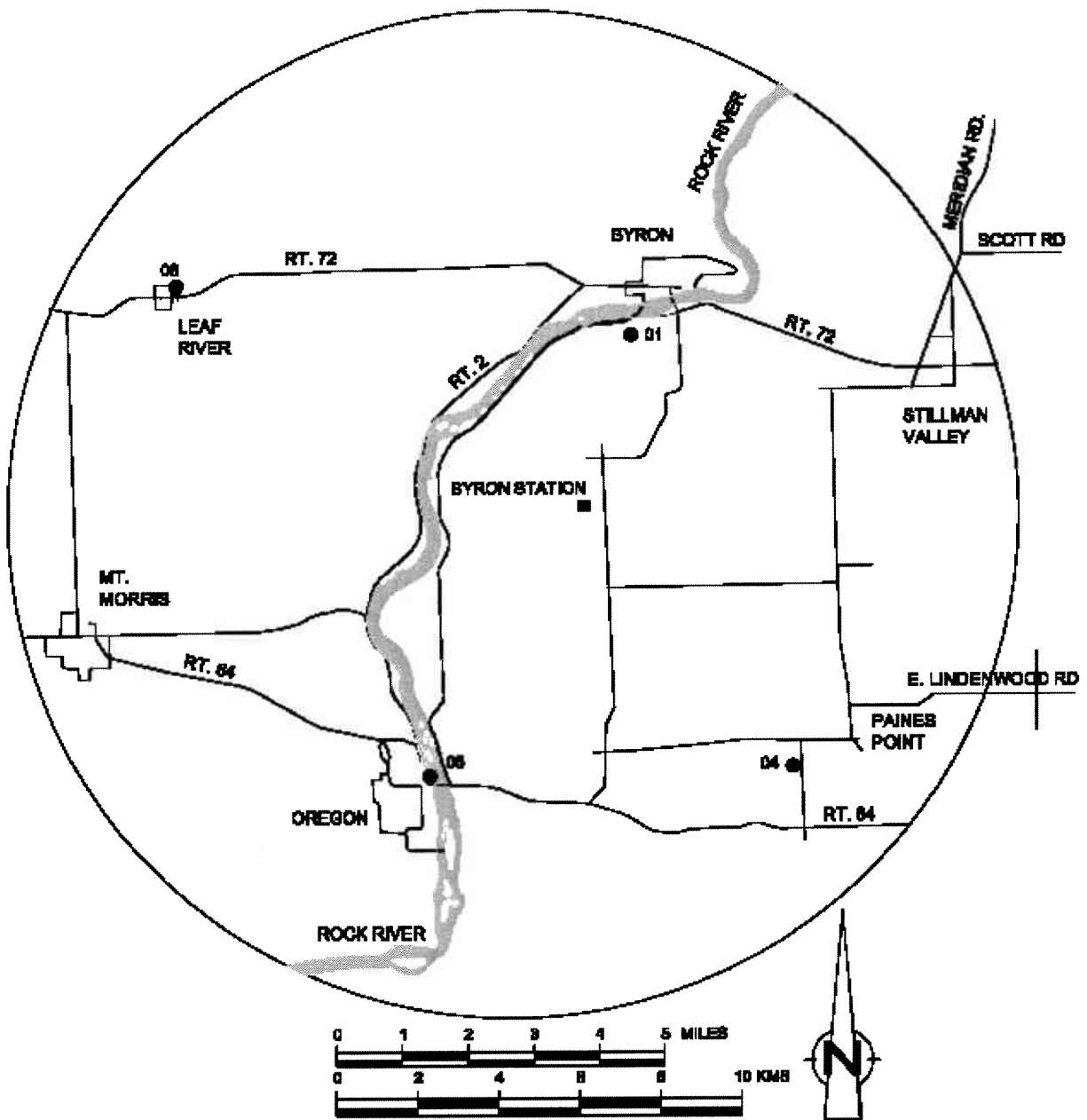
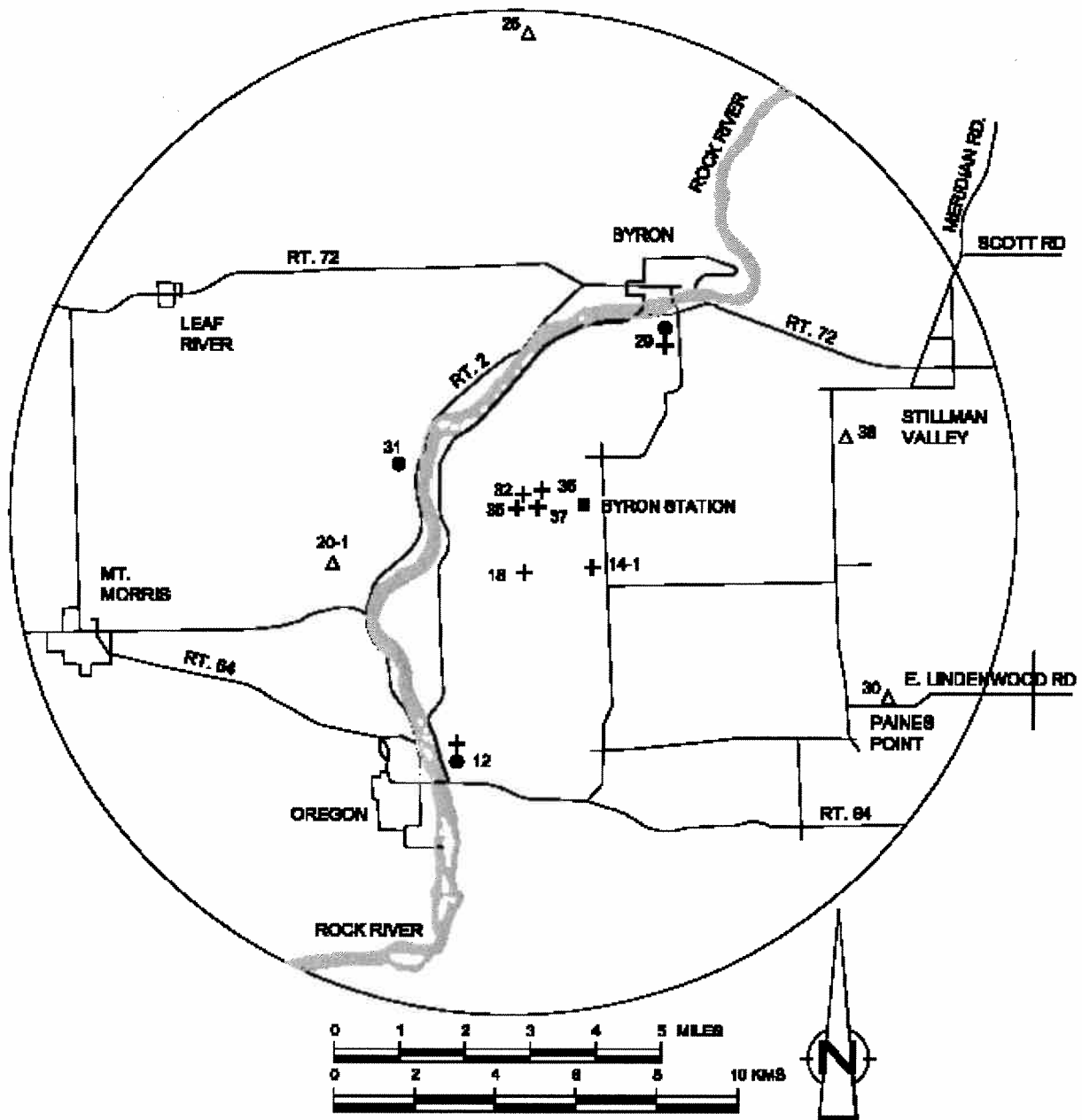


Figure B-2
 Onsite Air Sampling Locations of the
 Byron Nuclear Generating Station, 2007
 B - 5



- Air Sampling Location
- Byron Station

Figure B-3
 Offsite Air Sampling Locations of the
 Byron Nuclear Generating Station, 2007



- FISH
- △ MILK
- SEDIMENT
- + WATER
- BYRON STATION

Figure B-4
 Ingestion and Waterborne Exposure Pathway Sampling Locations
 of the Byron Nuclear Generating Station, 2007

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APPENDIX C

DATA TABLES AND FIGURES PRIMARY LABORATORY

TABLE C-I.1 CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BY-12	BY-29
01/02/07 - 01/09/07	4.8 ± 1.9	< 3.6
02/27/07 - 02/27/07	5.6 ± 1.9	(1)
03/13/07 - 03/27/07	5.6 ± 2.0	4.2 ± 1.8
04/03/07 - 04/24/07	5.2 ± 1.8	4.7 ± 1.8
05/01/07 - 05/29/07	4.4 ± 1.9	4.8 ± 1.9
06/05/07 - 06/26/07	3.5 ± 2.0	3.2 ± 2.1
07/03/07 - 07/31/07	3.5 ± 1.7	5.0 ± 1.8
08/07/07 - 08/28/07	5.7 ± 1.9	5.1 ± 1.8
09/04/07 - 09/25/07	7.3 ± 2.2	7.5 ± 2.2
10/02/07 - 10/30/07	5.1 ± 2.0	4.3 ± 2.2
11/06/07 - 11/27/07	4.8 ± 2.3	4.2 ± 2.2
12/26/07 - 12/26/07	6.9 ± 2.0	(1)
MEAN	5.2 ± 2.3	4.8 ± 2.3

TABLE C-I.2 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BY-12	BY-29
01/02/07 - 03/27/07	< 188	< 186
04/03/07 - 06/26/07	964 ± 155	< 176
07/03/07 - 09/25/07	< 185	< 186
10/02/07 - 12/26/07	< 168	< 177
MEAN*	964 ± 0	-

* 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 BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	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
BY-12	01/02/07 - 01/23/07	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 12	< 1	< 1	< 14	< 4
	02/27/07 - 02/27/07	< 6	< 7	< 15	< 7	< 13	< 8	< 12	< 14	< 7	< 7	< 36	< 11
	03/06/07 - 03/27/07	< 3	< 3	< 7	< 3	< 6	< 3	< 5	< 13	< 3	< 3	< 27	< 7
	04/03/07 - 04/24/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 22	< 7
	05/01/07 - 05/29/07	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 19	< 6
	06/05/07 - 06/26/07	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 17	< 6
	07/03/07 - 07/31/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 21	< 7
	08/07/07 - 08/28/07	< 1	< 1	< 4	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 17	< 6
	09/04/07 - 09/25/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 22	< 8
	10/02/07 - 10/30/07	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 16	< 5
	11/06/07 - 11/27/07	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 19	< 7
	12/26/07 - 12/26/07	< 2	< 2	< 3	< 2	< 3	< 2	< 3	< 6	< 2	< 2	< 12	< 4
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BY-29	01/02/07 - 01/09/07	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 10	< 2	< 2	< 45	< 13
	02/27/07 - 02/27/07	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	03/13/07 - 03/27/07	< 4	< 4	< 10	< 5	< 8	< 4	< 7	< 14	< 4	< 4	< 31	< 11
	04/03/07 - 04/24/07	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 16	< 5
	05/01/07 - 05/29/07	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 15	< 1	< 2	< 22	< 8
	06/05/07 - 06/26/07	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 14	< 1	< 1	< 19	< 6
	07/03/07 - 07/31/07	< 1	< 1	< 3	< 1	< 3	< 1	< 3	< 8	< 1	< 1	< 14	< 4
	08/07/07 - 08/28/07	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 15	< 2	< 2	< 21	< 7
	09/04/07 - 09/25/07	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 17	< 5
	10/02/07 - 10/30/07	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 14	< 1	< 1	< 17	< 4
	11/06/07 - 11/27/07	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 15	< 4
	12/26/07 - 12/26/07	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	MEAN		-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**TABLE C-II.1 CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	BY-14-1	BY-18	BY-32	BY-35	BY-36	BY-37
01/09/07 - 01/09/07	< 195	< 193	< 191	< 196	< 189	< 193
04/10/07 - 04/10/07	< 148	< 149	< 154	< 156	< 147	< 152
07/10/07 - 07/10/07	< 143	< 144	< 185	< 147	< 143	< 143
10/09/07 - 10/09/07	< 190	< 191	< 185	< 189	< 184	< 187
MEAN	-	-	-	-	-	-

TABLE C-II.2 CONCENTRATIONS OF GAMMA EMITTERS IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	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
BY-14-1	01/09/07 - 01/09/07	< 5	< 5	< 12	< 4	< 9	< 5	< 8	< 12	< 4	< 5	< 30	< 8
	04/10/07 - 04/10/07	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 4	< 2	< 2	< 10	< 3
	07/10/07 - 07/10/07	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 3	< 1	< 1	< 8	< 2
	10/09/07 - 10/09/07	< 4	< 4	< 9	< 5	< 8	< 4	< 7	< 14	< 4	< 4	< 27	< 8
MEAN	-	-	-	-	-	-	-	-	-	-	-	-	-
BY-18	01/09/07 - 01/09/07	< 5	< 5	< 9	< 5	< 9	< 6	< 8	< 12	< 4	< 4	< 29	< 12
	04/10/07 - 04/10/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 4	< 2	< 2	< 10	< 4
	07/10/07 - 07/10/07	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 4	< 2	< 2	< 10	< 4
	10/09/07 - 10/09/07	< 4	< 5	< 8	< 4	< 9	< 5	< 8	< 14	< 4	< 4	< 31	< 10
MEAN	-	-	-	-	-	-	-	-	-	-	-	-	
BY-32	01/09/07 - 01/09/07	< 5	< 5	< 11	< 5	< 9	< 5	< 9	< 14	< 5	< 6	< 32	< 12
	04/10/07 - 04/10/07	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 3	< 1	< 2	< 8	< 3
	07/10/07 - 07/10/07	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 5	< 2	< 2	< 11	< 4
	10/09/07 - 10/09/07	< 5	< 6	< 14	< 5	< 12	< 6	< 10	< 15	< 4	< 5	< 41	< 11
MEAN	-	-	-	-	-	-	-	-	-	-	-	-	
BY-35	01/09/07 - 01/09/07	< 2	< 2	< 4	< 2	< 5	< 3	< 4	< 7	< 2	< 2	< 17	< 5
	04/10/07 - 04/10/07	< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 5	< 2	< 2	< 13	< 4
	07/10/07 - 07/10/07	< 1	< 2	< 3	< 2	< 3	< 2	< 3	< 4	< 1	< 2	< 10	< 3
	10/09/07 - 10/09/07	< 5	< 6	< 12	< 4	< 11	< 5	< 7	< 14	< 4	< 5	< 35	< 12
MEAN	-	-	-	-	-	-	-	-	-	-	-	-	

TABLE C-II.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUND WATER SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	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
BY-36	01/09/07 - 01/09/07	< 5	< 5	< 13	< 5	< 11	< 6	< 10	< 15	< 4	< 5	< 33	< 12
	04/10/07 - 04/10/07	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 4	< 2	< 2	< 11	< 3
	07/10/07 - 07/10/07	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 5	< 2	< 2	< 12	< 4
	10/09/07 - 10/09/07	< 4	< 4	< 7	< 3	< 7	< 4	< 6	< 14	< 3	< 4	< 26	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BY-37	01/09/07 - 01/09/07	< 4	< 5	< 10	< 4	< 9	< 5	< 8	< 14	< 4	< 5	< 35	< 9
	04/10/07 - 04/10/07	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 4	< 2	< 2	< 10	< 3
	07/10/07 - 07/10/07	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 5	< 2	< 2	< 12	< 3
	10/09/07 - 10/09/07	< 4	< 4	< 9	< 4	< 8	< 5	< 7	< 15	< 4	< 4	< 30	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

C-5

TABLE C-III.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-29												
Channel Catfish	05/02/07	< 66	< 77	< 191	< 65	< 150	< 80	< 144	< 60	< 52	< 590	< 182
River Carpsucker	05/02/07	< 41	< 50	< 107	< 45	< 104	< 62	< 86	< 43	< 41	< 517	< 154
Freshwater Drum	10/02/07	< 37	< 34	< 67	< 31	< 76	< 39	< 73	< 32	< 38	< 241	< 91
Silver Redhorse	10/02/07	< 54	< 40	< 119	< 45	< 118	< 60	< 101	< 45	< 50	< 378	< 97
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BY-31												
Channel Catfish	05/02/07	< 64	< 66	< 113	< 47	< 143	< 85	< 107	< 57	< 47	< 532	< 213
River Carpsucker	05/02/07	< 35	< 44	< 128	< 46	< 91	< 59	< 69	< 40	< 52	< 386	< 116
Channel Catfish	10/02/07	< 47	< 46	< 114	< 53	< 106	< 61	< 83	< 47	< 52	< 300	< 121
River Carpsucker	10/02/07	< 43	< 43	< 94	< 37	< 80	< 41	< 60	< 33	< 39	< 224	< 83
	MEAN	-	-	-	-	-	-	-	-	-	-	-

**TABLE C-IV.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

RESULTS IN UNITS OF PCI/KG DRY ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-12	05/22/07	< 60	< 67	< 147	< 71	< 142	< 68	< 114	< 55	208 ± 56	< 459	< 140
	10/23/07	< 55	< 77	< 184	< 50	< 129	< 79	< 143	< 45	82 ± 69	< 1740	< 500
	MEAN*	-	-	-	-	-	-	-	-	145 ± 179	-	-
BY-34	05/22/07	< 63	< 65	< 152	< 52	< 126	< 74	< 114	< 52	123 ± 57	< 547	< 155
	10/23/07	< 53	< 74	< 212	< 44	< 69	< 70	< 101	< 48	< 50	< 1700	< 378
	MEAN*	-	-	-	-	-	-	-	-	123 ± 0	-	-

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

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

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

COLLECTION PERIOD	GROUP I				GROUP II			GROUP III
	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
01/02/07 - 01/09/07	25 ± 5	20 ± 4	23 ± 5	18 ± 4	20 ± 4	20 ± 4	20 ± 4	22 ± 4
01/09/07 - 01/16/07	19 ± 4	13 ± 4	19 ± 4	19 ± 4	13 ± 4	15 ± 4	17 ± 4	20 ± 4
01/16/07 - 01/23/07	24 ± 5	27 ± 5	26 ± 5	26 ± 5	30 ± 5	30 ± 5	28 ± 5	34 ± 5
01/23/07 - 01/30/07	18 ± 4	26 ± 5	27 ± 5	26 ± 5	26 ± 5	23 ± 5	29 ± 5	24 ± 5
01/30/07 - 02/06/07	26 ± 4	21 ± 4	26 ± 4	23 ± 4	24 ± 4	22 ± 4	31 ± 5	25 ± 5
02/06/07 - 02/12/07	19 ± 6	26 ± 6	21 ± 6	23 ± 5	20 ± 5	20 ± 5	25 ± 5	24 ± 5
02/12/07 - 02/20/07	20 ± 4	21 ± 4	23 ± 4	21 ± 4	21 ± 4	24 ± 4	18 ± 4	19 ± 4
02/20/07 - 02/27/07	13 ± 4	17 ± 4	19 ± 4	15 ± 4	14 ± 4	15 ± 4	16 ± 4	19 ± 4
02/27/07 - 03/06/07	16 ± 4	18 ± 4	17 ± 4	15 ± 4	16 ± 4	14 ± 4	16 ± 4	16 ± 4
03/06/07 - 03/13/07	19 ± 4	21 ± 4	22 ± 4	20 ± 4	17 ± 4	15 ± 4	21 ± 4	17 ± 4
03/13/07 - 03/20/07	20 ± 5	21 ± 4	22 ± 4	22 ± 4	26 ± 5	22 ± 4	24 ± 4	23 ± 4
03/20/07 - 03/27/07	12 ± 4	15 ± 4	18 ± 4	15 ± 4	16 ± 4	15 ± 4	12 ± 4	14 ± 4
03/27/07 - 04/03/07	16 ± 4	12 ± 4	14 ± 4	16 ± 4	11 ± 4	13 ± 4	11 ± 4	15 ± 4
04/03/07 - 04/10/07	16 ± 4	16 ± 4	16 ± 4	15 ± 4	19 ± 4	16 ± 4	16 ± 4	13 ± 4
04/10/07 - 04/17/07	22 ± 5	18 ± 4	11 ± 4	20 ± 5	15 ± 4	16 ± 4	16 ± 4	18 ± 4
04/17/07 - 04/24/07	9 ± 4	14 ± 4	10 ± 4	11 ± 4	9 ± 4	12 ± 4	11 ± 4	13 ± 4
04/24/07 - 05/01/07	14 ± 4	11 ± 4	14 ± 4	14 ± 4	9 ± 4	14 ± 4	11 ± 4	15 ± 4
05/01/07 - 05/08/07	17 ± 4	17 ± 4	14 ± 4	20 ± 4	15 ± 4	21 ± 4	19 ± 4	14 ± 4
05/08/07 - 05/15/07	21 ± 4	14 ± 4	19 ± 4	21 ± 4	18 ± 4	21 ± 4	20 ± 4	21 ± 5
05/15/07 - 05/22/07	14 ± 4	19 ± 4	15 ± 4	18 ± 4	16 ± 4	14 ± 4	16 ± 4	14 ± 4
05/22/07 - 05/29/07	23 ± 5	25 ± 5	17 ± 4	19 ± 4	21 ± 4	17 ± 4	18 ± 4	22 ± 5
05/29/07 - 06/05/07	21 ± 5	16 ± 4	14 ± 4	19 ± 5	13 ± 4	16 ± 4	14 ± 4	14 ± 4
06/05/07 - 06/12/07	18 ± 4	17 ± 4	14 ± 4	20 ± 4	19 ± 4	16 ± 4	19 ± 4	20 ± 4
06/12/07 - 06/19/07	22 ± 4	23 ± 4	26 ± 5	28 ± 5	29 ± 5	26 ± 5	30 ± 5	31 ± 5
06/19/07 - 06/26/07	20 ± 4	15 ± 4	18 ± 4	17 ± 4	18 ± 4	20 ± 4	16 ± 4	14 ± 4
06/26/07 - 07/03/07	11 ± 4	10 ± 4	14 ± 4	14 ± 4	13 ± 4	10 ± 4	15 ± 4	12 ± 4
07/03/07 - 07/10/07	17 ± 4	17 ± 4	20 ± 5	21 ± 5	19 ± 5	22 ± 5	17 ± 4	18 ± 5
07/10/07 - 07/17/07	12 ± 4	14 ± 4	12 ± 4	15 ± 4	16 ± 4	12 ± 4	16 ± 4	13 ± 4
07/17/07 - 07/24/07	12 ± 4	17 ± 4	13 ± 4	15 ± 4	16 ± 4	16 ± 4	12 ± 4	20 ± 5
07/24/07 - 07/31/07	23 ± 5	30 ± 5	26 ± 5	24 ± 5	21 ± 5	27 ± 5	26 ± 5	22 ± 5
07/31/07 - 08/07/07	27 ± 5	24 ± 5	24 ± 5	33 ± 5	31 ± 5	23 ± 5	31 ± 5	30 ± 5
08/07/07 - 08/14/07	18 ± 5	22 ± 5	20 ± 5	18 ± 5	23 ± 5	19 ± 5	18 ± 5	22 ± 5
08/14/07 - 08/21/07	21 ± 4	24 ± 5	25 ± 5	19 ± 4	19 ± 4	21 ± 4	21 ± 4	22 ± 4
08/21/07 - 08/28/07	21 ± 5	19 ± 4	17 ± 4	18 ± 4	21 ± 4	18 ± 4	22 ± 5	18 ± 4
08/28/07 - 09/04/07	23 ± 5	28 ± 5	20 ± 4	31 ± 5	24 ± 5	28 ± 5	27 ± 5	27 ± 5
09/04/07 - 09/11/07	20 ± 5	24 ± 5	20 ± 5	22 ± 5	22 ± 5	22 ± 5	19 ± 4	21 ± 4
09/11/07 - 09/18/07	19 ± 4	22 ± 5	19 ± 4	18 ± 4	16 ± 4	16 ± 4	19 ± 4	16 ± 4
09/18/07 - 09/25/07	30 ± 5	38 ± 5	35 ± 5	31 ± 5	28 ± 5	34 ± 5	33 ± 5	30 ± 5
09/25/07 - 10/02/07	24 ± 5	26 ± 5	23 ± 4	27 ± 5	23 ± 5	23 ± 4	24 ± 5	21 ± 4
10/02/07 - 10/09/07	22 ± 5	20 ± 5	18 ± 4	20 ± 5	20 ± 5	18 ± 4	23 ± 5	19 ± 5
10/09/07 - 10/16/07	18 ± 4	23 ± 5	15 ± 4	25 ± 5	26 ± 5	20 ± 4	20 ± 4	26 ± 5
10/16/07 - 10/23/07	20 ± 4	22 ± 4	29 ± 5	25 ± 5	24 ± 5	19 ± 4	25 ± 5	23 ± 5
10/23/07 - 10/30/07	12 ± 4	13 ± 5	13 ± 5	11 ± 4	10 ± 4	13 ± 5	12 ± 4	11 ± 4
10/30/07 - 11/06/07	18 ± 4	20 ± 4	17 ± 4	21 ± 4	19 ± 4	19 ± 4	24 ± 5	19 ± 4
11/06/07 - 11/13/07	26 ± 5	25 ± 5	25 ± 5	23 ± 5	24 ± 5	20 ± 5	25 ± 5	27 ± 5
11/13/07 - 11/20/07	24 ± 5	26 ± 5	24 ± 5	22 ± 5	18 ± 4	23 ± 5	23 ± 5	22 ± 5
11/20/07 - 11/27/07	22 ± 5	22 ± 5	24 ± 5	29 ± 5	26 ± 5	23 ± 5	22 ± 5	20 ± 5
11/27/07 - 12/04/07	24 ± 5	27 ± 5	22 ± 6	27 ± 6	24 ± 5	25 ± 5	29 ± 5	27 ± 5
12/04/07 - 12/12/07	32 ± 5	34 ± 5	32 ± 5	38 ± 5	37 ± 5	36 ± 5	41 ± 5	38 ± 5
12/12/07 - 12/18/07	36 ± 6	34 ± 6	45 ± 7	49 ± 7	43 ± 7	41 ± 6	39 ± 6	42 ± 6
12/18/07 - 12/26/07	26 ± 5	30 ± 5	39 ± 5	37 ± 5	37 ± 5	39 ± 5	39 ± 5	37 ± 5
12/26/07 - 01/02/08	27 ± 5	35 ± 5	33 ± 5	31 ± 5	29 ± 5	30 ± 5	33 ± 5	31 ± 5
MEAN	20 ± 11	21 ± 13	21 ± 14	22 ± 14	21 ± 14	21 ± 14	22 ± 15	21 ± 14

TABLE C-V.2

MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS (E-3 PCI.CU METER) IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

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

GROUP I - NEARSITE 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
01/02/07 - 01/30/07	13	27	22 ± 8	01/02/07 - 01/30/07	13	30	23 ± 12	01/02/07 - 01/30/07	20	34	25 ± 12
01/30/07 - 02/27/07	13	26	21 ± 8	01/30/07 - 02/27/07	14	31	21 ± 9	01/30/07 - 02/27/07	19	25	22 ± 7
02/27/07 - 04/03/07	12	22	18 ± 6	02/27/07 - 04/03/07	11	26	17 ± 9	02/27/07 - 04/03/07	14	23	17 ± 7
04/03/07 - 05/01/07	9	22	14 ± 7	04/03/07 - 05/01/07	9	19	14 ± 6	04/03/07 - 05/01/07	13	18	14 ± 4
05/01/07 - 05/29/07	14	25	18 ± 6	05/01/07 - 05/29/07	14	21	18 ± 5	05/01/07 - 05/29/07	14	22	18 ± 9
05/29/07 - 07/03/07	10	28	18 ± 9	05/29/07 - 07/03/07	10	30	18 ± 12	05/29/07 - 07/03/07	12	31	18 ± 15
07/03/07 - 07/31/07	12	30	18 ± 11	07/03/07 - 07/31/07	12	27	18 ± 10	07/03/07 - 07/31/07	13	22	18 ± 7
07/31/07 - 08/28/07	17	33	22 ± 9	07/31/07 - 08/28/07	18	31	22 ± 9	07/31/07 - 08/28/07	18	30	23 ± 10
08/28/07 - 10/02/07	18	38	25 ± 11	08/28/07 - 10/02/07	16	34	24 ± 11	08/28/07 - 10/02/07	16	30	23 ± 11
10/02/07 - 10/30/07	11	29	19 ± 10	10/02/07 - 10/30/07	10	26	19 ± 10	10/02/07 - 10/30/07	11	26	20 ± 12
10/30/07 - 11/27/07	17	29	23 ± 6	10/30/07 - 11/27/07	18	26	22 ± 5	10/30/07 - 11/27/07	19	27	22 ± 7
11/27/07 - 01/02/08	22	49	33 ± 14	11/27/07 - 01/02/08	24	43	35 ± 12	11/27/07 - 01/02/08	27	42	35 ± 12
01/02/07 - 01/02/08	9	49	21 ± 10	01/02/07 - 01/02/08	9	43	21 ± 10	01/02/07 - 01/02/08	11	42	21 ± 11

C - 9

TABLE C-V.3

**CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

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

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-01	01/02/07 - 04/03/07	< 2	< 4	< 13	< 3	< 6	< 5	< 7	< 2	< 2	< 465	< 136
	04/03/07 - 07/03/07	< 5	< 8	< 34	< 4	< 13	< 9	< 18	< 4	< 3	< 3620	< 1550
	07/03/07 - 10/02/07	< 4	< 8	< 21	< 3	< 10	< 8	< 15	< 3	< 3	< 2510	< 928
	10/02/07 - 01/02/08	< 2	< 5	< 15	< 2	< 5	< 4	< 7	< 3	< 2	< 472	< 220
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BY-04	01/02/07 - 04/03/07	< 2	< 3	< 8	< 2	< 4	< 4	< 6	< 2	< 2	< 411	< 103
	04/03/07 - 07/03/07	< 3	< 7	< 28	< 3	< 6	< 7	< 12	< 3	< 2	< 2580	< 1260
	07/03/07 - 10/02/07	< 3	< 7	< 26	< 3	< 9	< 8	< 15	< 4	< 3	< 3130	< 793
	10/02/07 - 01/02/08	< 4	< 6	< 16	< 2	< 9	< 6	< 13	< 3	< 3	< 720	< 264
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BY-06	01/02/07 - 04/03/07	< 4	< 6	< 12	< 2	< 7	< 7	< 11	< 3	< 3	< 704	< 288
	04/03/07 - 07/03/07	< 3	< 7	< 19	< 3	< 8	< 8	< 10	< 3	< 2	< 2200	< 1220
	07/03/07 - 10/02/07	< 4	< 8	< 30	< 3	< 12	< 9	< 15	< 4	< 3	< 3390	< 1280
	10/02/07 - 01/02/08	< 2	< 5	< 15	< 2	< 5	< 4	< 11	< 2	< 2	< 599	< 202
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BY-08	01/02/07 - 04/03/07	< 3	< 7	< 19	< 3	< 7	< 7	< 10	< 3	< 3	< 796	< 153
	04/03/07 - 07/03/07	< 3	< 5	< 22	< 2	< 6	< 7	< 11	< 3	< 2	< 2820	< 1040
	07/03/07 - 10/02/07	< 4	< 9	< 32	< 4	< 10	< 11	< 16	< 4	< 3	< 3820	< 1400
	10/02/07 - 01/02/08	< 5	< 6	< 21	< 3	< 9	< 7	< 15	< 4	< 3	< 881	< 267
	MEAN	-	-	-	-	-	-	-	-	-	-	-

C - 10

64 of 211

TABLE C-V.3

CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

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

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-21	01/02/07 - 04/03/07	< 3	< 6	< 20	< 3	< 10	< 6	< 10	< 3	< 3	< 749	< 257
	04/03/07 - 07/03/07	< 3	< 7	< 40	< 1	< 10	< 8	< 17	< 3	< 3	< 4120	< 1500
	07/03/07 - 10/02/07	< 3	< 7	< 14	< 3	< 10	< 8	< 13	< 3	< 3	< 2830	< 1410
	10/02/07 - 01/02/08	< 4	< 5	< 20	< 1	< 6	< 7	< 12	< 3	< 3	< 662	< 228
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BY-22	01/02/07 - 04/03/07	< 3	< 4	< 26	< 3	< 10	< 7	< 11	< 4	< 3	< 641	< 313
	04/03/07 - 07/03/07	< 3	< 5	< 13	< 3	< 8	< 7	< 12	< 3	< 2	< 2680	< 1500
	07/03/07 - 10/02/07	< 3	< 8	< 33	< 3	< 8	< 8	< 11	< 4	< 3	< 3210	< 734
	10/02/07 - 01/02/08	< 3	< 5	< 15	< 2	< 7	< 6	< 8	< 3	< 2	< 601	< 224
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BY-23	01/02/07 - 04/03/07	< 4	< 7	< 19	< 4	< 8	< 6	< 12	< 3	< 3	< 857	< 264
	04/03/07 - 07/03/07	< 4	< 7	< 26	< 3	< 8	< 8	< 18	< 4	< 3	< 4470	< 1730
	07/03/07 - 10/02/07	< 3	< 6	< 19	< 3	< 8	< 7	< 10	< 3	< 2	< 2650	< 807
	10/02/07 - 01/02/08	< 3	< 5	< 12	< 3	< 8	< 6	< 10	< 3	< 2	< 567	< 374
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BY-24	01/02/07 - 04/03/07	< 4	< 6	< 22	< 3	< 9	< 7	< 13	< 4	< 4	< 774	< 223
	04/03/07 - 07/03/07	< 3	< 5	< 17	< 3	< 8	< 7	< 10	< 2	< 2	< 2610	< 1270
	07/03/07 - 10/02/07	< 4	< 8	< 35	< 2	< 12	< 9	< 21	< 4	< 4	< 3180	< 1270
	10/02/07 - 01/02/08	< 5	< 6	< 23	< 4	< 12	< 7	< 12	< 4	< 3	< 885	< 319
	MEAN	-	-	-	-	-	-	-	-	-	-	-

C-11

TABLE C-VI.1

CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

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

COLLECTION PERIOD	GROUP I				GROUP II			GROUP III
	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
01/02/07 - 01/09/07	< 41	< 41	< 41	< 41	< 49	< 50	< 49	< 47
01/09/07 - 01/16/07	< 39	< 39	< 39	< 39	< 42	< 41	< 41	< 41
01/16/07 - 01/23/07	< 47	< 47	< 47	< 47	< 37	< 37	< 37	< 36
01/23/07 - 01/30/07	< 50	< 50	< 50	< 50	< 60	< 61	< 61	< 62
01/30/07 - 02/06/07	< 52	< 52	< 52	< 61	< 44	< 34	< 51	< 52
02/06/07 - 02/12/07	< 52	< 52	< 52	< 46	< 34	< 35	< 35	< 35
02/12/07 - 02/20/07	< 58	< 58	< 58	< 57	< 53	< 53	< 35	< 52
02/20/07 - 02/27/07	< 69	< 69	< 69	< 69	< 63	< 64	< 63	< 41
02/27/07 - 03/06/07	< 60	< 60	< 60	< 60	< 57	< 58	< 59	< 59
03/06/07 - 03/13/07	< 21	< 31	< 31	< 31	< 34	< 34	< 34	< 33
03/13/07 - 03/20/07	< 29	< 25	< 25	< 25	< 22	< 21	< 21	< 21
03/20/07 - 03/27/07	< 44	< 35	< 43	< 44	< 45	< 46	< 46	< 43
03/27/07 - 04/03/07	< 47	< 47	< 47	< 25	< 49	< 49	< 49	< 49
04/03/07 - 04/10/07	< 60	< 60	< 36	< 60	< 54	< 56	< 56	< 58
04/10/07 - 04/17/07	< 58	< 58	< 58	< 58	< 52	< 51	< 51	< 51
04/17/07 - 04/24/07	< 25	< 25	< 25	< 14	< 23	< 23	< 23	< 23
04/24/07 - 05/01/07	< 32	< 32	< 32	< 31	< 30	< 30	< 30	< 31
05/01/07 - 05/08/07	< 51	< 67	< 68	< 68	< 27	< 51	< 51	< 49
05/08/07 - 05/15/07	< 35	< 35	< 35	< 35	< 34	< 34	< 34	< 35
05/15/07 - 05/22/07	< 21	< 28	< 28	< 28	< 28	< 26	< 26	< 26
05/22/07 - 05/29/07	< 57	< 57	< 57	< 58	< 55	< 57	< 57	< 58
05/29/07 - 06/05/07	< 19	< 19	< 19	< 19	< 18	< 18	< 18	< 18
06/05/07 - 06/12/07	< 24	< 24	< 24	< 24	< 31	< 19	< 29	< 29
06/12/07 - 06/19/07	< 58	< 58	< 58	< 58	< 50	< 51	< 50	< 50
06/19/07 - 06/26/07	< 22	< 26	< 26	< 26	< 22	< 22	< 15	< 22
06/26/07 - 07/03/07	< 48	< 48	< 48	< 48	< 32	< 32	< 32	< 32
07/03/07 - 07/10/07	< 51	< 51	< 51	< 51	< 47	< 46	< 46	< 46
07/10/07 - 07/17/07	< 61	< 61	< 61	< 26	< 29	< 29	< 29	< 28
07/17/07 - 07/24/07	< 64	< 64	< 64	< 64	< 65	< 66	< 66	< 68
07/24/07 - 07/31/07	< 54	< 54	< 43	< 55	< 35	< 35	< 35	< 53
07/31/07 - 08/07/07	< 53	< 53	< 54	< 54	< 54	< 51	< 53	< 53
08/07/07 - 08/14/07	< 62	< 31	< 62	< 62	< 50	< 52	< 51	< 49
08/14/07 - 08/21/07	< 19	< 19	< 20	< 19	< 19	< 19	< 18	< 19
08/21/07 - 08/28/07	< 69	< 69	< 69	< 70	< 64	< 66	< 66	< 63
08/28/07 - 09/04/07	< 50	< 63	< 64	< 64	< 67	< 65	< 66	< 67
09/04/07 - 09/11/07	< 44	< 44	< 43	< 43	< 45	< 47	< 46	< 45
09/11/07 - 09/18/07	< 46	< 49	< 49	< 49	< 48	< 48	< 47	< 29
09/18/07 - 09/25/07	< 49	< 49	< 49	< 49	< 54	< 55	< 55	< 53
09/25/07 - 10/02/07	< 69	< 69	< 69	< 69	< 66	< 66	< 66	< 68
10/02/07 - 10/09/07	< 65	< 65	< 66	< 65	< 58	< 57	< 58	< 58
10/09/07 - 10/16/07	< 59	< 59	< 58	< 58	< 67	< 68	< 67	< 68
10/16/07 - 10/23/07	< 68	< 68	< 68	< 68	< 65	< 64	< 64	< 64
10/23/07 - 10/30/07	< 60	< 60	< 60	< 61	< 56	< 57	< 57	< 58
10/30/07 - 11/06/07	< 69	< 69	< 70	< 68	< 62	< 63	< 63	< 61
11/06/07 - 11/13/07	< 32	< 53	< 52	< 52	< 55	< 56	< 55	< 57
11/13/07 - 11/20/07	< 50	< 40	< 51	< 51	< 61	< 60	< 60	< 51
11/20/07 - 11/27/07	< 37	< 37	< 37	< 37	< 48	< 49	< 49	< 48
11/27/07 - 12/04/07	< 33	< 33	< 24	< 44	< 29	< 32	< 29	< 30
12/04/07 - 12/12/07	< 44	< 44	< 44	< 44	< 44	< 45	< 45	< 44
12/12/07 - 12/18/07	< 65	< 65	< 66	< 49	< 68	< 66	< 67	< 67
12/18/07 - 12/26/07	< 39	< 39	< 39	< 39	< 34	< 34	< 34	< 33
12/26/07 - 01/02/08	< 40	< 40	< 40	< 40	< 47	< 47	< 47	< 46
MEAN	-	-	-	-	-	-	-	-

TABLE C-VII.1

**CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN
THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	CONTROL FARM	INDICATOR FARM		
	BY-26-1	BY-20-1	BY-30	BY-38
01/01/07	< 0.2	< 0.3	< 0.3	(1)
02/06/07	< 0.4	< 0.6	< 0.5	(1)
03/06/07	< 0.6	< 0.8	< 0.9	(1)
04/03/07	< 0.6	< 0.6	< 0.8	< 0.7
05/01/07	< 0.6	(1)	(1)	< 0.6
05/08/07	-	< 0.7	< 1.0	-
05/15/07	< 0.7	< 0.8	< 0.7	< 0.8
05/29/07	< 0.7	< 0.7	< 0.8	< 0.9
06/12/07	< 0.7	< 0.9	< 0.8	< 0.9
06/26/07	< 0.6	< 0.9	< 0.8	< 0.7
07/10/07	< 0.8	< 0.9	< 0.9	< 0.8
07/24/07	< 0.4	< 0.6	< 0.6	< 0.7
08/07/07	< 0.6	< 0.7	< 0.8	< 0.8
08/21/07	< 0.9	< 0.6	< 0.8	< 0.8
09/04/07	< 0.9	< 0.9	< 0.8	< 0.8
09/18/07	< 0.5	< 0.5	< 0.6	< 0.6
10/02/07	< 0.7	< 0.8	< 0.9	< 0.8
10/16/07	< 0.5	< 0.6	< 0.6	< 0.7
10/29/07	-	-	-	< 0.8
10/30/07	< 0.8	< 0.9	< 0.8	-
11/13/07	< 0.6	< 0.5	< 0.7	(1)
12/04/07	< 0.8	< 0.8	< 0.7	(1)
MEAN	-	-	-	-

- NO SAMPLE REQUIRED

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VII.2

**CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-20-1	01/01/07	< 5	< 5	< 11	< 5	< 11	< 5	< 8	< 4	< 5	< 25	< 7
	02/06/07	< 7	< 8	< 19	< 8	< 17	< 8	< 11	< 8	< 9	< 35	< 7
	03/06/07	< 7	< 7	< 13	< 6	< 15	< 7	< 12	< 6	< 8	< 35	< 11
	04/03/07	< 4	< 5	< 12	< 5	< 11	< 5	< 9	< 3	< 5	< 28	< 8
	05/08/07	< 6	< 7	< 17	< 8	< 9	< 8	< 11	< 5	< 6	< 41	< 12
	05/15/07	< 6	< 6	< 15	< 6	< 14	< 5	< 11	< 5	< 5	< 28	< 11
	05/29/07	< 3	< 3	< 6	< 3	< 6	< 3	< 5	< 2	< 3	< 14	< 3
	06/12/07	< 5	< 5	< 13	< 5	< 11	< 7	< 9	< 4	< 5	< 49	< 14
	06/26/07	< 4	< 4	< 11	< 4	< 9	< 4	< 8	< 3	< 4	< 30	< 7
	07/10/07	< 9	< 8	< 17	< 9	< 19	< 10	< 15	< 9	< 8	< 42	< 12
	07/24/07	< 5	< 7	< 15	< 7	< 16	< 7	< 11	< 6	< 6	< 43	< 12
	08/07/07	< 6	< 7	< 16	< 6	< 15	< 6	< 13	< 6	< 6	< 40	< 11
	08/21/07	< 4	< 4	< 10	< 4	< 10	< 5	< 8	< 4	< 4	< 42	< 15
	09/04/07	< 6	< 8	< 19	< 7	< 16	< 9	< 14	< 5	< 6	< 53	< 12
	09/18/07	< 7	< 7	< 18	< 5	< 14	< 7	< 10	< 7	< 7	< 43	< 13
	10/02/07	< 3	< 4	< 10	< 3	< 8	< 4	< 7	< 3	< 4	< 35	< 12
	10/16/07	< 3	< 4	< 11	< 3	< 9	< 4	< 7	< 4	< 3	< 45	< 13
10/30/07	< 6	< 6	< 15	< 5	< 18	< 7	< 11	< 8	< 6	< 37	< 12	
11/13/07	< 2	< 2	< 5	< 2	< 4	< 2	< 3	< 1	< 2	< 16	< 5	
12/04/07	< 5	< 6	< 14	< 4	< 11	< 6	< 10	< 4	< 5	< 38	< 14	
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VII.2

CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-26-1	01/01/07	< 5	< 6	< 13	< 6	< 13	< 6	< 10	< 5	< 6	< 27	< 10
	02/06/07	< 8	< 8	< 18	< 9	< 20	< 7	< 15	< 8	< 8	< 33	< 14
	03/06/07	< 10	< 8	< 22	< 9	< 23	< 9	< 10	< 6	< 9	< 35	< 15
	04/03/07	< 6	< 8	< 17	< 8	< 16	< 7	< 12	< 6	< 7	< 41	< 15
	05/01/07	< 4	< 3	< 9	< 4	< 8	< 4	< 7	< 3	< 3	< 25	< 8
	05/15/07	< 7	< 7	< 16	< 6	< 17	< 7	< 11	< 5	< 7	< 39	< 9
	05/29/07	< 5	< 4	< 12	< 5	< 10	< 5	< 8	< 4	< 5	< 32	< 11
	06/12/07	< 4	< 5	< 11	< 4	< 9	< 5	< 7	< 3	< 4	< 38	< 13
	06/26/07	< 4	< 4	< 10	< 4	< 8	< 4	< 7	< 4	< 4	< 28	< 9
	07/10/07	< 5	< 4	< 9	< 5	< 11	< 5	< 8	< 5	< 5	< 21	< 8
	07/24/07	< 5	< 6	< 16	< 6	< 14	< 6	< 10	< 5	< 7	< 42	< 12
	08/07/07	< 4	< 4	< 8	< 4	< 9	< 5	< 7	< 3	< 4	< 24	< 8
	08/21/07	< 4	< 4	< 12	< 4	< 9	< 5	< 9	< 3	< 4	< 40	< 13
	09/04/07	< 5	< 6	< 14	< 5	< 14	< 6	< 9	< 4	< 5	< 41	< 14
	09/18/07	< 5	< 5	< 15	< 6	< 12	< 6	< 9	< 5	< 5	< 35	< 10
	10/02/07	< 4	< 5	< 12	< 5	< 9	< 5	< 8	< 4	< 4	< 46	< 14
	10/16/07	< 3	< 4	< 10	< 4	< 8	< 4	< 7	< 3	< 3	< 40	< 14
10/30/07	< 7	< 8	< 19	< 8	< 18	< 8	< 14	< 8	< 7	< 47	< 15	
11/13/07	< 2	< 2	< 6	< 2	< 5	< 2	< 4	< 2	< 2	< 21	< 6	
12/04/07	< 7	< 7	< 19	< 6	< 18	< 9	< 14	< 6	< 7	< 52	< 15	
MEAN		-	-	-	-	-	-	-	-	-	-	-

TABLE C-VII.2

**CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-30	01/01/07	< 4	< 6	< 15	< 6	< 14	< 6	< 9	< 5	< 6	< 27	< 6
	02/06/07	< 7	< 6	< 14	< 7	< 16	< 8	< 12	< 6	< 7	< 32	< 11
	03/06/07	< 6	< 6	< 13	< 8	< 15	< 7	< 11	< 6	< 7	< 29	< 9
	04/03/07	< 5	< 7	< 15	< 5	< 10	< 6	< 10	< 5	< 6	< 39	< 10
	05/08/07	< 6	< 7	< 13	< 8	< 13	< 7	< 11	< 5	< 6	< 36	< 12
	05/15/07	< 7	< 7	< 20	< 6	< 16	< 7	< 14	< 6	< 7	< 30	< 13
	05/29/07	< 3	< 3	< 7	< 3	< 7	< 3	< 5	< 3	< 3	< 17	< 5
	06/12/07	< 3	< 4	< 10	< 4	< 8	< 5	< 8	< 3	< 3	< 35	< 13
	06/26/07	< 5	< 5	< 13	< 5	< 11	< 6	< 10	< 4	< 5	< 32	< 11
	07/10/07	< 4	< 4	< 8	< 5	< 11	< 4	< 7	< 4	< 4	< 25	< 6
	07/24/07	< 6	< 6	< 16	< 7	< 14	< 6	< 10	< 5	< 6	< 41	< 10
	08/07/07	< 6	< 7	< 17	< 7	< 14	< 7	< 13	< 6	< 7	< 39	< 15
	08/21/07	< 4	< 4	< 12	< 4	< 10	< 5	< 8	< 4	< 4	< 41	< 12
	09/04/07	< 8	< 9	< 23	< 8	< 18	< 9	< 14	< 8	< 7	< 56	< 13
	09/18/07	< 5	< 6	< 15	< 6	< 10	< 7	< 10	< 5	< 6	< 33	< 12
	10/02/07	< 4	< 4	< 11	< 4	< 10	< 5	< 7	< 4	< 4	< 39	< 11
	10/16/07	< 3	< 4	< 11	< 3	< 9	< 5	< 8	< 3	< 3	< 45	< 14
	10/30/07	< 4	< 4	< 12	< 2	< 10	< 4	< 9	< 4	< 5	< 36	< 10
11/13/07	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 2	< 2	< 19	< 6	
12/04/07	< 7	< 7	< 18	< 7	< 15	< 7	< 12	< 6	< 6	< 46	< 12	
MEAN		-	-	-	-	-	-	-	-	-	-	-

**TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BY-38	04/03/07	< 6	< 6	< 17	< 7	< 17	< 7	< 11	< 6	< 7	< 35	< 14
	04/30/07	< 4	< 5	< 10	< 5	< 11	< 5	< 8	< 4	< 5	< 34	< 11
	05/13/07	< 7	< 7	< 14	< 8	< 15	< 8	< 11	< 7	< 6	< 39	< 8
	05/27/07	< 3	< 3	< 8	< 3	< 8	< 3	< 6	< 3	< 3	< 20	< 6
	06/11/07	< 4	< 5	< 12	< 4	< 12	< 5	< 9	< 4	< 4	< 50	< 14
	06/24/07	< 3	< 4	< 9	< 4	< 8	< 4	< 7	< 3	< 4	< 27	< 9
	07/08/07	< 6	< 6	< 13	< 6	< 12	< 7	< 10	< 5	< 5	< 27	< 9
	07/22/07	< 5	< 5	< 13	< 4	< 11	< 5	< 10	< 4	< 5	< 31	< 13
	08/05/07	< 7	< 7	< 18	< 7	< 16	< 7	< 14	< 6	< 7	< 47	< 11
	08/19/07	< 4	< 5	< 11	< 4	< 8	< 4	< 8	< 3	< 4	< 42	< 12
	09/01/07	< 6	< 7	< 14	< 6	< 13	< 7	< 11	< 5	< 5	< 45	< 14
	09/17/07	< 5	< 6	< 14	< 5	< 12	< 7	< 12	< 5	< 6	< 44	< 10
	10/01/07	< 4	< 4	< 11	< 4	< 8	< 5	< 9	< 4	< 4	< 44	< 10
	10/13/07	< 2	< 2	< 6	< 2	< 5	< 2	< 4	< 2	< 2	< 26	< 7
	10/26/07	< 7	< 7	< 24	< 9	< 17	< 6	< 17	< 6	< 9	< 48	< 11
MEAN		-	-	-	-	-	-	-	-	-	-	-

TABLE C-VIII.1

**CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2007**

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

STC	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
BY-CONTROL (1)													
Cabbage	08/27/07	< 15	< 18	< 43	< 13	< 29	< 20	< 35	< 30	< 13	< 13	< 434	< 133
Potatoes	08/27/07	< 4	< 4	< 12	< 4	< 10	< 5	< 8	< 31	< 3	< 4	< 48	< 14
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BY-QUAD 1													
Beet Tops	08/27/07	< 7	< 8	< 19	< 6	< 15	< 9	< 14	< 54	< 6	< 7	< 84	< 26
Beets	08/27/07	< 15	< 19	< 50	< 15	< 31	< 22	< 36	< 54	< 14	< 16	< 446	< 142
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BY-QUAD 2													
Lettuce	08/25/07	< 3	< 4	< 10	< 4	< 8	< 5	< 8	< 34	< 3	< 4	< 48	< 14
Onions	08/25/07	< 4	< 5	< 11	< 4	< 9	< 5	< 9	< 40	< 4	< 4	< 60	< 19
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BY-QUAD 3													
Kohlrabi leaves & Cabbage	08/25/07	< 4	< 5	< 12	< 4	< 10	< 5	< 9	< 43	< 4	< 4	< 60	< 16
Potatoes	08/25/07	< 3	< 4	< 9	< 3	< 8	< 4	< 6	< 26	< 3	< 3	< 40	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BY-QUAD 4													
Kohlrabi leaves & Cabbage	08/25/07	< 4	< 4	< 11	< 4	< 9	< 5	< 8	< 37	< 3	< 4	< 53	< 16
Potatoes	08/25/07	< 15	< 19	< 52	< 15	< 32	< 22	< 36	< 38	< 12	< 14	< 526	< 155
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR BYRON NUCLEAR GENERATING STATION, 2007

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
BY-01-1	18.5 \pm 2.6	18	17	19	20
BY-01-2	18.5 \pm 3.8	20	18	16	20
BY-04-1	21.5 \pm 4.2	21	19	22	24
BY-04-2	20.8 \pm 5.0	20	18	21	24
BY-06-1	17.8 \pm 4.1	19	16	16	20
BY-06-2	18.8 \pm 4.4	20	18	16	21
BY-08-1	17.5 \pm 3.5	17	17	16	20
BY-08-2	18.0 \pm 4.9	18	15	18	21
BY-21-1	18.3 \pm 6.6	18	16	16	23
BY-21-2	17.5 \pm 5.0	17	15	17	21
BY-22-1	23.5 \pm 2.6	22	23	24	25
BY-22-2	24.5 \pm 7.4	25	20	24	29
BY-23-1	22.0 \pm 4.3	22	20	21	25
BY-23-2	22.3 \pm 6.6	24	19	20	26
BY-24-1	20.3 \pm 3.8	20	19	19	23
BY-24-2	20.0 \pm 3.3	20	18	20	22
BY-101-1	19.0 \pm 6.7	20	15	18	23
BY-101-2	17.5 \pm 5.0	17	15	17	21
BY-102-1	24.3 \pm 1.9	25	24	23	25
BY-102-2	24.8 \pm 8.2	25	20	24	30
BY-103-1	22.0 \pm 3.3	20	22	22	24
BY-103-2	22.0 \pm 3.7	21	20	23	24
BY-104-1	23.0 \pm 3.3	21	23	23	25
BY-104-2	23.5 \pm 6.0	21	21	27	25
BY-105-1	23.5 \pm 6.2	20	22	27	25
BY-105-2	24.0 \pm 4.0	25	21	25	25
BY-106-1	22.5 \pm 4.2	22	20	23	25
BY-106-2	22.3 \pm 3.4	22	20	23	24
BY-107-1	24.0 \pm 4.3	24	21	25	26
BY-107-2	24.8 \pm 3.0	26	23	24	26
BY-108-1	24.3 \pm 5.0	24	21	27	25
BY-108-2	22.5 \pm 2.6	23	21	22	24
BY-109-1	22.8 \pm 5.3	24	19	23	25
BY-109-2	22.5 \pm 5.3	24	19	22	25
BY-110-1	21.8 \pm 4.4	23	19	21	24
BY-110-2	22.5 \pm 2.6	21	22	23	24
BY-111-3	22.8 \pm 4.1	23	20	23	25
BY-111-4	22.8 \pm 6.6	23	19	22	27
BY-112-3	21.5 \pm 4.2	22	19	21	24
BY-112-4	22.5 \pm 5.8	23	19	22	26
BY-113-1	23.3 \pm 5.3	23	21	22	27
BY-113-2	19.0 \pm 3.3	19	17	19	21
BY-114-1	19.3 \pm 5.0	20	16	19	22
BY-114-2	21.0 \pm 3.7	20	19	22	23

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR BYRON NUCLEAR GENERATING STATION, 2007

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

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
BY-115-1	21.8 ± 3.4	20	22	21	24
BY-115-2	20.5 ± 2.6	19	20	21	22
BY-116-1	20.0 ± 4.3	21	17	20	22
BY-116-2	21.0 ± 3.3	21	19	21	23
BY-201-3	22.0 ± 4.3	24	19	22	23
BY-201-4	22.3 ± 2.5	22	21	22	24
BY-202-1	20.3 ± 5.7	20	17	20	24
BY-202-2	24.0 ± 6.7	25	20	23	28
BY-203-1	18.8 ± 5.3	21	16	17	21
BY-203-2	20.8 ± 4.1	21	18	21	23
BY-204-1	19.8 ± 3.0	19	19	19	22
BY-204-2	21.8 ± 3.4	21	20	22	24
BY-205-1	23.5 ± 4.2	24	21	23	26
BY-205-2	20.0 ± 2.0	20	19	21	(1)
BY-206-1	23.0 ± 4.3	22	21	23	26
BY-206-2	24.3 ± 4.1	26	23	22	26
BY-207-1	24.5 ± 1.2	24	24	25	25
BY-207-2	23.3 ± 1.9	22	23	24	24
BY-208-1	25.5 ± 7.4	24	24	23	31
BY-208-2	22.8 ± 3.4	22	21	23	25
BY-209-1	22.3 ± 9.1	21	17	23	28
BY-209-4	23.0 ± 4.3	21	23	22	26
BY-210-3	23.3 ± 5.3	23	22	21	27
BY-210-4	21.8 ± 3.4	21	20	22	24
BY-211-1	23.8 ± 3.4	24	22	23	26
BY-211-4	22.0 ± 3.3	20	22	22	24
BY-212-1	23.8 ± 3.4	24	22	23	26
BY-212-4	24.3 ± 3.4	22	25	24	26
BY-213-1	24.3 ± 1.9	25	24	23	25
BY-213-4	24.5 ± 6.0	23	23	23	29
BY-214-1	23.0 ± 8.2	21	20	22	29
BY-214-4	22.0 ± 4.0	(1)	20	22	24
BY-215-1	23.0 ± 2.8	22	22	23	25
BY-215-4	22.8 ± 4.7	21	21	23	26
BY-216-1	24.0 ± 5.7	22	22	24	28
BY-216-2	21.0 ± 5.9	21	17	22	24

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.2 MEAN QUARTLY TLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR BYRON NUCLEAR GENERATING STATION, 2007

RESULTS IN UNITS OF MILLI-ROENTGENS/QUARTER \pm 2
STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	INNER RING \pm 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	21.9 \pm 4.2	22.2 \pm 3.4	20.4 \pm 4.5	17.5 \pm 1.4
APR-JUN	19.9 \pm 4.4	20.9 \pm 4.6	18.3 \pm 4.0	16.0 \pm 2.8
JUL-SEP	22.3 \pm 4.7	22.3 \pm 3.0	19.4 \pm 5.7	17.0 \pm 2.8
OCT-DEC	24.4 \pm 3.7	25.5 \pm 4.3	23.1 \pm 5.3	20.5 \pm 1.4

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR BYRON STATION, 2007

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN \pm 2 S.D.
INNER RING	128	15	30	22.1 \pm 5.3
OUTER RING	126	16	31	22.7 \pm 5.1
OTHER	56	15	29	20.3 \pm 6.0
CONTROL	8	15	21	17.8 \pm 4.0

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

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

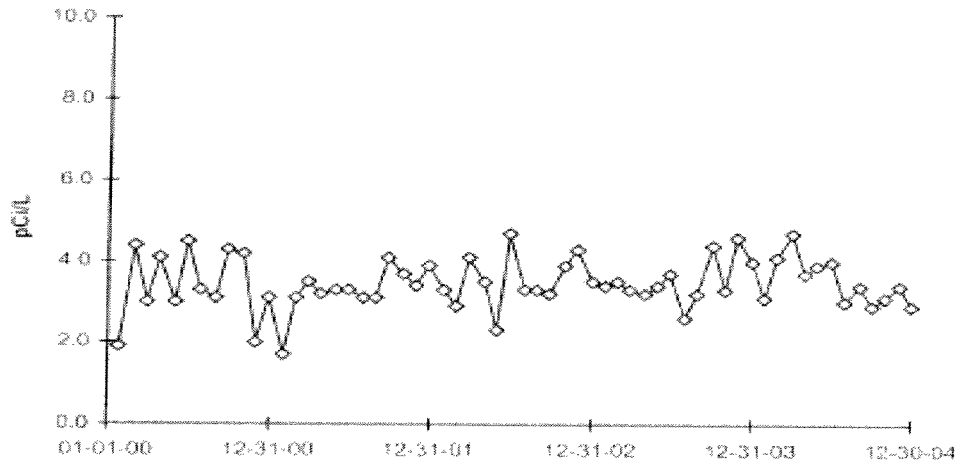
OTHER STATIONS - BY-01-1, BY-01-2, BY-04-1, BY-04-2, BY-06-1, BY-06-2, BY-21-1, BY-21-2, BY-22-1, BY-22-2, BY-23-1, BY-23-2, BY-24-1, BY-24-2

CONTROL STATIONS - BY-08-1, BY-08-2

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FIGURE C-1
Surface Water - Gross Beta - Station BY-12 and BY-29 (C)
Collected in the Vicinity of BNGS, 2000 - 2004

**BY-12 Oregon Pool of Rock River,
Downstream**



BY-29 (C) Byron, Upstream

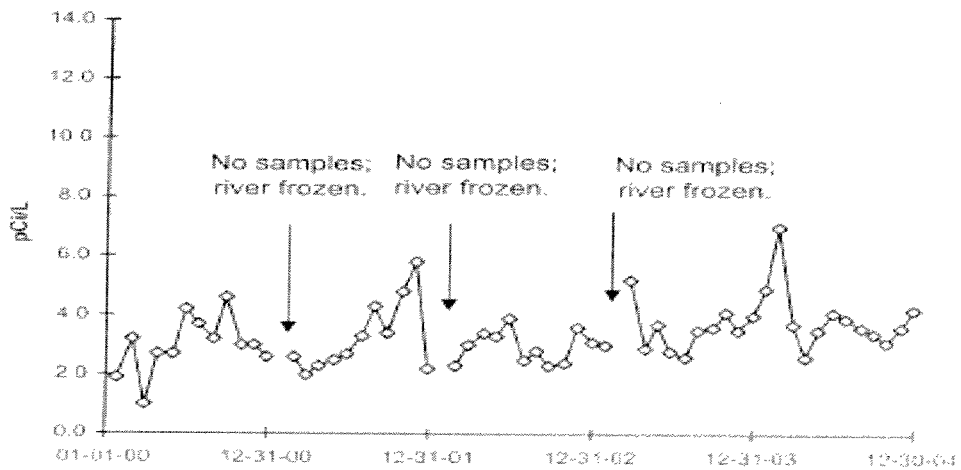
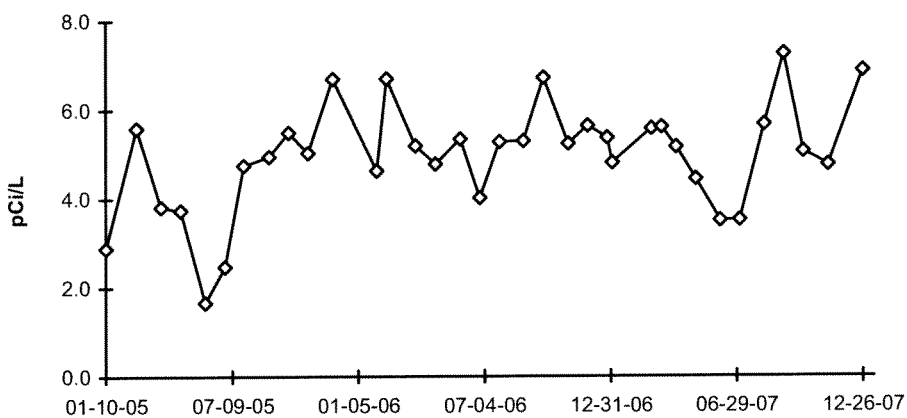
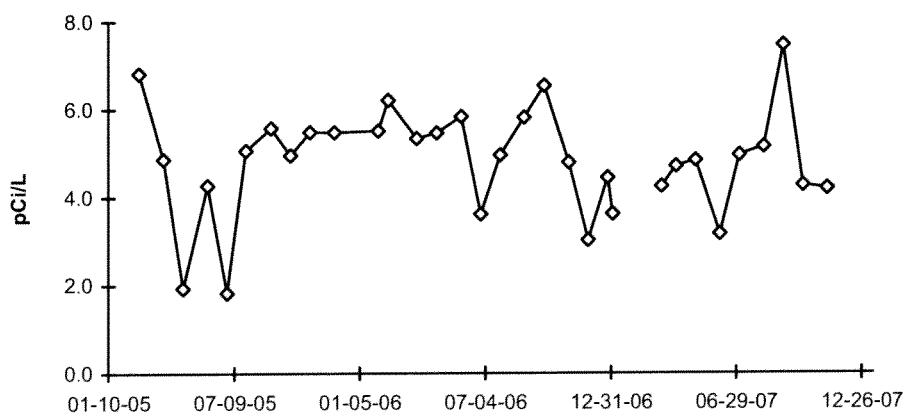


FIGURE C-1 (cont.)
Surface Water - Gross Beta - Station BY-12 and BY-29 (C)
Collected in the Vicinity of BNGS, 2005 - 2007

BY-12 Oregon Pool of Rock River, Downstream



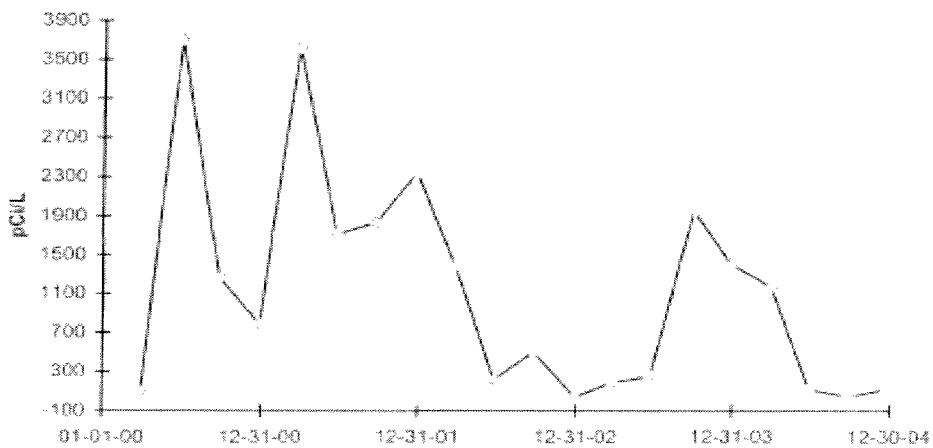
BY-29 (C) Byron, Upstream



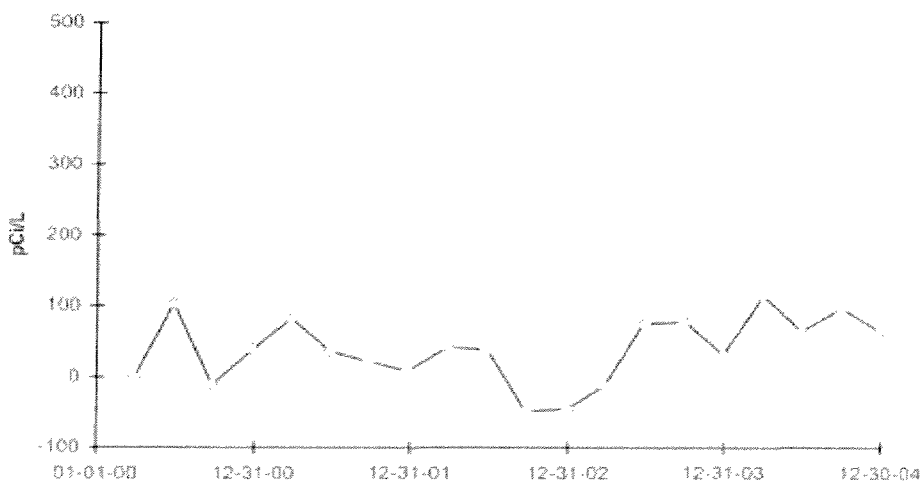
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-2
Surface Water - Tritium - Stations BY-12 and BY-29 (C)
Collected in the Vicinity of BNGS, 2000 - 2004

**BY-12 Oregon Pool of Rock River,
Downstream**

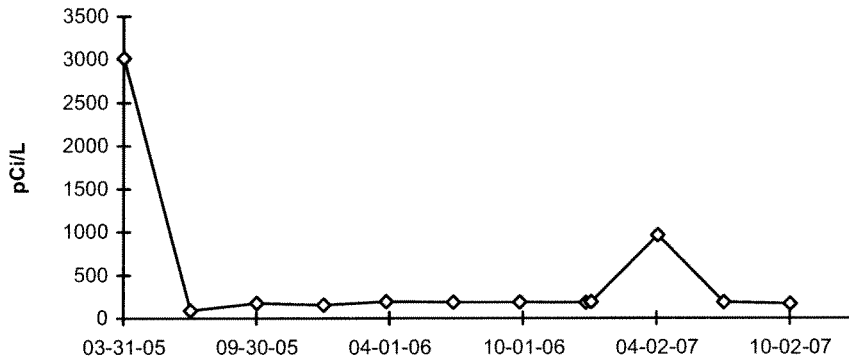


BY-29(C) Byron, Upstream

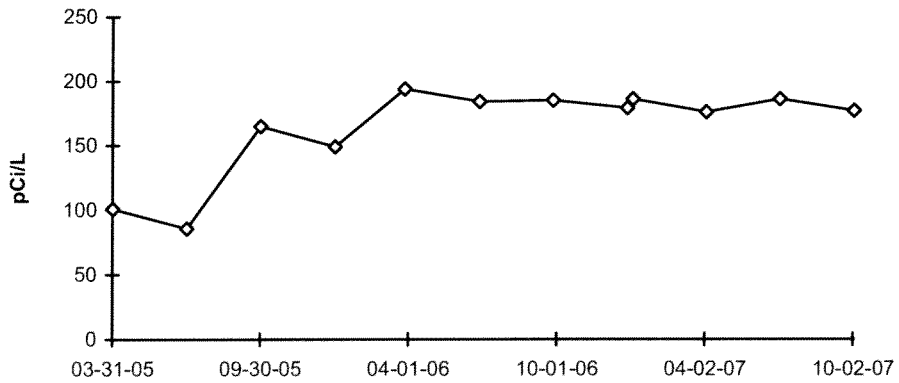


**FIGURE C-2 (cont.)
Surface Water - Tritium - Stations BY-12 and BY-29 (C)
Collected in the Vicinity of BNGS, 2005 - 2007**

BY-12 Oregon Pool of Rock River, Downstream



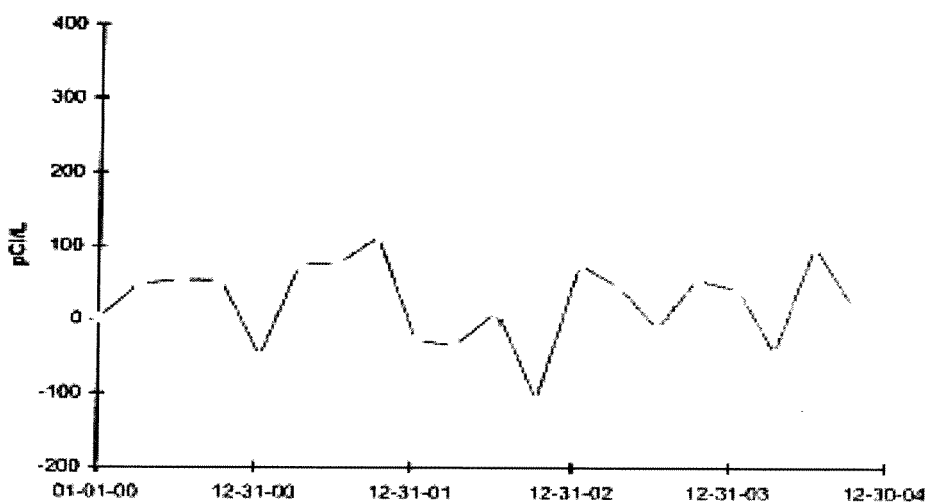
BY-29 (C) Byron, Upstream



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

FIGURE C-3
Ground Water - Tritium - Stations BY-14-1 and BY-18
Collected in the Vicinity of BNGS, 2000 - 2004

BY-14-1 3200 N. German Church Road



BY-18 McCoy Farmstead Well

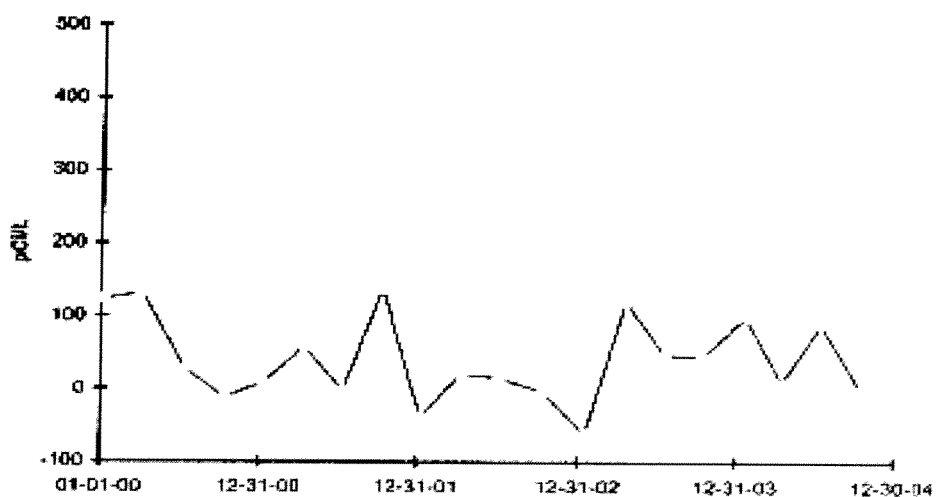
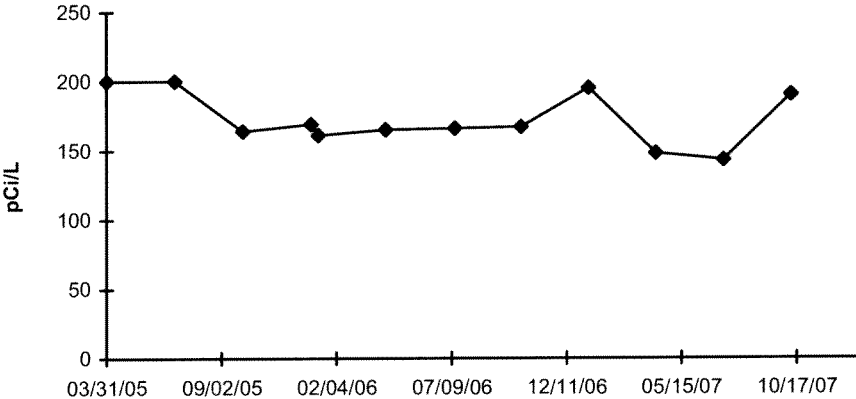
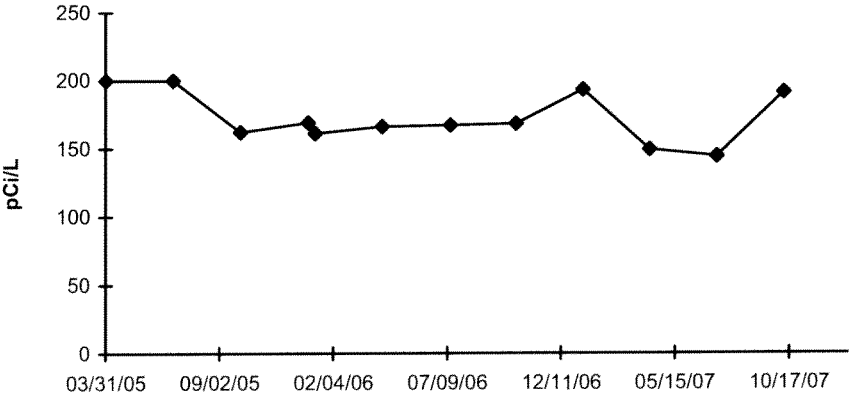


FIGURE C-3 (cont.)
Ground Water - Tritium - Stations BY-14-1 and BY-18
Collected in the Vicinity of BNGS, 2005 - 2007

BY-14-1 3200 N. German Church Road



BY-18 McCoy Farmstead Well



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

FIGURE C-4
Ground Water - Tritium - Station BY-32
Collected in the Vicinity of BNGS, 2000 - 2004
BY-32 Wolford Well

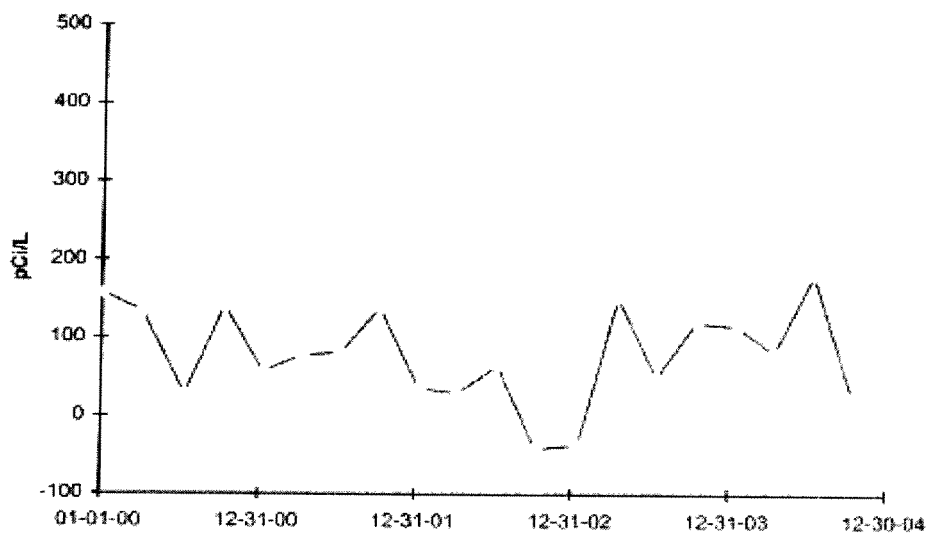
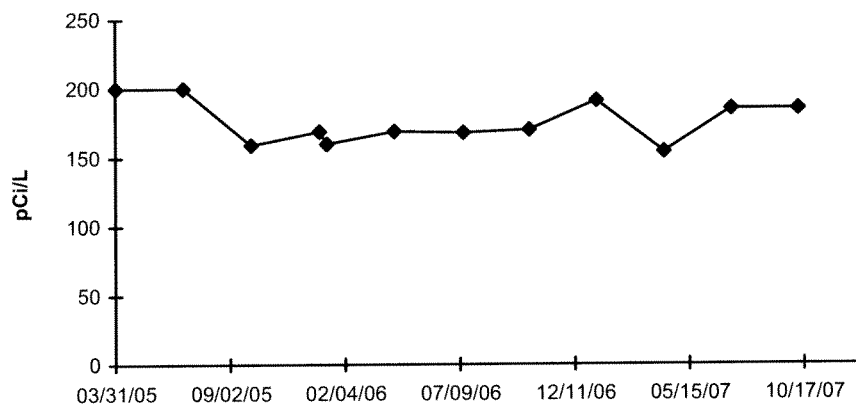


FIGURE C-4 (cont.)
Ground Water - Tritium - Station BY-32
Collected in the Vicinity of BNGS, 2005 -2007

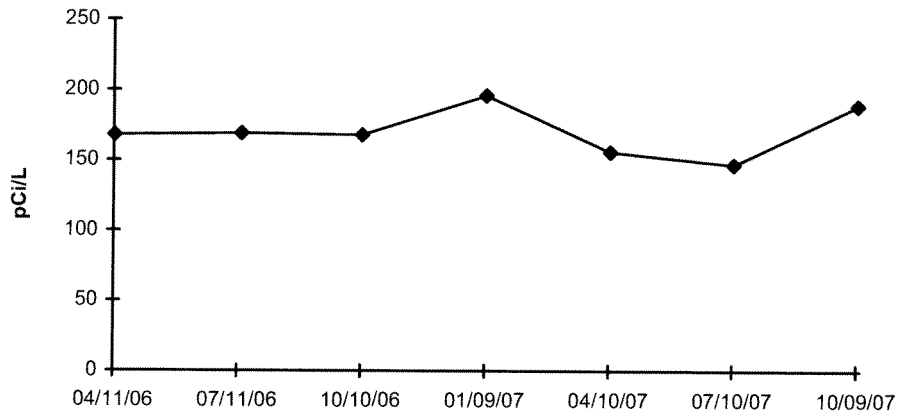
BY-32 Wolford Well



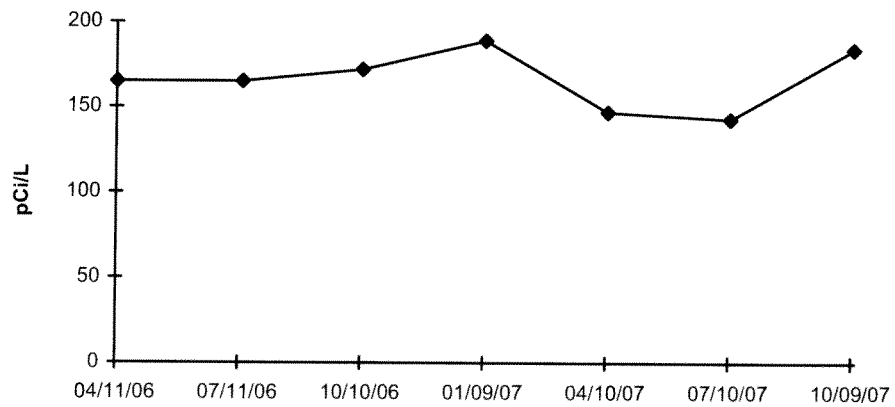
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-5
Ground Water - Tritium - Stations BY-35 and BY-36
Collected in the Vicinity of BNGS, 2006-2007

BY-35



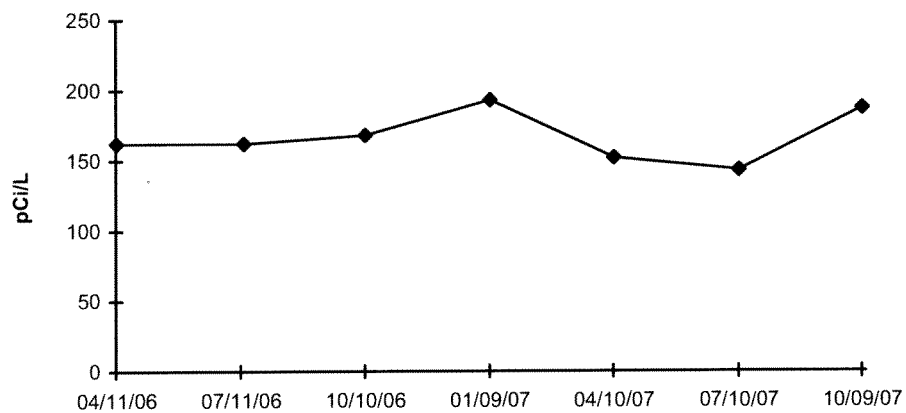
BY-36



NEW STATIONS IN 2006

FIGURE C-6
Ground Water - Tritium - Stations BY-37
Collected in the Vicinity of BNGS, 2006-2007

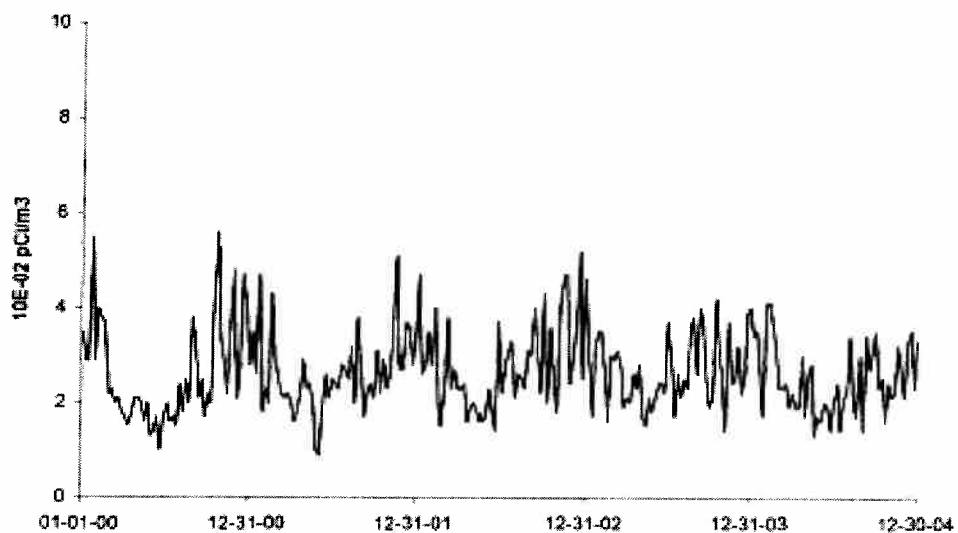
BY-37



NEW STATION IN 2006

FIGURE C-7
Air Particulates - Gross Beta - Stations BY-08 (C) and
BY-21 Collected in the Vicinity of BNGS, 2000 - 2004

BY-08 (C) Leaf River



BY-21 Byron Nearsite N

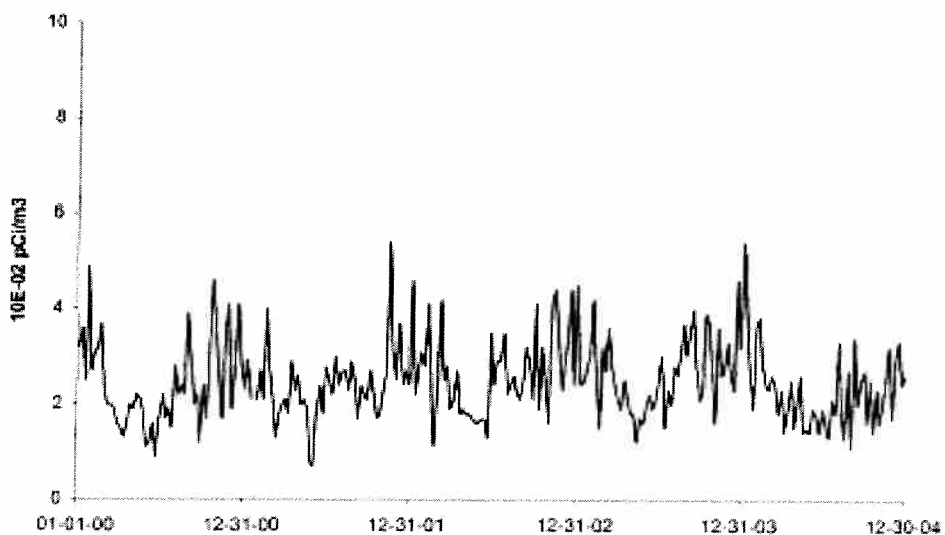
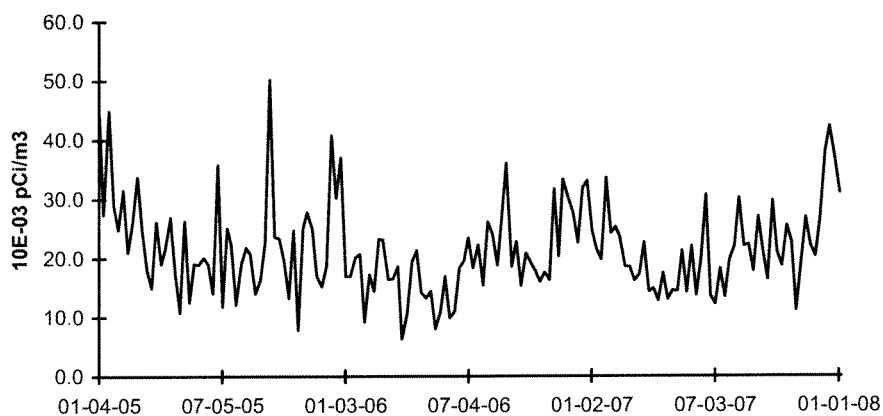
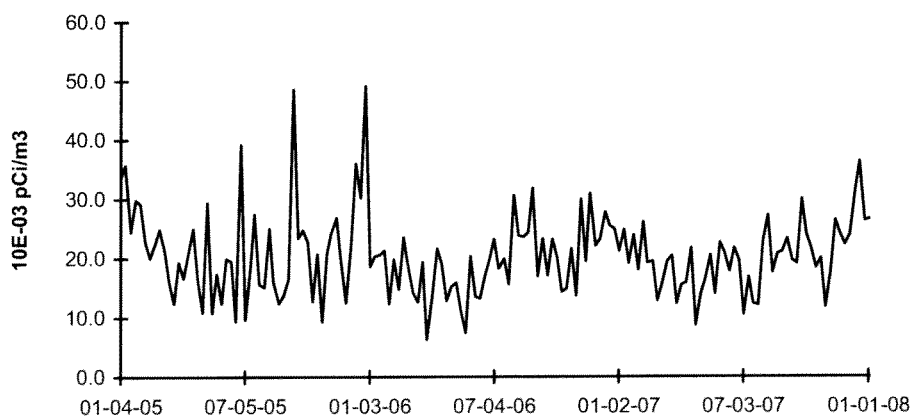


FIGURE C-7 (cont.)
Air Particulates - Gross Beta - Stations BY-08 (C) and
BY-21 Collected in the Vicinity of BNGS, 2005 - 2007

BY-08 (C) Leaf River



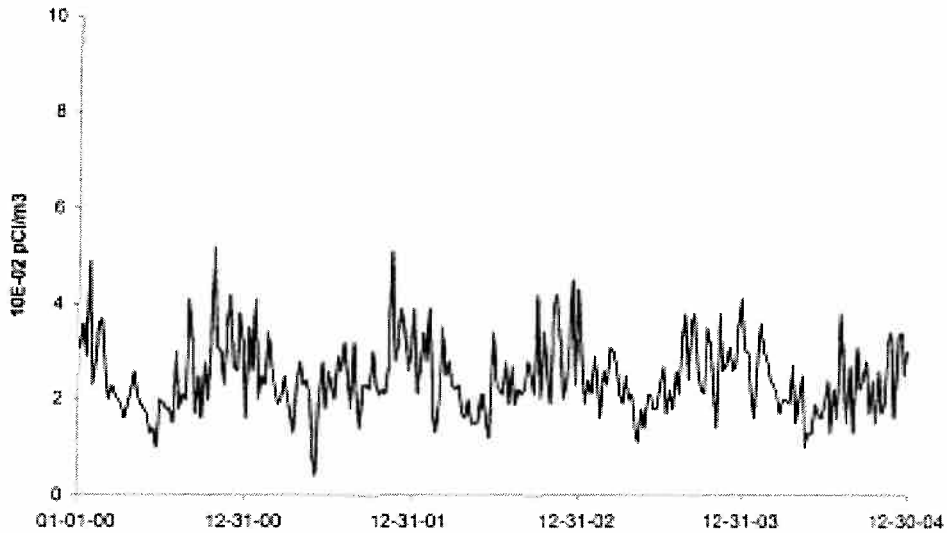
BY-21 Byron Nearsite N



DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCi/M3 TO E-03 PCi/M3

FIGURE C-8
Air Particulates - Gross Beta - Stations BY-22 and
BY-23 Collected in the Vicinity of BNGS, 2000 - 2004

BY-22 Byron Nearsite ESE



BY-23 Byron Nearsite S

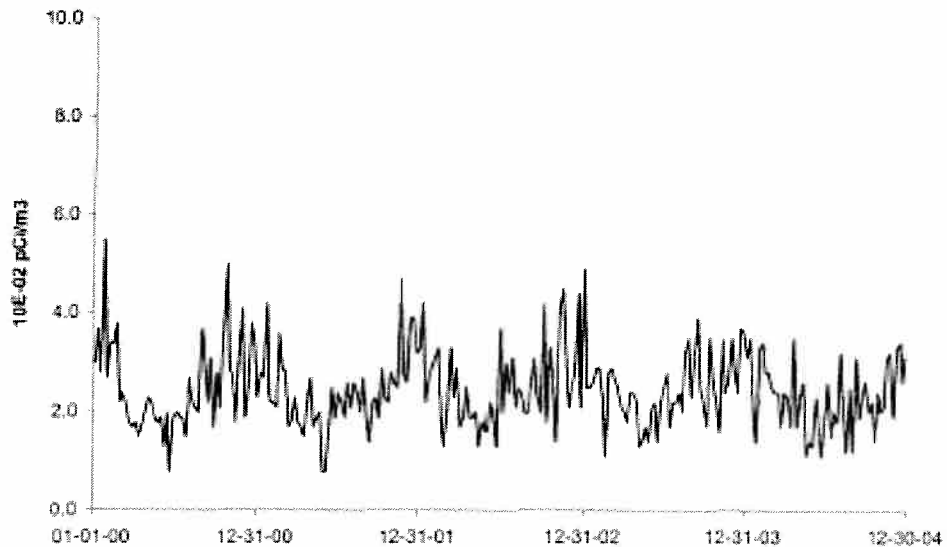
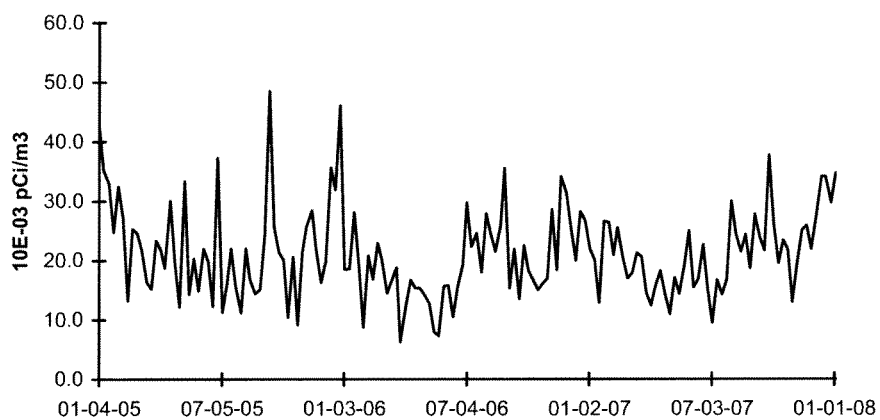
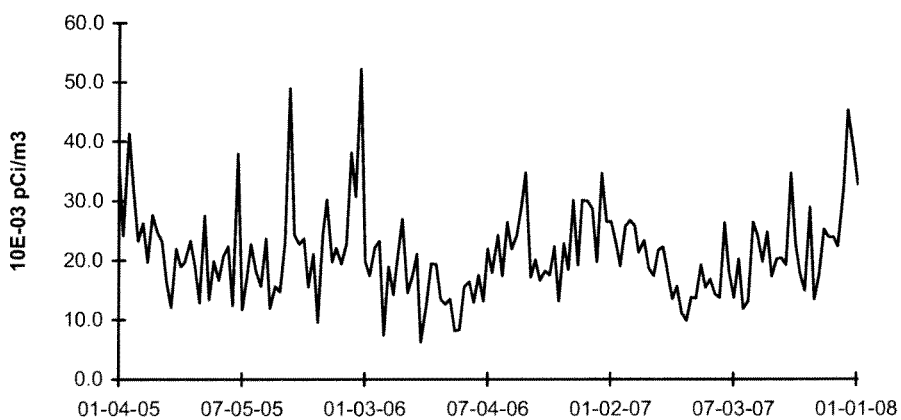


FIGURE C-8 (cont.)
Air Particulates - Gross Beta - Stations BY-22 and
BY-23 Collected in the Vicinity of BNGS, 2005 - 2007

BY-22 Byron Nearsite ESE

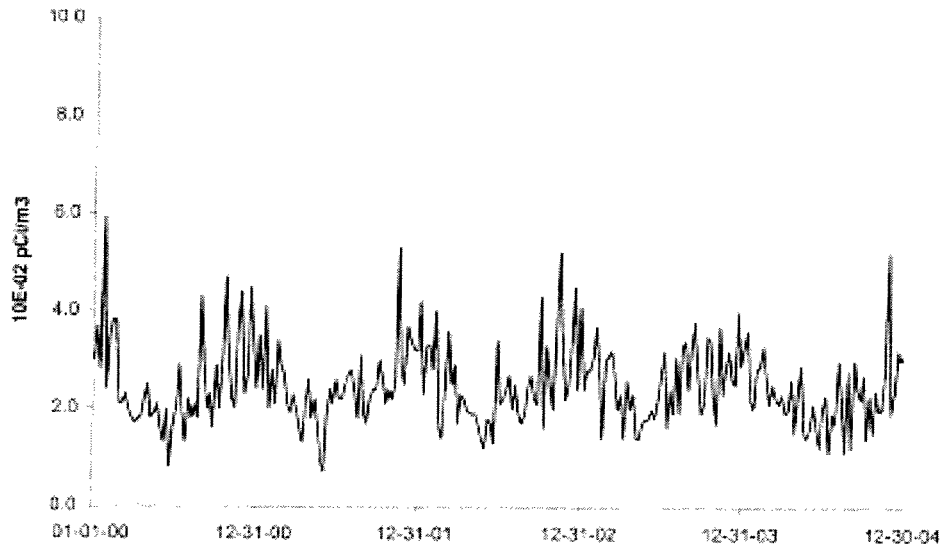


BY-23 Byron Nearsite S



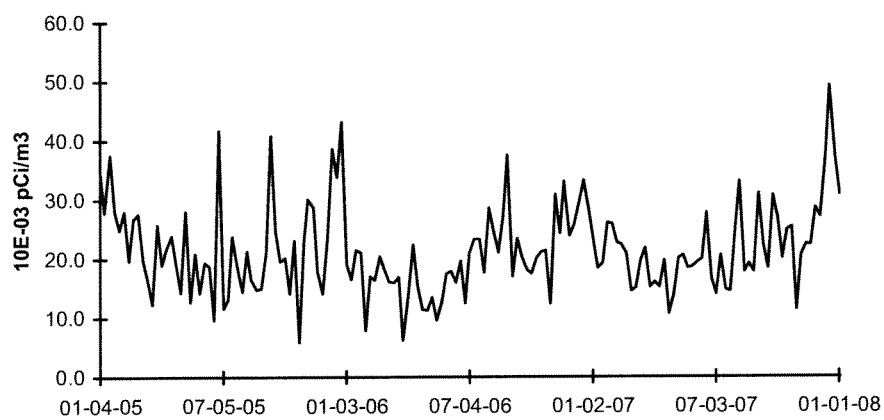
DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

FIGURE C-9
Air Particulates - Gross Beta - Station BY-24
Collected in the Vicinity of BNGS, 2000 - 2004
BY-24 Byron Nearsite SW



**FIGURE C-9 (cont.)
Air Particulates - Gross Beta - Station BY-24
Collected in the Vicinity of BNGS, 2005 - 2007**

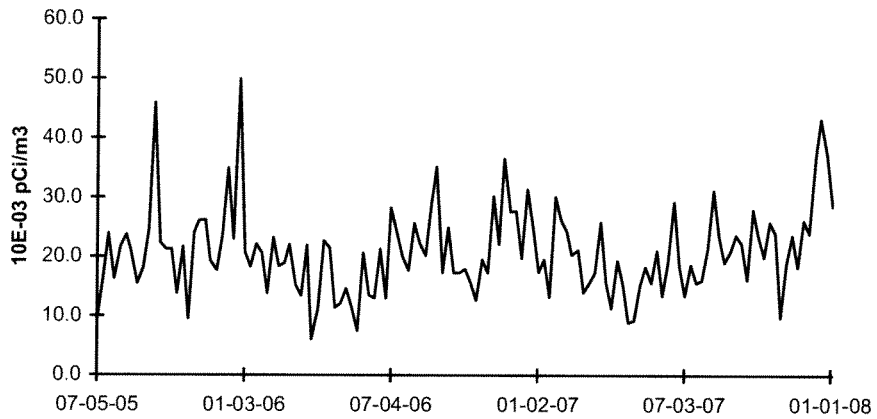
BY-24 Byron Nearsite SW



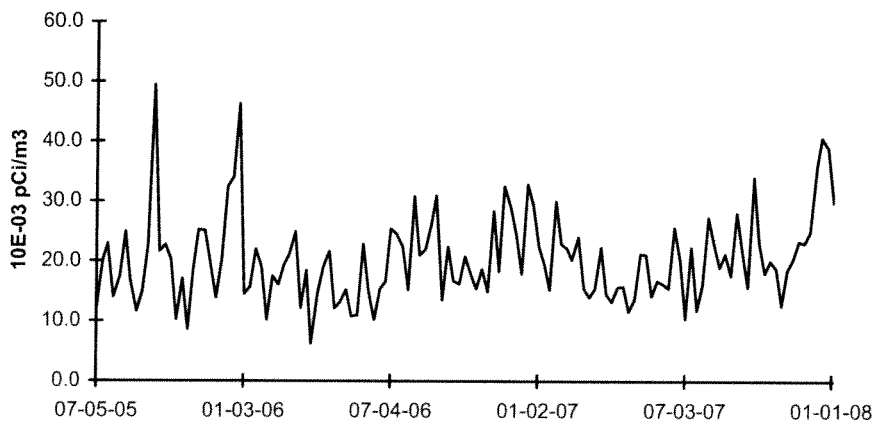
DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

FIGURE C-10
Air Particulates - Gross Beta - Stations BY-01 and
BY-04 Collected in the Vicinity of BNGS, 2005 - 2007

BY-01



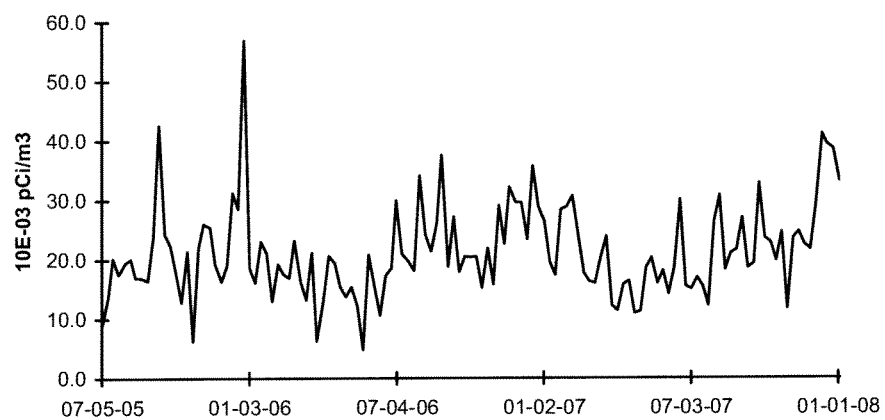
BY-04



AIR PARTICULATE GROSS BETA ANALYSES OF FAR FIELD LOCATIONS STARTED IN JULY 2005

FIGURE C-11
Air Particulates - Gross Beta - Station BY-06
Collected in the Vicinity of BNGS, 2005 - 2007

BY-06



AIR PARTICULATE GROSS BETA ANALYSES OF FAR FIELD LOCATIONS STARTED IN JULY 2005

APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

**TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2007
(PAGE 1 OF 3)**

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
March 2007	E5255-396	Milk	Sr-89	pCi/L	125	137	0.91	A			
			Sr-90	pCi/L	10.8	10	1.08	A			
March 2007	E5256-396	Milk	I-131	pCi/L	107	85.2	1.26	W			
			Ce-141	pCi/L	269	297	0.91	A			
			Cr-51	pCi/L	244	245	1.00	A			
			Cs-134	pCi/L	98.1	112	0.88	A			
			Cs-137	pCi/L	227	234	0.97	A			
			Co-58	pCi/L	92.5	98.8	0.94	A			
			Mn-54	pCi/L	182.0	182	1.00	A			
			Fe-59	pCi/L	108.0	106	1.02	A			
			Zn-65	pCi/L	985	1000	0.99	A			
			Co-60	pCi/L	143	152	0.94	A			
			March 2007	E5258-396	AP	Ce-141	pCi	252	245	1.03	A
						Cr-51	pCi	204	202	1.01	A
						Cs-134	pCi	74.9	92.3	0.81	A
						Cs-137	pCi	190.0	197.0	0.96	A
Co-58	pCi	79.7				81.6	0.98	A			
Mn-54	pCi	156				151	1.03	A			
Fe-59	pCi	99.1				87.2	1.14	A			
Zn-65	pCi	894				826	1.08	A			
March 2007	E5257-396	Charcoal	I-131	pCi	34.7	71.3	0.49	N (1)			
June 2007	E5384-396	Milk	Sr-89	pCi/L	98.3	95.2	1.03	A			
			Sr-90	pCi/L	16.1	12.9	1.25	W			
June 2007	E5385-396	Milk	I-131	pCi/L	71.0	70.1	1.01	A			
			Ce-141	pCi/L	176	200	0.88	A			
			Cr-51	pCi/L	459	512	0.90	A			
			Cs-134	pCi/L	197	242	0.81	A			
			Cs-137	pCi/L	158	169	0.93	A			
			Co-58	pCi/L	180	198	0.91	A			
			Mn-54	pCi/L	163	166	0.98	A			
			Fe-59	pCi/L	158	167	0.95	A			
			Zn-65	pCi/L	318	334	0.95	A			
			Co-60	pCi/L	212	238	0.89	A			
			June 2007	E5387-396	AP	Ce-141	pCi	87.5	105	0.83	A
Cr-51	pCi	232				268	0.87	A			
Cs-134	pCi	101				127	0.80	A			
Cs-137	pCi	78.9				88.5	0.89	A			
Co-58	pCi	91.8				104.0	0.88	A			
Mn-54	pCi	85.6				87	0.99	A			
Fe-59	pCi	89.8				87.3	1.03	A			
Zn-65	pCi	178				175	1.02	A			
June 2007	E5386-396	Charcoal	I-131	pCi	79.3	79.1	1.00	A			

**TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2007
(PAGE 2 OF 3)**

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
September 2007	E5492-396	Milk	Sr-89	pCi/L	99.0	94.9	1.04	A			
			Sr-90	pCi/L	13.9	13.1	1.06	A			
September 2007	E5493-396	Milk	I-131	pCi/L	81.9	85.2	0.96	A			
			Ce-141	pCi/L	200	211	0.95	A			
			Cr-51	pCi/L	271	289	0.94	A			
			Cs-134	pCi/L	131	147	0.89	A			
			Cs-137	pCi/L	131	131	1.00	A			
			Co-58	pCi/L	114	114	1.00	A			
			Mn-54	pCi/L	171	168	1.02	A			
			Fe-59	pCi/L	117	111	1.05	A			
			Zn-65	pCi/L	212	202	1.05	A			
			Co-60	pCi/L	143	148	0.97	A			
			September 2007	E5495-396	AP	Ce-141	pCi	128	136	0.94	A
						Cr-51	pCi	181	186	0.97	A
						Cs-134	pCi	85.9	94.7	0.91	A
						Cs-137	pCi	83.2	83.9	0.99	A
Co-58	pCi	69.4				73.3	0.95	A			
Mn-54	pCi	112				108	1.04	A			
Fe-59	pCi	79.6				71.1	1.12	A			
Zn-65	pCi	159				130	1.22	W			
September 2007	E5494-396	Charcoal	I-131	pCi	70.8	69.5	1.02	A			
December 2007	E5749-396	Milk	Sr-89	pCi/L	87.6	93.7	0.93	A			
			Sr-90	pCi/L	15.5	15.2	1.02	A			
December 2007	E5750-396	Milk	I-131	pCi/L	60.6	60.8	1.00	A			
			Ce-141	pCi/L	137	141	0.97	A			
			Cr-51	pCi/L	497	512	0.97	A			
			Cs-134	pCi/L	117	137	0.85	A			
			Cs-137	pCi/L	166	166	1.00	A			
			Co-58	pCi/L	159	174	0.91	A			
			Mn-54	pCi/L	190	190	1.00	A			
			Fe-59	pCi/L	149	148	1.01	A			
			Zn-65	pCi/L	231	234	0.99	A			
			Co-60	pCi/L	198	211	0.94	A			
			December 2007	E5752-396	AP	Ce-141	pCi	88.6	93.4	0.95	A
						Cr-51	pCi	352	340	1.04	A
						Cs-134	pCi	84.6	91.2	0.93	A
						Cs-137	pCi	111	110.0	1.01	A
Co-58	pCi	114				116.0	0.98	A			
Mn-54	pCi	135				126	1.07	A			
Fe-59	pCi	119				98.5	1.21	W			
Zn-65	pCi	172				155	1.11	A			
December 2007	E5752-396	AP	Co-60	pCi	137	141	0.97	A			

**TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
 TELEDYNE BROWN ENGINEERING, 2007
 (PAGE 3 OF 3)**

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2007	E5751-396	Charcoal	I-131	pCi	65.8	74.1	0.89	A

(1) New technician counted charcoal cartridge on the back rather than the face, resulting in low activity. If the charcoal cartridge had been counted on the face, the ratio would have been approximately 1.07, which is acceptable. NCR 07-02

(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, 2007**

(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
July 2007	Rad 70	Water	Sr-89	pCi/L	58.6	58.2	49.5 - 66.9	A
			Sr-90	pCi/L	18.7	19.0	10.3 - 27.7	A
			Ba-133	pCi/L	18.6	19.4	10.7 - 28.1	A
			Cs-134	pCi/L	57.6	68.9	60.2 - 77.6	N (1)
			Cs-137	pCi/L	55.4	61.3	52.6 - 70.0	A
			Co-60	pCi/L	31.3	33.5	24.8 - 42.2	A
			Zn-65	pCi/L	49.0	54.6	45.2 - 64.0	A
			Gr-A	pCi/L	26.8	27.1	15.4 - 38.8	A
			Gr-B	pCi/L	12	11.5	2.84 - 20.2	A
			I-131	pCi/L	31.1	26.5	21.3 - 31.7	A
			H-3	pCi/L	1700	1770	1180 - 2360	A
October 2007	RAD 71	Water	Sr-89	pCi/L	27.07	27.4	19.3 - 33.9	A
			Sr-90	pCi/L	17.40	18.2	12.9 - 21.6	A
			Ba-133	pCi/L	12.57	12.6	8.64 - 15.5	A
			Cs-134	pCi/L	63.33	71.1	58.0 - 78.2	A
			Cs-137	pCi/L	168	180	162 - 200	A
			Co-60	pCi/L	21.93	23.2	19.9 - 28.3	A
			Zn-65	pCi/L	245.33	251	226 - 294	A
			Gr-A	pCi/L	55.60	58.6	30.6 - 72.9	A
			Gr-B	pCi/L	15.23	9.73	4.26 - 18.2	A
			I-131	pCi/L	27.43	28.9	24.0 - 33.8	A
			H-3	pCi/L	9263.3	9700	8430 - 10700	A

(1) The Cs-134 TBE found/ERA known ratio is 83.6%, which TBE considers acceptable. NCR 07-07

(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, 2007
(PAGE 1 OF 1)**

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
February 2007	07-MaW17	Water	Cs-134	Bq/L	74.5	83.5	58.5 - 108.6	A
			Cs-137	Bq/L	162	163.0	114.1 - 211.9	A
			Co-57	Bq/L	140	143.7	100.6 - 186.8	A
			Co-60	Bq/L	27.9	26.9	18.8 - 35.0	A
			H-3	Bq/L	346	283.0	198.1 - 367.9	W
			Mn-54	Bq/L	125	123.8	86.7 - 160.9	A
			Sr-90	Bq/L	8.90	8.87	6.21 - 11.53	A
			Zn-65	Bq/L	117	114.8	80.4 - 149.2	A
	07-GrW17	Water	Gr-A	Bq/L	0.502	0.327	>0.0 - 0.654	A
			Gr-B	Bq/L	0.975	0.851	0.426 - 1.277	A
	07-MaS17	Soil	Cs-134	Bq/kg	322	327.4	229.2 - 425.6	A
			Cs-137	Bq/kg	893	799.7	559.8 - 1039.6	A
			Co-57	Bq/kg	508.3	471.2	329.8 - 612.6	A
			Co-60	Bq/kg	300.3	274.7	192.3 - 357.1	A
			Mn-54	Bq/kg	779	685.2	479.6 - 890.8	A
			K-40	Bq/kg	682	602	421 - 783	A
			Sr-90	Bq/kg	293	319.0	223.3 - 414.7	A
			Zn-65	Bq/kg	618.7	536.8	375.8 - 697.8	A
	07-RdF17	AP	Cs-134	Bq/sample	3.230	1.4960	2.9372 - 5.4548	W
			Cs-137	Bq/sample	2.453	2.5693	1.7985 - 3.3401	A
			Co-57	Bq/sample	3.067	2.8876	2.0213 - 3.7539	A
			Co-60	Bq/sample	2.767	2.9054	2.0338 - 3.7770	A
			Mn-54	Bq/sample	3.557	3.5185	2.4630 - 4.5741	A
			Sr-90	Bq/sample	0.584	0.6074	0.4252 - 0.7896	A
			Zn-65	Bq/sample	2.463	2.6828	1.8780 - 3.4876	A
			07-GrF17	AP	Gr-A	Bq/sample	0.353	0.601
	Gr-B	Bq/sample			0.500	0.441	0.221 - 0.662	A
	February 2007	07-RdV17	Vegetation	Cs-134	Bq/sample	6.207	6.2101	4.3471 - 8.0731
Cs-137				Bq/sample	7.80	6.9949	4.8964 - 9.0934	A
Co-57				Bq/sample	8.64	8.1878	5.7315 - 10.6441	A
Co-60				Bq/sample	6.10	5.8215	4.0751 - 7.5680	A
Mn-54				Bq/sample	9.41	8.4492	5.9144 - 10.9840	A
K-40				Bq/sample	63.5	Not evaluated by MAPEP		
Sr-90				Bq/sample	1.51	1.5351	1.0746 - 1.9956	A
Zn-65				Bq/sample	7.15	5.6991	3.9894 - 7.4088	W

(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
ENVIRONMENTAL, INC., 2007
(Page 1 of 2)**

Lab Code *	Date	Analysis	Concentration (pCi/L)			Acceptance
			Laboratory Result ^b	ERA Result ^c	Control Limits	
STAP-1116	03/19/07	Gr. Alpha	34.64 ± 2.56	25.8	12.4 - 39	Pass
STAP-1116	03/19/07	Gr. Beta	93.41 ± 3.20	79.5	48.8 - 116	Pass
STAP-1117	03/19/07	Co-60	1610.00 ± 8.40	1300.0	1010.0 - 1620	Pass
STAP-1117	03/19/07	Cs-134	1340.40 ± 48.84	1120.0	732.0 - 1380	Pass
STAP-1117 ^e	03/19/07	Cs-137	345.30 ± 8.20	255.0	192.0 - 336	Fail
STAP-1117 ^f	03/19/07	Mn-54	< 5.0	0.0		Pass
STAP-1117	03/19/07	Sr-90	156.10 ± 6.60	156.0	66.6 - 246	Pass
STAP-1117	03/19/07	Zn-65	363.80 ± 11.90	245.0	208.0 - 412	Pass
STSO-1118	03/19/07	Ac-228	3097.77 ± 94.96	2790.0	1790.0 - 3930	Pass
STSO-1118	03/19/07	Bi-212	2467.87 ± 114.33	2500.0	658.0 - 3730	Pass
STSO-1118	03/19/07	Co-60	7847.40 ± 86.60	7330.0	5340.0 - 9820	Pass
STSO-1118	03/19/07	Cs-134	7910.60 ± 356.88	7560.0	4850.0 - 9070	Pass
STSO-1118	03/19/07	Cs-137	4635.00 ± 99.10	4300.0	3290.0 - 5580	Pass
STSO-1118	03/19/07	K-40	12201.60 ± 423.20	11100.0	8050.0 - 15000	Pass
STSO-1118 ^f	03/19/07	Mn-54	< 34.0	0.0		Pass
STSO-1118	03/19/07	Pb-212	2046.80 ± 127.20	1730.0	1120.0 - 2430	Pass
STSO-1118	03/19/07	Pb-214	4142.80 ± 110.40	3330.0	1980.0 - 4980	Pass
STSO-1118	03/19/07	Sr-90	6163.30 ± 791.60	7500.0	2610.0 - 12400	Pass
STSO-1118	03/19/07	Th-234	4329.40 ± 569.10	3590.0	2190.0 - 4560	Pass
STSO-1118 ^f	03/19/07	Zn-65	0.00 ± 0.00	0.0	0.0 - 0	Pass
STVE-1119	03/19/07	Co-60	2827.90 ± 62.40	2600.0	1760.0 - 3720	Pass
STVE-1119	03/19/07	Cs-134	654.80 ± 48.40	579.0	308.0 - 822	Pass
STVE-1119	03/19/07	Cs-137	3307.30 ± 58.80	2920.0	2150.0 - 4060	Pass
STVE-1119	03/19/07	K-40	40814.20 ± 618.80	37900.0	27200.0 - 53600	Pass
STVE-1119 ^f	03/19/07	Mn-54	< 27.6	0.0		Pass
STVE-1119	03/19/07	Sr-90	8999.70 ± 580.90	8890.0	4900.0 - 11800	Pass
STVE-1119	03/19/07	Zn-65	474.30 ± 45.70	366.0	267.0 - 500	Pass
STW-1120	03/19/07	Co-60	541.40 ± 9.00	536.0	467.0 - 631	Pass
STW-1120	03/19/07	Cs-134	1623.80 ± 66.10	1750.0	1290.0 - 2020	Pass
STW-1120	03/19/07	Cs-137	1839.10 ± 17.90	1850.0	1570.0 - 2220	Pass
STW-1120 ^f	03/19/07	Mn-54	< 8.1	0.0		Pass
STW-1120	03/19/07	Sr-90	949.40 ± 16.70	989.0	630.0 - 1320	Pass
STW-1120	03/19/07	Zn-65	2009.00 ± 36.40	1910.0	1600.0 - 2410	Pass
STW-1121	04/09/07	Sr-89	30.7 ± 4.3	35.4	26.7 - 44.1	Pass
STW-1121	04/09/07	Sr-90	39.3 ± 1.8	42.1	33.4 - 50.8	Pass

**TABLE D-4 ERA^(a) STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM
ENVIRONMENTAL, INC., 2007
(Page 2 of 2)**

Lab Code *	Date	Analysis	Concentration (pCi/L)			Acceptance
			Laboratory Result ^b	ERA Result ^c	Control Limits	
STW-1122	04/09/07	Ba-133	30.0 ± 2.4	29.3	20.6 - 38.0	Pass
STW-1122	04/09/07	Co-60	118.5 ± 3.9	119.0	109.0 - 129.0	Pass
STW-1122	04/09/07	Cs-134	52.6 ± 2.3	54.3	45.6 - 63.0	Pass
STW-1122	04/09/07	Cs-137	49.5 ± 3.8	50.3	41.6 - 59.0	Pass
STW-1122	04/09/07	Zn-65	91.7 ± 6.3	88.6	73.3 - 104.0	Pass
STW-1123	04/09/07	Gr. Alpha	33.8 ± 3.5	56.5	32.0 - 81.0	Pass
STW-1123	04/09/07	Gr. Beta	24.2 ± 2.3	25.3	16.6 - 34.0	Pass
STW-1124	04/09/07	I-131	19.2 ± 1.2	18.9	13.7 - 24.1	Pass
STW-1125	04/09/07	H-3	7540.0 ± 255.0	8060.0	6660.0 - 9450.0	Pass
STW-1127	07/09/07	Sr-89	51.7 ± 5.0	58.2	49.5 - 66.9	Pass
STW-1127	07/09/07	Sr-90	21.4 ± 2.3	19.0	10.3 - 27.7	Pass
STW-1128	07/09/07	Ba-133	19.4 ± 2.2	19.4	10.7 - 28.1	Pass
STW-1128	07/09/07	Co-60	32.8 ± 2.0	33.5	24.8 - 42.2	Pass
STW-1128	07/09/07	Cs-134	67.0 ± 2.9	68.9	60.2 - 77.6	Pass
STW-1128	07/09/07	Cs-137	61.6 ± 3.8	61.3	52.6 - 70.0	Pass
STW-1128	07/09/07	Zn-65	55.6 ± 7.5	54.6	45.2 - 64.0	Pass
STW-1129	07/09/07	Gr. Alpha	19.2 ± 1.6	27.1	15.4 - 38.8	Pass
STW-1129	07/09/07	Gr. Beta	9.1 ± 0.9	11.5	2.8 - 20.2	Pass
STW-1131	10/05/07	Sr-89	27.3 ± 3.3	27.4	19.3 - 33.9	Pass
STW-1131	10/05/07	Sr-90	17.7 ± 1.2	18.2	12.9 - 21.6	Pass
STW-1132	10/05/07	Ba-133	12.2 ± 3.3	12.6	8.6 - 15.5	Pass
STW-1132	10/05/07	Co-60	23.8 ± 1.4	23.2	19.9 - 28.3	Pass
STW-1132	10/05/07	Cs-134	70.5 ± 4.2	71.1	58.0 - 78.2	Pass
STW-1132	10/05/07	Cs-137	178.2 ± 3.3	180.0	162.0 - 200.0	Pass
STW-1132	10/05/07	Zn-65	263.9 ± 6.9	251.0	226.0 - 294.0	Pass
STW-1133	10/05/07	Gr. Alpha	54.7 ± 2.1	58.6	30.6 - 72.9	Pass
STW-1133	10/05/07	Gr. Beta	11.9 ± 0.9	9.7	4.3 - 18.2	Pass
STW-1134	10/05/07	I-131	33.0 ± 1.5	28.9	24.0 - 33.8	Pass
STW-1135	10/05/07	H-3	9965.0 ± 250.0	9700.0	8430.0 - 10700.0	Pass

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

^a Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing administered by Environmental Resources Associates, serving as a replacement for studies conducted previously by the Environmental Measurements Laboratory Quality Assessment Program (EML).

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

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

^e A high bias (~ 20%) was observed in gamma results for air filters. A composite filter geometry was used in the calculations vs. a single filter geometry. Result of recalculation. Cs-137, 305.8 ± 6.0 pCi/filter.

^f Included in the testing series as a "false positive". No activity expected.

**TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)^a
ENVIRONMENTAL, INC., 2007**

(Page 1 of 1)

Lab Code ^c	Date	Analysis	Concentration ^b			Acceptance
			Laboratory result	Known Activity	Control Limits ^d	
STW-1110	01/01/07	Gr. Alpha	0.45 ± 0.08	0.33	0.00 - 0.65	Pass
STW-1110	01/01/07	Gr. Beta	0.90 ± 0.14	0.85	0.43 - 1.28	Pass
STW-1111	01/01/07	Co-57	151.60 ± 10.00	143.70	100.60 - 186.80	Pass
STW-1111	01/01/07	Cs-134	79.20 ± 8.00	83.50	58.50 - 108.60	Pass
STW-1111	01/01/07	Cs-137	168.70 ± 12.10	163.00	114.10 - 211.90	Pass
STW-1111	01/01/07	H-3	262.20 ± 9.10	283.00	198.10 - 367.90	Pass
STW-1111	01/01/07	Mn-54	130.60 ± 11.50	123.80	86.70 - 160.90	Pass
STW-1111	01/01/07	Sr-90	9.60 ± 1.40	8.87	6.21 - 11.53	Pass
STW-1111	01/01/07	Zn-65	123.70 ± 17.00	114.80	80.40 - 149.20	Pass
STSO-1112	01/01/07	Co-57	501.20 ± 2.90	471.20	329.80 - 612.60	Pass
STSO-1112	01/01/07	Co-60	285.90 ± 2.10	274.70	192.30 - 357.10	Pass
STSO-1112	01/01/07	Cs-134	325.90 ± 7.40	327.40	229.20 - 425.60	Pass
STSO-1112	01/01/07	Cs-137	855.70 ± 4.60	799.70	559.80 - 1039.60	Pass
STSO-1112	01/01/07	Mn-54	750.90 ± 4.70	685.20	479.60 - 890.80	Pass
STAP-1113	01/01/07	Gr. Alpha	0.27 ± 0.04	0.60	0.00 - 1.20	Pass
STAP-1113	01/01/07	Gr. Beta	0.57 ± 0.05	0.44	0.22 - 0.66	Pass
STAP-1114	01/01/07	Co-57	3.51 ± 0.07	2.89	2.02 - 3.75	Pass
STAP-1114	01/01/07	Co-60	2.98 ± 0.10	2.91	2.03 - 3.78	Pass
STAP-1114	01/01/07	Cs-134	4.02 ± 0.16	4.20	2.94 - 5.45	Pass
STAP-1114	01/01/07	Cs-137	2.75 ± 0.12	2.57	1.80 - 3.34	Pass
STAP-1114	01/01/07	Mn-54	3.94 ± 0.12	3.52	2.46 - 4.57	Pass
STAP-1114	01/01/07	Sr-90	0.58 ± 0.18	0.61	0.43 - 0.79	Pass
STAP-1114	01/01/07	Zn-65	2.70 ± 0.10	2.68	1.88 - 3.49	Pass
STVE-1115	01/01/07	Co-57	8.90 ± 0.20	8.19	5.73 - 10.64	Pass
STVE-1115	01/01/07	Co-60	6.50 ± 0.20	5.82	4.08 - 7.57	Pass
STVE-1115	01/01/07	Cs-134	6.90 ± 0.30	6.21	4.35 - 8.07	Pass
STVE-1115	01/01/07	Cs-137	8.20 ± 0.30	6.99	4.90 - 9.09	Pass
STVE-1115	01/01/07	Mn-54	10.10 ± 0.30	8.46	5.91 - 10.98	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.

APPENDIX E

TABLE OF CONTENTS

INTRODUCTION..... 1

SUMMARY 2

1.0. EFFLUENTS 3

 1.1. Gaseous Effluents to the Atmosphere 3

 1.2. Liquids Released to Rock River 3

2.0. SOLID RADIOACTIVE WASTE 3

3.0. DOSE TO MAN..... 4

 3.1. Gaseous Effluent Pathways 4

 3.1.1. Noble Gases..... 4

 3.1.1.1. Gamma Dose Rates 4

 3.1.1.2. Beta Air and Skin Dose Rate 4

 3.1.2. Radioactive Iodine..... 5

 3.1.2.1. Dose to Thyroid..... 5

 3.2. Liquid Effluent Pathways 5

 3.3. Assessment of Dose to Member of Public 6

4.0. SITE METEOROLOGY 6

Table of Contents (cont.)

APPENDIX E-1 DATA TABLES AND FIGURES E-1.1

 Station Releases

 Table 1.1-1 Gaseous Effluents E-1.2

 Table 1.2-1 Liquid Effluents E-1.3

 Table 3.1-1 Maximum Doses Resulting from Airborne Releases..... E-1.4

 Table 3.2-1 Maximum Doses Resulting from Liquid Discharges..... E-1.8

 Table 3.4-1 Maximum Doses Resulting from Airborne Releases Based
 On Concurrent Meteorological Data E-1.12

INTRODUCTION

Liquid effluents from Byron Station are released to the Rock 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 weekly grab samples and grab samples of batch releases prior to the release of noble gases as well as continuously collected composite samples of iodine and particulate radioactivity 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 isotopic composition of effluents and meteorological data.

Environmental monitoring is conducted by sampling at indicator and control (background) locations in the vicinity of Byron Station to measure changes in radiation or radioactivity levels that may be attributable to station operation. If significant changes attributable to Byron Station are measured, these changes are correlated with effluent releases. External gamma radiation exposure from noble gases and internal dose from I-131 in milk are the critical pathways at this site; however, an environmental monitoring program is conducted which also includes other pathways.

SUMMARY

Calculations based on gaseous and liquid effluents, Rock River flow and meteorological data indicate that public dose due to radioactive material attributable to Byron 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 Byron Station calculated for the maximum-exposed individual for the period is 3.35E-01 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.

There were no additional operational controls implemented which affected the areas of radiological effluents in 2007.

There were no measurements which exceeded the reporting levels, including any which would not have been attributable to station effluents.

The results of the current radiological environmental monitoring program are approximately the same as those found during the pre-operational studies conducted at Byron Station.

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

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

A total of 5.55E-01 curies of fission and activation gases were released with a maximum average quarterly release rate of 2.80E-02 $\mu\text{Ci}/\text{sec}$.

A total of 2.75E-05 curies of 1-131 were released during the year with a maximum average quarterly release rate of 1.64E-06 $\mu\text{Ci}/\text{sec}$.

A total of 4.18E-04 curies were released as airborne particulate matter with a maximum average quarterly release rate of 5.23E-05 $\mu\text{Ci}/\text{sec}$. Alpha-emitting radionuclides were below detectable limits.

A total of 1.02E-06 curies of other radioisotopes were released with a maximum average quarterly release rate of 1.31E-07 $\mu\text{Ci}/\text{sec}$.

A total of 6.51E+01 curies of tritium were released with a maximum average quarterly release rate of 2.20E+00 $\mu\text{Ci}/\text{sec}$.

1.2 Liquids Released to Rock River

A total of 2.56E+10 liters of radioactive liquid wastes (prior to dilution) containing 2.62E-02 curies (excluding tritium, noble gases and alpha) were discharged from the station. These wastes were released at a maximum quarterly average concentration of 1.59E-09 $\mu\text{Ci}/\text{ml}$. A total of 2.74E+03 curies of tritium were released. Quarterly release totals of principal radionuclides in liquid effluents are given in Table 1.2-1.

2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck. For detail, refer to Byron Station 2007 Effluent 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 whole body dose rates are shown in Table 3.1-1 and were calculated based on measured release rates, isotopic composition of the noble gases, and average meteorological data for the period. Dose rates based on concurrent meteorological data are shown in Table 3.4-1. Based on measured effluents and average meteorological data, the maximum total body dose to an individual would be $1.08\text{E-}02$ mrem for the year (Table 3.1-1), with an occupancy or shielding factor of 0.7 included. The maximum total body dose based on measured effluents and concurrent meteorological data would be $2.09\text{E-}06$ mrem (Table 3.4-1). The maximum gamma air dose was $3.32\text{E-}05$ mrad (Table 3.1-1) based on measured effluents and average meteorological data, and $4.01\text{E-}06$ 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 "semi-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/cm^2 and an occupancy factor of 1.0 is used. The skin dose based on concurrent meteorological data for the year was $6.78\text{E-}06$

mrem (Table 3.4-1)

The maximum offsite beta air dose for the year, based on measured effluents and average meteorological data, was $1.82\text{E-}05$ mrad (Table 3.1-1). The beta air dose based on concurrent meteorological data was $1.58\text{E-}05$ mrad (Table 3.4-1).

3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The minimal levels of radioiodine, I-131, released during routine operation of the station, may be made available to man resulting in a dose to the thyroid. The principal pathway of interest for this radionuclide is ingestion of radioiodine in milk. Calculations made for 2007 and previous years indicate that contributions to doses from inhalation of I-131 and I-133 and ingestion of I-133 in milk are negligible.

3.1.2.1 Dose to Thyroid

The hypothetical thyroid dose to the maximum exposed individual living near the station via ingestion of milk was calculated. The radionuclide considered was I-131 and the source of milk was taken to be the nearest dairy farm with the cows pastured from May through October. The maximum thyroid dose was less than $2.44\text{E-}02$ mrem during the year (Table 3.1-1[infant]).

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 $3.24\text{E-}01$ mrem (adult) and no organ dose exceeded $4.82\text{E-}01$ mrem (Table

3.2-1 [adult]).

3.3 Assessment of Dose to Member of Public

During the period January to December 2007, Byron Station did not exceed the limits below as shown in Table 3.1-1 and Table 3.2-1 (based on yearly average meteorological data), and Table 3.4-1 (based on concurrent meteorological data):

- The RETS limits on dose or dose commitment to a member of the public 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 quarter; 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).

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 250' level and wind speed class by atmospheric stability class determined from the temperature difference between the 250' and 30' levels. Data recovery for all measurements on the tower as 99.2% during 2007 (Table 3.4-1).

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

APPENDIX E-1

DATA TABLES AND FIGURES

Table 1.1-1

Byron Station Unit One 2007

EFFLUENT AND WASTE DISPOSAL REPORT

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2007	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	2.18E-01	2.99E-02	2.20E-02	4.27E-02	3.12E-01
2. Avg. Release Rate	uCi/sec	2.80E-02	3.80E-03	2.77E-03	5.37E-03	9.89E-03
Iodine-131						
1. Total Release	Ci	0.00E+00	3.33E-06	8.48E-06	1.30E-05	2.49E-05
2. Avg. Release Rate	uCi/sec	0.00E+00	4.24E-07	1.07E-06	1.64E-06	7.90E-07
Particulates Half Life >= 8 days						
1. Total Release	Ci	7.09E-07	0.00E+00	0.00E+00	9.30E-07	1.64E-06
2. Avg. Release Rate	uCi/sec	9.12E-08	0.00E+00	0.00E+00	1.17E-07	5.20E-08
Others						
1. Total Release	Ci	1.02E-06	0.00E+00	0.00E+00	0.00E+00	1.02E-06
2. Avg. Release Rate	uCi/sec	1.31E-07	0.00E+00	0.00E+00	0.00E+00	3.23E-08
Tritium						
1. Total Release	Ci	2.39E+00	6.41E+00	5.15E+00	8.65E+00	2.26E+01
2. Avg. Release Rate	uCi/sec	3.07E-01	8.15E-01	6.48E-01	1.09E+00	7.17E-01

Byron Station Unit Two 2007

EFFLUENT AND WASTE DISPOSAL REPORT

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2007	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	1.67E-01	3.15E-02	0.00E+00	4.40E-02	2.43E-01
2. Avg. Release Rate	uCi/sec	2.15E-02	4.01E-03	0.00E+00	5.54E-03	7.71E-03
Iodine-131						
1. Total Release	Ci	7.95E-07	1.88E-07	8.19E-07	8.24E-07	2.63E-06
2. Avg. Release Rate	uCi/sec	1.02E-07	2.39E-08	1.03E-07	1.04E-07	8.34E-08
Particulates Half Life >= 8 days						
1. Total Release	Ci	0.00E+00	0.00E+00	4.16E-04	0.00E+00	4.16E-04
2. Avg. Release Rate	uCi/sec	0.00E+00	0.00E+00	5.23E-05	0.00E+00	1.32E-05
Tritium						
1. Total Release	Ci	1.71E+01	7.70E+00	6.48E+00	1.13E+01	4.25E+01
2. Avg. Release Rate	uCi/sec	2.20E+00	9.79E-01	8.15E-01	1.42E+00	1.35E+00

Table 1.2-1

Byron Station Unit One 2007

EFFLUENT AND WASTE DISPOSAL REPORT

TABLE 2A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2007	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	3.13E-03	4.64E-03	2.02E-03	3.28E-03	1.31E-02
2. Avg. Diluted Conc.	uCi/ml	1.18E-09	1.59E-09	5.66E-10	8.89E-10	1.02E-09
Tritium						
1. Total Release	Ci	4.81E+02	1.61E+02	1.43E+02	5.87E+02	1.37E+03
2. Avg. Diluted Conc.	uCi/ml	1.81E-04	5.53E-05	4.01E-05	1.59E-04	1.07E-04
Dissolved and Entrained Gases						
1. Total Release	Ci	6.47E-04	7.02E-05	0.00E+00	4.59E-04	1.18E-03
2. Avg. Diluted Conc.	uCi/ml	2.43E-10	2.41E-11	0.00E+00	1.24E-10	9.22E-11
Volume of liquid waste	liters	2.66E+09	2.91E+09	3.57E+09	3.69E+09	1.28E+10
Volume of dil. water	liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Byron Station Unit Two 2007

EFFLUENT AND WASTE DISPOSAL REPORT

TABLE 2A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2007	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	3.13E-03	4.64E-03	2.02E-03	3.28E-03	1.31E-02
2. Avg. Diluted Conc.	uCi/ml	1.18E-09	1.59E-09	5.66E-10	8.89E-10	1.02E-09
Tritium						
1. Total Release	Ci	4.81E+02	1.61E+02	1.43E+02	5.87E+02	1.37E+03
2. Avg. Diluted Conc.	uCi/ml	1.81E-04	5.53E-05	4.01E-05	1.59E-04	1.07E-04
Dissolved and Entrained Gases						
1. Total Release	Ci	6.47E-04	7.02E-05	0.00E+00	4.59E-04	1.18E-03
2. Avg. Diluted Conc.	uCi/ml	2.43E-10	2.41E-11	0.00E+00	1.24E-10	9.22E-11
Volume of liquid waste	liters	2.66E+09	2.91E+09	3.57E+09	3.69E+09	1.28E+10
Volume of dil. water	liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.1-1

Byron Station Unit One 2007

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2007

Unit Range - From: 1 To: 1

=== I&P DOSE LIMIT ANALYSIS ===== ANNUAL 2007 =====

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2007 - Admin. Any Organ	INFANT	THYROID	1.22E-02	1.13E+01	1.08E-01
2007 - Admin. Total Body	CHILD	TBODY	5.39E-03	1.05E+01	5.13E-02
2007 - T.Spc. Any Organ	INFANT	THYROID	1.22E-02	1.50E+01	8.12E-02

Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Grs/Goat/Milk (GMILK)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	3.44E+01
TE-125M	2.39E-02
I-131	6.24E+01
I-132	2.20E-03
I-133	3.25E+00
CS-136	1.37E-04

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2007 - T.Spc. Total Body	CHILD	TBODY	5.39E-03	1.50E+01	3.59E-02

Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Vegetation (VEG)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	9.97E+01
TE-125M	1.25E-01
I-131	1.06E-01
I-132	3.40E-04
I-133	7.74E-03
CS-136	1.55E-02

Table 3.1-1

Byron Station Unit One 2007

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2007
 Unit Range - From: 1 To: 1

=== NG DOSE LIMIT ANALYSIS ===== ANNUAL 2007 =====

Annual - Limit	Dose (mrad)	Limit (mrad)	Max % of Limit
2007 - Admin. Gamma	1.66E-05	7.50E+00	2.21E-04
2007 - Admin. Beta	9.11E-06	1.50E+01	6.08E-05
2007 - T.Spc. Gamma	1.66E-05	1.00E+01	1.66E-04

Receptor: 4 Composite Crit. Receptor - NG
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	1.39E+01
KR-85	4.53E-02
XE-138	6.76E+00
KR-85M	7.86E-03
XE-135	1.54E+01
XE-133M	3.26E-02
XE-131M	2.10E-02
XE-133	6.38E+01

Annual - Limit	Dose (mrad)	Limit (mrad)	Max % of Limit
2007 - T.Spc. Beta	9.11E-06	2.00E+01	4.56E-05

Receptor: 4 Composite Crit. Receptor - NG
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	2.19E+00
KR-85	2.30E+00
XE-138	1.56E+00
KR-85M	5.63E-03
XE-135	8.85E+00
XE-133M	6.60E-02
XE-131M	6.70E-02
XE-133	8.50E+01

Table 3.1-1 (continued)

Byron Station Unit Two 2007

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2007
 Unit Range - From: 2 To: 2

==== I&P DOSE LIMIT ANALYSIS ===== ANNUAL 2007 =====

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2007 - Admin. Any Organ	INFANT	THYROID	1.22E-02	1.13E+01	1.08E-01
2007 - Admin. Total Body	CHILD	TBODY	5.39E-03	1.05E+01	5.13E-02
2007 - T.Spc. Any Organ	INFANT	THYROID	1.22E-02	1.50E+01	8.12E-02

Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Grs/Goat/Milk (GMILK)
 Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	3.44E+01
TE-125M	2.39E-02
I-131	6.24E+01
I-132	2.20E-03
I-133	3.25E+00
CS-136	1.37E-04

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2007 - T.Spc. Total Body	CHILD	TBODY	5.39E-03	1.50E+01	3.59E-02

Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Vegetation (VEG)
 Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	9.97E+01
TE-125M	1.25E-01
I-131	1.06E-01
I-132	3.40E-04
I-133	7.74E-03
CS-136	1.55E-02

Table 3.1-1 (continued)

Byron Station Unit Two 2007

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2007
 Unit Range - From: 2 To: 2

=== NG DOSE LIMIT ANALYSIS ===== ANNUAL 2007 =====

Annual - Limit	Dose (mrad)	Limit (mrad)	Max % of Limit
2007 - Admin. Gamma	1.66E-05	7.50E+00	2.21E-04
2007 - Admin. Beta	9.11E-06	1.50E+01	6.08E-05
2007 - T.Spc. Gamma	1.66E-05	1.00E+01	1.66E-04

Receptor: 4 Composite Crit. Receptor - NG
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	1.39E+01
KR-85	4.53E-02
XE-138	6.76E+00
KR-85M	7.86E-03
XE-135	1.54E+01
XE-133M	3.26E-02
XE-131M	2.10E-02
XE-133	6.38E+01

Annual - Limit	Dose (mrad)	Limit (mrad)	Max % of Limit
2007 - T.Spc. Beta	9.11E-06	2.00E+01	4.56E-05

Receptor: 4 Composite Crit. Receptor - NG
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	2.19E+00
KR-85	2.30E+00
XE-138	1.56E+00
KR-85M	5.63E-03
XE-135	8.85E+00
XE-133M	6.60E-02
XE-131M	6.70E-02
XE-133	8.50E+01

Table 3.2-1

Byron Station Unit One 2007

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2007

Unit Range - From: 1 To: 1

Agegrp	Liquid Receptor							TB
	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI	Skin	
ADULT	1.13E-02	1.63E-01	1.62E-01	1.97E-01	1.59E-01	2.41E-01	0.00E+00	1.62E-01
TEEN	1.19E-02	1.24E-01	1.22E-01	1.19E-01	1.19E-01	1.81E-01	0.00E+00	1.23E-01
CHILD	1.50E-02	1.37E-01	1.37E-01	1.33E-01	1.33E-01	1.57E-01	0.00E+00	1.37E-01
INFANT	6.74E-05	5.88E-02	5.88E-02	5.88E-02	5.88E-02	5.89E-02	0.00E+00	5.89E-02

Annual - Limit		Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2007	- Admin. Any Organ	ADULT	GILLI	2.41E-01	7.50E+00	3.22E+00
2007	- Admin. Total Body	ADULT	TBODY	1.62E-01	2.25E+00	7.20E+00
2007	- T.Spc. Any Organ	ADULT	GILLI	2.41E-01	1.00E+01	2.41E+00

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	6.59E+01
CR-51	1.26E-02
MN-54	1.56E-01
FE-55	1.97E-02
FE-59	6.25E-02
CO-58	4.30E+00
CO-60	2.12E+00
SR-89	8.80E-03
SR-90	1.80E-02
NB-95	1.21E+01
TE-125M	1.53E+01

Table 3.2-1 (continued)

Byron Station Unit One 2007

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 LIQUID DOSE SUMMARY

=== SITE DOSE LIMIT ANALYSIS =====			ANNUAL 2007	=====
Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem) Max % of Limit
-----	-----	-----	-----	-----
2007 - T.Spc. Total Body	ADULT	TBODY	1.62E-01	3.00E+00 5.40E+00

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
-----	-----
H-3	9.81E+01
CR-51	7.48E-05
MN-54	1.45E-02
FE-55	1.19E-02
FE-59	1.07E-02
CO-58	7.08E-01
CO-60	3.70E-01
SR-89	2.34E-03
SR-90	2.15E-02
NB-95	1.60E-03
TE-125M	7.64E-01

Table 3.2-1 (continued)

Byron Station Unit Two

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2007

Unit Range - From: 2 To: 2

Agegrp	Liquid Receptor							TB
	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI	Skin	
ADULT	1.13E-02	1.63E-01	1.62E-01	1.97E-01	1.59E-01	2.41E-01	0.00E+00	1.62E-01
TEEN	1.19E-02	1.24E-01	1.22E-01	1.19E-01	1.19E-01	1.81E-01	0.00E+00	1.23E-01
CHILD	1.50E-02	1.37E-01	1.37E-01	1.33E-01	1.33E-01	1.57E-01	0.00E+00	1.37E-01
INFANT	6.74E-05	5.88E-02	5.88E-02	5.88E-02	5.88E-02	5.89E-02	0.00E+00	5.89E-02

Annual - Limit		Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2007	- Admin. Any Organ	ADULT	GILLI	2.41E-01	7.50E+00	3.22E+00
2007	- Admin. Total Body	ADULT	TBODY	1.62E-01	2.25E+00	7.20E+00
2007	- T.Spc. Any Organ	ADULT	GILLI	2.41E-01	1.00E+01	2.41E+00

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	6.59E+01
CR-51	1.26E-02
MN-54	1.56E-01
FE-55	1.97E-02
FE-59	6.25E-02
CO-58	4.30E+00
CO-60	2.12E+00
SR-89	8.80E-03
SR-90	1.80E-02
NB-95	1.21E+01
TE-125M	1.53E+01

Table 3.2-1 (continued)

Byron Station Unit Two

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2007 - T.Spc. Total Body	ADULT	TBODY	1.62E-01	3.00E+00	5.40E+00

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	9.81E+01
CR-51	7.48E-05
MN-54	1.45E-02
FE-55	1.19E-02
FE-59	1.07E-02
CO-58	7.08E-01
CO-60	3.70E-01
SR-89	2.34E-03
SR-90	2.15E-02
NB-95	1.60E-03
TE-125M	7.64E-01

Table 3.4-1

Byron Station - Unit 1

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

2007

TYPE OF DOSE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	ANNUAL
GAMMA AIR (mrad)	1.330E-06(ESE)	1.910E-06(W)	4.770E-07(NNW)	2.420E-07(S)	1.984E-06(ESE)
BETA AIR (mrad)	6.100E-06(ESE)	7.760E-07(W)	1.590E-04(NNW)	1.850E-06(NNW)	8.541E-06(ESE)
WHOLE BODY (mrem)	4.760E-07(SE)	1.010E-07(SE)	2.950E-07(SSE)	2.920E-07(SSE)	1.059E-06(SE)
SKIN (mrem)	1.840E-06(SE)	3.010E-06(SE)	7.260E-07(SSE)	7.520E-07(S)	3.424E-06(SE)
ORGAN (mrem)	4.080E-06(ESE)	9.780E-05(W)	1.630E-05(NNW)	2.340E-04(NNW)	5.004E-04(NNW)
CRITICAL PERSON	Teenager	Teenager	Teenager	Teenager	Teenager
CRITICAL ORGAN	Thyroid	Thyroid	Thyroid	Thyroid	Thyroid

COMPLIANCE STATUS

TYPE OF DOSE	10 CFR 50 APP. I		10 CFR 50 APP. I	
	QUARTERLY OBJECTIVE	% OF APP. I	YEARLY OBJECTIVE	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	20.0	0.00
WHOLE BODY (mrem)	2.5	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	15.0	0.00
CRITICAL PERSON		Teenager		Teenager
CRITICAL ORGAN		Thyroid		Thyroid

Calculation used release data from the following:
Unit 1 - Vent

Date of calculation: 3/13/2008

Table 3.4-1 (continued)

Byron Station - Unit 2

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

2007

TYPE OF DOSE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	ANNUAL
GAMMA AIR (mrad)	1.070E-07(ESE)	6.910E-07(W)	0.000E+00(N)	5.150E-07(S)	2.026E-06(ESE)
BETA AIR (mrad)	4.730E-06(ESE)	1.500E-06(W)	0.000E+00(N)	2.150E-06(NNW)	7.220E-06(ESE)
WHOLE BODY (mrem)	3.900E-07(SE)	2.770E-07(SE)	2.090E-07(SSE)	3.250E-07(S)	1.031E-06(SE)
SKIN (mrem)	1.470E-06(SE)	9.680E-07(SE)	2.850E-07(SSE)	1.300E-06(S)	3.358E-06(SE)
ORGAN (mrem)	2.910E-04(ESE)	1.160E-04(W)	2.030E-04(NNW)	2.960E-04(NNW)	7.347E-04(NNW)
CRITICAL PERSON	Teenager	Teenager	Teenager	Teenager	Teenager
CRITICAL ORGAN	Thyroid	Liver	Lung	Thyroid	Lung

COMPLIANCE STATUS

TYPE OF DOSE	10 CFR 50 APP. I		10 CFR 50 APP. I	
	QUARTERLY OBJECTIVE	% OF APP. I	YEARLY OBJECTIVE	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	20.0	0.00
WHOLE BODY (mrem)	2.5	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	15.0	0.00
CRITICAL PERSON		Teenager		Teenager
CRITICAL ORGAN		Thyroid		Lung

Calculation used release data from the following:
Unit 2 - Vent

Date of calculation: 3/13/2008

Data Recovery (priority parameters) 99.2%

APPENDIX F

METEOROLOGICAL

Byron Generating Station

Period of Record: January - March 2007
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 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	0	0	1	0	0	0	1
ENE	0	0	2	0	0	0	2
E	0	0	1	0	0	0	1
ESE	0	0	1	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	1	0	0	1
SSW	0	0	0	0	0	0	0
SW	0	0	2	2	0	0	4
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	1	0	0	1
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	7	4	0	0	11

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

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 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	1	0	0	0	1
NE	0	0	4	0	0	0	4
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	2	1	0	0	3
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	1	2	0	0	3
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	0	0	0	2	0	0	2
NW	0	1	4	0	0	0	5
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	1	13	5	0	0	19

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

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	1	0	0	2
NNE	0	0	1	0	0	0	1
NE	0	0	1	0	0	0	1
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	1
SE	0	0	0	1	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	2	1	1	0	4
SW	0	0	1	1	0	0	2
WSW	0	0	1	7	0	0	8
W	0	0	1	1	0	0	2
WNW	0	1	3	2	0	0	6
NW	0	3	3	0	0	0	6
NNW	0	1	2	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	5	17	15	1	0	38

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

Byron Generating Station

Period of Record: January - March 2007
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	11	23	17	3	0	55
NNE	4	18	9	6	1	0	38
NE	0	15	23	15	6	0	59
ENE	2	17	13	13	0	0	45
E	1	29	48	22	0	0	100
ESE	2	7	13	13	3	0	38
SE	0	9	8	12	1	0	30
SSE	2	6	20	9	1	0	38
S	0	9	38	14	4	0	65
SSW	2	8	41	28	12	0	91
SW	0	21	58	29	7	0	115
WSW	1	13	49	41	9	9	122
W	4	27	86	52	18	1	188
WNW	2	26	61	43	4	0	136
NW	1	32	31	22	0	0	86
NNW	1	20	35	7	0	0	63
Variable	0	0	0	0	0	0	0
Total	23	268	556	343	69	10	1269

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 3

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	4	4	5	0	0	16
NNE	2	16	2	0	0	0	20
NE	0	6	2	0	0	0	8
ENE	1	4	4	1	0	0	10
E	6	20	7	1	1	0	35
ESE	1	14	7	8	4	2	36
SE	4	5	9	3	0	0	21
SSE	0	12	24	6	0	0	42
S	3	7	17	19	3	0	49
SSW	4	11	21	16	3	0	55
SW	5	23	29	9	0	0	66
WSW	5	16	21	2	0	0	44
W	10	41	39	6	0	0	96
WNW	11	57	25	2	0	0	95
NW	6	36	9	0	0	0	51
NNW	2	9	4	0	0	0	15
Variable	0	0	0	0	0	0	0
Total	63	281	224	78	11	2	659

Hours of calm in this stability class: 7
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 3

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)

Winds Measured at 30 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	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	2	5	0	0	0	0	7
ESE	2	3	2	0	0	0	7
SE	1	2	0	0	0	0	3
SSE	1	6	8	0	0	0	15
S	2	5	6	0	0	0	13
SSW	3	9	1	0	0	0	13
SW	2	4	0	0	0	0	6
WSW	4	0	0	0	0	0	4
W	2	5	0	0	0	0	7
WNW	6	5	0	0	0	0	11
NW	9	11	0	0	0	0	20
NNW	4	3	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	38	59	17	0	0	0	114

Hours of calm in this stability class: 19

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 3

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 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	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	1	0	0	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	4	1	0	0	0	5
SSW	0	3	0	0	0	0	3
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	1	0	0	0	0	0	1
WNW	1	1	0	0	0	0	2
NW	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	4	8	1	0	0	0	13

Hours of calm in this stability class: 5
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 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	0	0	0	1	0	0	1
ENE	0	0	0	1	1	0	2
E	0	0	0	2	0	0	2
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	1	0	1
SSW	0	0	0	0	0	0	0
SW	0	0	0	4	0	0	4
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	1	0	0	1
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	9	2	0	11

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

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 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	1	0	0	1
NE	0	0	0	4	0	0	4
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	3	0	0	3
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	1	0	1	0	2
SSW	0	0	0	0	1	0	1
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	0	0	0	2	1	0	3
NW	0	0	2	2	0	0	4
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	0	3	13	3	0	19

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

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

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

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

Byron Generating Station

Period of Record: January - March 2007
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	17	19	8	6	55
NNE	0	11	8	14	5	4	42
NE	1	4	11	20	15	11	62
ENE	1	2	17	11	12	2	45
E	0	7	31	43	19	7	107
ESE	0	4	4	9	14	6	37
SE	0	3	8	8	4	0	23
SSE	2	0	10	10	7	7	36
S	1	5	11	31	15	6	69
SSW	0	5	14	43	16	23	101
SW	2	1	21	41	25	15	105
WSW	0	2	23	60	21	18	124
W	0	9	41	70	37	15	172
WNW	2	13	36	51	30	6	138
NW	1	9	29	29	28	0	96
NNW	0	8	22	28	1	0	59
Variable	0	0	0	0	0	0	0
Total	10	88	303	487	257	126	1271

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

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	2	11	0	17
NNE	0	2	11	7	1	0	21
NE	0	3	3	3	0	0	9
ENE	0	2	4	6	0	1	13
E	0	7	7	8	8	2	32
ESE	0	1	7	10	3	11	32
SE	0	1	6	7	3	2	19
SSE	0	3	7	7	18	6	41
S	0	0	3	10	18	15	46
SSW	2	0	4	11	29	8	54
SW	3	2	5	25	32	2	69
WSW	2	2	11	24	4	0	43
W	0	3	23	41	10	1	78
WNW	1	3	24	62	8	1	99
NW	0	4	24	35	2	0	65
NNW	1	4	11	9	0	0	25
Variable	0	0	0	0	0	0	0
Total	9	38	153	267	147	49	663

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

Byron Generating Station

Period of Record: January - March 2007
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	10	1	0	0	11
NNE	0	0	1	1	0	0	2
NE	0	1	0	0	0	0	1
ENE	1	0	0	0	0	0	1
E	0	1	1	0	0	0	2
ESE	0	2	1	7	3	0	13
SE	0	1	0	0	0	0	1
SSE	0	0	0	0	1	0	1
S	1	3	1	2	11	1	19
SSW	0	0	1	3	4	0	8
SW	0	0	2	8	0	0	10
WSW	1	3	1	0	0	0	5
W	0	0	6	0	0	0	6
WNW	0	3	6	5	0	0	14
NW	1	0	4	15	1	0	21
NNW	0	2	5	9	0	0	16
Variable	0	0	0	0	0	0	0
Total	4	16	39	51	20	1	131

Hours of calm in this stability class: 2
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Byron Generating Station

Period of Record: January - March 2007

Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 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	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1
ESE	0	0	1	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	1	0	0	0	0	1
S	0	1	0	0	0	0	1
SSW	0	0	0	0	1	0	1
SW	0	0	0	2	0	0	2
WSW	0	0	2	0	0	0	2
W	0	0	1	0	0	0	1
WNW	0	0	0	1	0	0	1
NW	1	1	0	0	0	0	2
NNW	0	2	1	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	1	6	7	3	1	0	18

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

Byron Generating Station

Period of Record: April - June 2007
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 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	7	0	0	0	7
NE	0	0	1	0	0	0	1
ENE	0	1	8	0	0	0	9
E	0	0	4	1	0	0	5
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	4	0	0	4
SSW	0	0	0	3	0	0	3
SW	0	0	2	0	0	0	2
WSW	0	0	0	2	0	0	2
W	0	0	0	0	0	0	0
WNW	0	0	2	0	0	0	2
NW	0	0	0	6	0	0	6
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	1	25	16	0	0	42

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: 20

Byron Generating Station

Period of Record: April - June 2007

Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	1	0	0	2
NNE	0	0	1	1	0	0	2
NE	0	0	0	1	0	0	1
ENE	0	1	3	0	0	0	4
E	0	1	2	0	0	0	3
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
SSE	0	0	2	0	0	0	2
S	0	0	0	5	3	0	8
SSW	0	0	0	2	1	0	3
SW	0	1	2	0	0	0	3
WSW	0	0	1	3	0	0	4
W	0	0	3	0	0	0	3
WNW	0	2	9	3	0	0	14
NW	0	3	4	6	0	0	13
NNW	0	0	2	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	9	30	22	4	0	65

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: 20

Byron Generating Station

Period of Record: April - June 2007

Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)

Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	0	1	0	0	3
NNE	0	0	2	2	0	0	4
NE	0	0	2	0	0	0	2
ENE	0	1	2	0	0	0	3
E	0	4	2	1	0	0	7
ESE	0	0	1	0	0	0	1
SE	0	2	8	1	0	0	11
SSE	0	1	3	0	0	0	4
S	0	0	4	3	2	0	9
SSW	0	0	7	2	2	0	11
SW	0	1	4	0	0	0	5
WSW	0	0	3	2	0	0	5
W	0	2	13	0	0	0	15
WNW	0	4	16	5	0	0	25
NW	0	3	5	6	0	0	14
NNW	0	2	5	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	1	21	77	23	4	0	126

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: 20

Byron Generating Station

Period of Record: April - June 2007
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	16	18	0	0	0	38
NNE	3	9	8	3	0	0	23
NE	0	12	33	5	1	0	51
ENE	4	23	30	17	2	0	76
E	3	47	32	3	0	0	85
ESE	1	22	15	4	6	0	48
SE	0	14	12	8	1	0	35
SSE	0	25	18	2	0	0	45
S	2	15	29	20	5	1	72
SSW	1	17	20	14	12	0	64
SW	4	20	18	10	2	0	54
WSW	1	19	15	8	5	0	48
W	1	12	11	9	5	0	38
WNW	2	26	40	18	20	0	106
NW	1	27	49	16	0	0	93
NNW	3	20	11	4	0	0	38
Variable	0	0	0	0	0	0	0
Total	30	324	359	141	59	1	914

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 7
 Hours of missing stability measurements in all stability classes: 20

Byron Generating Station

Period of Record: April - June 2007

Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	18	1	0	0	0	21
NNE	2	9	7	1	0	0	19
NE	3	2	13	3	0	0	21
ENE	4	24	23	2	0	0	53
E	7	65	24	6	0	0	102
ESE	1	14	6	2	0	0	23
SE	2	15	14	3	0	0	34
SSE	5	35	22	6	0	0	68
S	5	20	33	9	0	0	67
SSW	3	12	6	7	2	0	30
SW	11	18	31	3	0	0	63
WSW	10	12	10	0	0	0	32
W	4	9	10	3	0	0	26
WNW	7	17	4	1	0	0	29
NW	8	16	4	0	0	0	28
NNW	2	10	4	0	0	0	16
Variable	0	0	0	0	0	0	0
Total	76	296	212	46	2	0	632

Hours of calm in this stability class: 7
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 20

Byron Generating Station

Period of Record: April - June 2007

Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)

Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	0	0	0	0	2
NNE	1	0	0	0	0	0	1
NE	2	0	0	0	0	0	2
ENE	4	4	0	0	0	0	8
E	3	18	0	0	0	0	21
ESE	1	22	1	0	0	0	24
SE	4	21	3	0	0	0	28
SSE	2	28	9	0	0	0	39
S	3	13	14	0	0	0	30
SSW	5	13	0	0	0	0	18
SW	7	1	1	0	0	0	9
WSW	3	3	0	0	0	0	6
W	8	2	0	0	0	0	10
WNW	6	1	0	1	0	0	8
NW	6	2	0	0	0	0	8
NNW	1	3	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	56	133	28	1	0	0	218

Hours of calm in this stability class: 13

Hours of missing wind measurements in this stability class: 2

Hours of missing stability measurements in all stability classes: 20

Byron Generating Station

Period of Record: April - June 2007

Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	2	2	0	0	0	0	4
E	5	14	0	0	0	0	19
ESE	3	8	0	0	0	0	11
SE	0	6	1	0	0	0	7
SSE	3	1	0	0	0	0	4
S	5	14	0	0	0	0	19
SSW	9	3	0	0	0	0	12
SW	4	0	0	0	0	0	4
WSW	8	0	0	0	0	0	8
W	7	0	0	0	0	0	7
WNW	4	0	0	0	0	0	4
NW	5	0	0	0	0	0	5
NNW	2	0	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	59	48	1	0	0	0	108

Hours of calm in this stability class: 26

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 20

Byron Generating Station

Period of Record: April - June 2007
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 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	4	0	0	6
NE	0	0	2	0	0	0	2
ENE	0	0	4	6	0	0	10
E	0	0	1	2	0	0	3
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	3	1	4
SSW	0	0	0	2	1	0	3
SW	0	0	0	2	0	0	2
WSW	0	0	0	2	0	0	2
W	0	0	0	0	0	0	0
WNW	0	0	1	0	1	0	2
NW	0	0	0	1	5	0	6
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	0	11	20	10	1	42

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: 20

Byron Generating Station

Period of Record: April - June 2007

Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 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	0	2	0	0	2
NE	0	0	0	0	1	0	1
ENE	0	0	3	2	0	0	5
E	0	0	0	2	0	0	2
ESE	0	1	0	0	0	0	1
SE	0	0	0	1	0	0	1
SSE	0	0	0	2	0	0	2
S	0	0	0	5	3	2	10
SSW	0	0	0	0	0	1	1
SW	0	0	0	2	0	0	2
WSW	0	0	0	1	3	0	4
W	0	0	2	3	0	0	5
WNW	0	2	4	5	1	0	12
NW	0	1	4	5	6	0	16
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	4	14	31	14	3	66

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: 20

Byron Generating Station

Period of Record: April - June 2007
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	0	1	0	0	2
NNE	0	0	1	2	0	0	3
NE	0	0	0	2	0	0	2
ENE	0	0	3	1	0	0	4
E	0	1	3	2	0	0	6
ESE	0	0	1	0	0	0	1
SE	0	1	6	4	1	0	12
SSE	0	0	2	4	1	0	7
S	0	0	0	5	0	2	7
SSW	0	1	2	5	0	2	10
SW	0	0	3	1	0	0	4
WSW	0	0	4	3	1	0	8
W	0	1	7	5	0	0	13
WNW	0	2	6	11	4	0	23
NW	0	0	5	6	7	0	18
NNW	0	1	1	5	0	0	7
Variable	0	0	0	0	0	0	0
Total	1	7	44	57	14	4	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: 20

Byron Generating Station

Period of Record: April - June 2007
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	6	16	10	1	0	33
NNE	1	2	13	8	0	0	24
NE	0	2	23	20	5	5	55
ENE	0	10	18	15	23	7	73
E	1	15	41	20	4	0	81
ESE	1	14	16	8	7	9	55
SE	0	7	10	7	6	0	30
SSE	0	10	21	12	3	0	46
S	2	6	19	25	15	10	77
SSW	0	8	14	15	8	15	60
SW	0	15	19	10	4	10	58
WSW	0	4	15	9	6	5	39
W	1	8	12	8	11	6	46
WNW	1	10	22	28	12	23	96
NW	2	8	25	52	22	1	110
NNW	2	6	14	13	4	0	39
Variable	0	0	0	0	0	0	0
Total	11	131	298	260	131	91	922

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: 20

Byron Generating Station

Period of Record: April - June 2007
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	6	8	0	0	19
NNE	0	1	8	15	1	0	25
NE	3	3	5	10	7	0	28
ENE	0	1	11	10	15	2	39
E	3	14	43	45	6	5	116
ESE	1	2	6	3	4	2	18
SE	0	5	9	11	8	5	38
SSE	1	3	1	21	11	5	42
S	0	3	9	27	30	5	74
SSW	0	5	10	15	10	2	42
SW	1	2	11	19	25	1	59
WSW	1	7	13	13	3	0	37
W	0	4	6	16	3	0	29
WNW	0	5	16	7	1	0	29
NW	2	1	14	8	1	0	26
NNW	0	3	9	7	0	0	19
Variable	0	0	0	0	0	0	0
Total	12	64	177	235	125	27	640

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: 20

Byron Generating Station

Period of Record: April - June 2007

Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	2	2	0	0	7
NNE	1	2	1	2	0	0	6
NE	0	2	0	0	0	0	2
ENE	3	1	2	0	0	0	6
E	2	5	18	9	1	0	35
ESE	0	4	6	11	1	0	22
SE	1	0	2	10	7	1	21
SSE	0	2	1	10	6	3	22
S	0	0	3	17	12	2	34
SSW	0	2	3	11	4	0	20
SW	0	1	1	9	2	0	13
WSW	0	1	4	5	0	0	10
W	0	0	5	0	0	0	5
WNW	0	1	10	3	0	1	15
NW	1	2	6	1	0	0	10
NNW	0	2	2	1	0	0	5
Variable	0	0	0	0	0	0	0
Total	8	28	66	91	33	7	233

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: 20

Byron Generating Station

Period of Record: April - June 2007
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 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	1	1	0	0	0	0	2
NE	0	1	0	0	0	0	1
ENE	1	2	0	0	0	0	3
E	2	4	9	2	0	0	17
ESE	1	0	0	9	4	0	14
SE	1	1	4	1	0	0	7
SSE	1	0	1	0	3	0	5
S	0	5	2	6	4	0	17
SSW	0	1	1	5	0	0	7
SW	1	2	2	4	0	0	9
WSW	1	1	3	1	0	0	6
W	1	4	2	3	0	0	10
WNW	1	2	6	6	0	0	15
NW	1	4	5	0	0	0	10
NNW	0	4	0	1	0	0	5
Variable	0	0	0	0	0	0	0
Total	12	34	36	38	11	0	131

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: 20

Byron Generating Station

Period of Record: July - September 2007
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	8	0	0	0	0	8
NNE	0	2	0	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	1	0	0	0	0	1
E	0	1	0	0	0	0	1
ESE	1	5	0	0	0	0	6
SE	0	2	0	0	0	0	2
SSE	0	0	0	0	0	0	0
S	0	0	3	0	0	0	3
SSW	0	0	3	0	0	0	3
SW	0	1	0	0	0	0	1
WSW	0	1	1	0	0	0	2
W	0	0	0	2	0	0	2
WNW	0	3	4	3	0	0	10
NW	0	1	4	0	0	0	5
NNW	0	4	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	1	29	15	5	0	0	50

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 7
 Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	7	1	0	0	0	8
NNE	0	2	0	0	0	0	2
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	1	3	0	0	0	4
S	0	2	4	1	0	0	7
SSW	0	1	5	0	0	0	6
SW	1	0	1	0	0	0	2
WSW	0	5	0	0	0	0	5
W	0	2	1	0	0	0	3
WNW	1	0	1	1	0	0	3
NW	2	4	2	0	0	0	8
NNW	1	4	1	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	5	28	19	2	0	0	54

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: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	0	0	0	0	3
NNE	0	4	0	0	0	0	4
NE	0	1	0	0	0	0	1
ENE	0	3	0	0	0	0	3
E	0	1	0	0	0	0	1
ESE	0	2	0	0	0	0	2
SE	0	1	0	0	0	0	1
SSE	0	5	2	0	0	0	7
S	0	2	7	4	0	0	13
SSW	0	2	7	2	0	0	11
SW	0	4	3	0	0	0	7
WSW	1	4	3	0	0	0	8
W	0	2	5	0	0	0	7
WNW	1	3	3	0	0	0	7
NW	0	3	1	0	0	0	4
NNW	1	4	2	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	3	44	33	6	0	0	86

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: 52

Byron Generating Station

Period of Record: July - September 2007
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	16	5	1	0	0	29
NNE	6	14	10	0	0	0	30
NE	6	16	1	0	0	0	23
ENE	5	16	3	1	0	0	25
E	6	20	0	0	0	0	26
ESE	6	23	5	0	0	0	34
SE	3	26	1	0	0	0	30
SSE	1	35	9	3	0	0	48
S	3	27	30	3	0	0	63
SSW	6	31	44	4	0	0	85
SW	2	44	32	2	0	0	80
WSW	6	33	19	2	0	0	60
W	5	34	20	2	0	0	61
WNW	1	28	12	2	0	0	43
NW	4	19	6	0	0	0	29
NNW	3	35	4	0	0	0	42
Variable	0	0	0	0	0	0	0
Total	70	417	201	20	0	0	708

Hours of calm in this stability class: 3
 Hours of missing wind measurements in this stability class: 6
 Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	11	5	0	0	0	20
NNE	5	11	1	0	0	0	17
NE	7	8	2	0	0	0	17
ENE	4	15	4	0	0	0	23
E	11	34	0	0	0	0	45
ESE	11	23	1	0	0	0	35
SE	7	30	5	0	0	0	42
SSE	8	37	36	1	0	0	82
S	12	44	31	2	0	0	89
SSW	11	27	26	2	0	0	66
SW	12	14	23	0	0	0	49
WSW	13	24	4	0	0	0	41
W	12	18	2	0	0	0	32
WNW	19	7	4	0	0	0	30
NW	20	21	2	0	0	0	43
NNW	10	22	4	1	0	0	37
Variable	0	0	0	0	0	0	0
Total	166	346	150	6	0	0	668

Hours of calm in this stability class: 5
 Hours of missing wind measurements in this stability class: 9
 Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	1	0	0	0	0	3
NNE	4	6	0	0	0	0	10
NE	1	2	0	0	0	0	3
ENE	5	7	1	0	0	0	13
E	6	13	0	0	0	0	19
ESE	9	16	0	0	0	0	25
SE	5	31	0	0	0	0	36
SSE	4	43	7	0	0	0	54
S	20	19	2	0	0	0	41
SSW	15	5	0	0	0	0	20
SW	3	2	0	0	0	0	5
WSW	6	0	0	0	0	0	6
W	7	5	0	0	0	0	12
WNW	24	4	0	0	0	0	28
NW	19	2	0	0	0	0	21
NNW	11	10	0	0	0	0	21
Variable	0	0	0	0	0	0	0
Total	141	166	10	0	0	0	317

Hours of calm in this stability class: 7
 Hours of missing wind measurements in this stability class: 12
 Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	4	0	0	0	0	0	4
ESE	5	13	0	0	0	0	18
SE	6	17	0	0	0	0	23
SSE	10	11	2	0	0	0	23
S	31	9	0	0	0	0	40
SSW	10	5	0	0	0	0	15
SW	2	0	0	0	0	0	2
WSW	11	0	0	0	0	0	11
W	12	0	0	0	0	0	12
WNW	12	0	0	0	0	0	12
NW	23	0	0	0	0	0	23
NNW	11	0	0	0	0	0	11
Variable	0	0	0	0	0	0	0
Total	141	55	2	0	0	0	198

Hours of calm in this stability class: 18

Hours of missing wind measurements in this stability class: 4

Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	5	0	0	0	9
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	2	1	0	0	0	3
ESE	0	1	2	1	0	0	4
SE	0	0	2	0	0	0	2
SSE	0	0	0	1	0	0	1
S	0	0	1	1	0	0	2
SSW	0	0	0	3	0	0	3
SW	0	0	1	0	0	0	1
WSW	0	0	1	1	0	0	2
W	0	1	3	0	4	0	8
WNW	0	3	2	2	1	2	10
NW	0	0	2	1	3	0	6
NNW	0	3	1	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	15	22	10	8	2	57

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: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	4	0	0	0	9
NNE	0	1	1	0	0	0	2
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	1	0	0	0	1
SSE	0	0	2	1	0	0	3
S	0	1	2	7	1	0	11
SSW	0	0	0	4	0	0	4
SW	0	0	2	0	0	0	2
WSW	0	4	1	0	0	0	5
W	0	2	0	0	1	0	3
WNW	0	2	0	0	1	1	4
NW	0	1	3	1	1	0	6
NNW	0	1	4	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	0	17	20	13	4	1	55

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: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	0	0	0	0	4
NNE	0	1	2	0	0	0	3
NE	0	1	0	0	0	0	1
ENE	0	3	0	0	0	0	3
E	0	0	1	0	0	0	1
ESE	1	0	3	0	0	0	4
SE	0	1	0	1	0	0	2
SSE	0	3	3	1	0	0	7
S	0	0	1	6	5	0	12
SSW	0	1	3	7	2	0	13
SW	0	1	5	1	0	0	7
WSW	0	1	2	3	0	0	6
W	0	0	5	1	0	0	6
WNW	0	4	2	1	1	0	8
NW	0	1	4	0	0	0	5
NNW	0	2	3	1	0	0	6
Variable	0	0	0	0	0	0	0
Total	1	23	34	22	8	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: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	8	10	5	1	0	27
NNE	3	7	14	7	2	0	33
NE	1	7	10	1	0	0	19
ENE	0	10	10	6	1	0	27
E	0	11	11	0	1	0	23
ESE	3	11	11	5	3	0	33
SE	1	20	16	2	0	0	39
SSE	1	10	18	8	6	1	44
S	1	14	22	22	9	0	68
SSW	3	15	26	25	5	0	74
SW	1	19	34	23	9	0	86
WSW	0	15	20	16	5	0	56
W	2	9	31	9	4	0	55
WNW	2	14	13	15	1	1	46
NW	1	8	13	6	1	0	29
NNW	3	9	25	3	2	0	42
Variable	0	0	0	0	0	0	0
Total	25	187	284	153	50	2	701

Hours of calm in this stability class: 4
 Hours of missing wind measurements in this stability class: 12
 Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)

Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	6	10	6	0	0	23
NNE	0	4	9	11	0	0	24
NE	0	4	3	4	0	0	11
ENE	2	4	10	11	2	0	29
E	3	4	25	7	0	0	39
ESE	0	7	8	9	4	1	29
SE	1	1	14	15	10	0	41
SSE	1	10	6	17	32	8	74
S	2	4	13	48	16	2	85
SSW	0	7	14	27	15	1	64
SW	1	8	19	18	19	0	65
WSW	0	8	19	8	1	0	36
W	1	4	18	6	0	0	29
WNW	0	9	8	6	1	0	24
NW	1	4	16	22	0	0	43
NNW	1	5	23	12	1	0	42
Variable	0	0	0	0	0	0	0
Total	14	89	215	227	101	12	658

Hours of calm in this stability class: 5

Hours of missing wind measurements in this stability class: 19

Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007

Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	2	8	8	0	0	20
NNE	1	1	3	4	0	0	9
NE	0	1	6	0	0	0	7
ENE	3	4	8	12	0	0	27
E	1	7	8	3	0	0	19
ESE	1	3	6	5	6	0	21
SE	0	0	3	7	19	1	30
SSE	0	3	3	10	16	1	33
S	0	2	9	17	18	0	46
SSW	1	1	5	12	2	0	21
SW	0	2	11	8	0	0	21
WSW	1	0	1	6	0	0	8
W	0	0	2	9	0	0	11
WNW	2	2	3	4	0	0	11
NW	0	2	15	9	0	0	26
NNW	0	6	9	9	0	0	24
Variable	0	0	0	0	0	0	0
Total	12	36	100	123	61	2	334

Hours of calm in this stability class: 2
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 52

Byron Generating Station

Period of Record: July - September 2007
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	1	8	3	0	0	15
NNE	5	4	5	6	0	0	20
NE	1	6	2	1	0	0	10
ENE	3	1	1	0	0	0	5
E	4	2	2	0	0	0	8
ESE	0	2	4	4	3	0	13
SE	0	3	4	10	7	4	28
SSE	0	4	4	7	8	2	25
S	0	3	9	4	1	0	17
SSW	0	1	10	9	3	0	23
SW	0	0	7	12	2	0	21
WSW	0	1	1	6	0	0	8
W	1	0	1	0	0	0	2
WNW	0	1	0	1	0	0	2
NW	0	1	3	0	0	0	4
NNW	1	7	4	4	0	0	16
Variable	0	0	0	0	0	0	0
Total	18	37	65	67	24	6	217

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: 52

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	2	0	0	5
NNE	0	0	0	0	0	0	0
NE	0	0	1	0	0	0	1
ENE	0	0	3	0	0	0	3
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	1	0	0	0	0	1
SW	0	3	1	0	0	0	4
WSW	0	2	0	0	0	0	2
W	0	2	2	3	0	0	7
WNW	0	3	1	0	0	0	4
NW	0	2	2	0	0	0	4
NNW	0	1	0	1	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	15	12	6	0	0	33

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: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)

Winds Measured at 30 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	0	0	0	0	0	0	0
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	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	1	4	0	0	0	5
SW	0	2	1	0	0	0	3
WSW	0	0	0	0	0	0	0
W	0	1	1	3	0	0	5
WNW	0	1	1	4	0	0	6
NW	0	2	3	6	0	0	11
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	9	12	15	0	0	36

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: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	2	1	0	0	3
NNE	0	0	0	0	0	0	0
NE	0	0	2	0	0	0	2
ENE	0	1	0	0	0	0	1
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	1	1	0	0	0	2
SSW	0	1	4	0	0	0	5
SW	0	3	2	5	0	0	10
WSW	0	1	2	0	0	5	8
W	0	0	2	2	0	0	4
WNW	0	1	4	5	0	0	10
NW	0	4	5	6	1	0	16
NNW	0	4	2	1	0	0	7
Variable	0	0	0	0	0	0	0
Total	0	16	26	20	1	5	68

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: 21

Byron Generating Station

Period of Record: October - December 2007
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	50	29	35	0	0	118
NNE	7	20	11	2	0	0	40
NE	3	10	9	0	0	0	22
ENE	2	10	8	0	0	0	20
E	13	21	0	0	0	0	34
ESE	7	16	9	2	1	0	35
SE	2	12	34	6	2	0	56
SSE	1	14	40	9	0	0	64
S	0	15	39	8	0	0	62
SSW	3	28	35	21	4	0	91
SW	4	20	42	12	1	0	79
WSW	1	19	26	18	3	10	77
W	5	14	33	33	4	0	89
WNW	4	26	42	32	7	0	111
NW	3	28	44	8	1	0	84
NNW	4	33	35	6	0	0	78
Variable	0	0	0	0	0	0	0
Total	63	336	436	192	23	10	1060

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 4
 Hours of missing stability measurements in all stability classes: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	13	2	0	0	0	18
NNE	3	24	0	0	0	0	27
NE	0	4	4	0	0	0	8
ENE	2	10	4	0	0	0	16
E	8	7	0	0	0	0	15
ESE	9	24	14	1	0	0	48
SE	2	22	21	5	0	0	50
SSE	6	33	44	6	0	0	89
S	6	37	37	11	0	0	91
SSW	4	23	18	11	0	0	56
SW	10	18	10	3	0	0	41
WSW	7	20	13	6	0	0	46
W	11	22	7	3	0	0	43
WNW	18	25	14	2	0	0	59
NW	7	30	5	0	0	0	42
NNW	7	33	4	0	0	0	44
Variable	0	0	0	0	0	0	0
Total	103	345	197	48	0	0	693

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	4	0	0	0	0	5
NNE	1	1	0	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	2	7	0	0	0	0	9
ESE	5	7	4	0	0	0	16
SE	4	5	0	0	0	0	9
SSE	1	43	16	0	0	0	60
S	6	29	5	0	0	0	40
SSW	7	5	1	0	0	0	13
SW	6	3	0	0	0	0	9
WSW	5	4	0	0	0	0	9
W	8	8	0	0	0	0	16
WNW	7	1	0	0	0	0	8
NW	15	3	0	0	0	0	18
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	68	121	26	0	0	0	215

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 3
 Hours of missing stability measurements in all stability classes: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 30 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	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	1	0	0	0	0	0	1
ESE	0	1	0	0	0	0	1
SE	1	6	0	0	0	0	7
SSE	3	16	0	0	0	0	19
S	3	9	2	0	0	0	14
SSW	4	0	0	0	0	0	4
SW	4	0	0	0	0	0	4
WSW	4	0	0	0	0	0	4
W	5	0	0	0	0	0	5
WNW	2	0	0	0	0	0	2
NW	5	0	0	0	0	0	5
NNW	3	0	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	37	32	2	0	0	0	71

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: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	2	1	0	4
NNE	0	0	0	0	0	0	0
NE	0	0	0	4	0	0	4
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	1	0	0	0	1
SW	0	1	3	0	0	0	4
WSW	0	1	2	0	0	0	3
W	0	1	1	2	1	2	7
WNW	0	1	2	0	1	0	4
NW	0	2	0	1	1	0	4
NNW	0	0	0	0	2	0	2
Variable	0	0	0	0	0	0	0
Total	0	6	10	9	6	2	33

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: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	1	1	0	3
NNE	0	0	0	0	0	0	0
NE	0	0	0	1	0	0	1
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	5	1	0	0	6
SW	0	0	2	0	0	0	2
WSW	0	0	0	0	0	0	0
W	0	0	2	2	1	1	6
WNW	0	0	1	1	5	1	8
NW	0	0	0	2	3	0	5
NNW	0	0	3	1	1	0	5
Variable	0	0	0	0	0	0	0
Total	0	0	14	9	11	2	36

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: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	0	2	0	3
NNE	0	0	0	0	0	0	0
NE	0	1	0	2	0	0	3
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	1	0	0	0	1
S	0	0	3	1	0	0	4
SSW	0	0	1	3	0	0	4
SW	0	0	5	1	3	0	9
WSW	0	1	1	0	0	5	7
W	0	0	0	3	1	0	4
WNW	0	0	5	5	4	1	15
NW	0	0	3	1	6	1	11
NNW	0	0	3	4	0	0	7
Variable	0	0	0	0	0	0	0
Total	0	2	23	20	16	7	68

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: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Neutral - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	10	28	12	30	0	80
NNE	1	8	28	15	9	2	63
NE	0	6	11	6	0	0	23
ENE	0	5	7	4	1	0	17
E	3	9	11	6	0	0	29
ESE	2	7	11	8	5	1	34
SE	0	4	8	27	19	7	65
SSE	0	2	16	25	12	5	60
S	1	6	21	28	9	7	72
SSW	1	6	28	38	21	8	102
SW	0	5	18	19	7	5	54
WSW	0	6	30	9	8	17	70
W	2	9	25	25	19	17	97
WNW	0	7	21	27	36	12	103
NW	1	4	22	43	12	2	84
NNW	1	3	21	30	13	0	68
Variable	0	0	0	0	0	0	0
Total	12	97	306	322	201	83	1021

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 43
 Hours of missing stability measurements in all stability classes: 21

Byron Generating Station

Period of Record: October - December 2007
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	8	8	0	0	20
NNE	2	1	3	5	0	0	11
NE	1	2	14	8	0	0	25
ENE	1	3	10	6	0	0	20
E	0	6	6	0	0	0	12
ESE	1	2	2	11	8	3	27
SE	0	4	17	32	14	6	73
SSE	0	2	6	20	16	8	52
S	0	1	10	40	42	10	103
SSW	0	3	10	34	22	0	69
SW	0	6	13	24	4	2	49
WSW	3	6	11	16	8	1	45
W	0	3	8	14	6	0	31
WNW	1	4	27	16	5	0	53
NW	0	4	24	19	1	0	48
NNW	3	1	17	25	1	0	47
Variable	0	0	0	0	0	0	0
Total	13	51	186	278	127	30	685

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 11
 Hours of missing stability measurements in all stability classes: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 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	1	2	4	0	0	7
NE	0	0	2	0	0	0	2
ENE	1	0	0	0	0	0	1
E	2	0	2	2	0	0	6
ESE	0	1	0	3	6	0	10
SE	0	0	1	2	6	0	9
SSE	0	2	1	3	1	2	9
S	0	5	6	25	26	1	63
SSW	0	4	1	15	16	0	36
SW	1	3	6	6	1	0	17
WSW	1	0	4	1	0	0	6
W	1	2	2	8	0	0	13
WNW	0	1	4	7	0	0	12
NW	0	2	4	10	0	0	16
NNW	1	2	2	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	7	25	39	86	56	3	216

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 21

Byron Generating Station

Period of Record: October - December 2007

Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	0	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	4	0	0	0	0	4
E	0	2	0	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	1	0	1
SSE	0	0	3	2	6	0	11
S	0	0	1	4	12	0	17
SSW	0	1	3	7	2	0	13
SW	0	0	0	1	0	0	1
WSW	0	0	1	0	0	0	1
W	1	0	4	0	0	0	5
WNW	0	0	1	1	0	0	2
NW	0	1	7	2	0	0	10
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	1	12	20	17	21	0	71

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: 21

APPENDIX G

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

Docket No: 50-454
50-455

BYRON NUCLEAR GENERATING STATION UNITS 1 and 2

Annual Radiological
Groundwater Protection Program Report

1 January Through 31 December 2007

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon SM

Nuclear

Byron Nuclear Generating Station
Byron, IL 61010

May 2008

189 of 211

Table Of Contents

I. Summary and Conclusions	1
II. Introduction.....	4
A. Objectives of the RGPP	4
B. Implementation of the Objectives	4
C. Program Description.....	5
D. Characteristics of Tritium (H-3)	6
III. Program Description.....	6
A. Sample Analysis	6
B. Data Interpretation	7
C. Background Analysis.....	8
1. Background Concentrations of Tritium	8
A. Groundwater Results.....	10
B. Drinking Water Well Survey	11
C. Summary of Results – Inter-laboratory Comparison Program	11
D. Leaks, Spills, and Releases	11
E. Trends.....	11
F. Investigations	11
G. Actions Taken.....	12

Appendices

Appendix A Location Designation

Tables

Table A-1: Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Byron Nuclear Generating Station, 2006

Figures

Figure A-1: Monitoring Well Locations, Byron Nuclear Generating Station, 2006 (Extra wells noted on map are for reference only.)

Appendix B Data Tables

Tables

Table B-I.1 Concentrations of Tritium in Groundwater Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2007.

I. Summary and Conclusions

In 2006, Exelon instituted a comprehensive monitoring program to evaluate the impact of station operations on groundwater in the vicinity of Byron Nuclear Generating Station. The monitoring was conducted in two phases. Phase 1 of the monitoring was part of a comprehensive study initiated by Exelon to determine whether groundwater or surface water at and in the vicinity of Byron Nuclear Generating Station had been adversely impacted by any releases of radionuclides. Phase 1 was conducted by Conestoga Rovers and Associates (CRA) and the conclusions were made available to state and federal regulators as well as the public on an Exelon web site <http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.html>. Phase 2 of the RGPP was conducted by Exelon corporate and station personnel to initiate follow up of Phase 1 and begin long-term monitoring at groundwater locations selected during Phase 1. This is the second in a series of annual reports on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Byron Nuclear Generating Station. This report covers groundwater samples, collected from the environment, both on and off station property in 2007. During that time period, 45 analyses were performed on 45 samples from 22 locations.

In assessing all the data gathered for this report, it was concluded that the operation of Byron Nuclear Generating Station had no adverse radiological impact on the environment, and there are no known active releases into the groundwater at Byron Nuclear Generating Station.

Gamma-emitting radionuclides were not evaluated in 2007. In the case of tritium, Exelon specified that its laboratories achieve a lower limit of detection 10 times lower than that required by federal regulation.

Strontium-89/90 was not evaluated in 2007.

Tritium was not detected in any of the groundwater 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 at concentrations greater than the LLD of 200 pCi/L in four of 22 groundwater sample locations. The tritium concentrations in these four monitoring wells ranged from 327 ± 112 pCi/L to $3,050 \pm 357$ pCi/L. These four monitoring wells are located near the Circ Water Blowdown vaults (2, 3, & 4) along the blowdown line located West of the Station. The 2007 tritium results from these monitoring wells are similar to the results obtained in 2006.

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II. Introduction

The Byron Station, a two-unit PWR station, is located about two miles east of the Rock River and approximately three miles southwest of Byron in Ogle County, Illinois. The reactors are designed to have capacities of 1280 and 1254 MW gross, respectively. Unit One loaded fuel in November 1984 and went on line February 2, 1985. Unit Two went on line January 9, 1987.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) on samples collected in 2007.

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 before significant 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 Byron Nuclear Generating Station as discussed below:

1. Exelon and its consultant identified locations as described in the Phase 1 study. Phase 1 studies were conducted by Conestoga Rovers and Associates (CRA) and the results and conclusions were made available to state and federal regulators as well as the public on an Exelon web site in station specific reports.
<http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.html>

2. The Byron Nuclear Generating Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.
3. Byron Nuclear Generating Station will continue to perform routine sampling and radiological analysis of water from selected locations.
4. Byron Nuclear Generating Station has implemented new procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.
5. Byron Nuclear Generating 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 Figure A-1, Appendix A.

Groundwater

Samples of water are collected, managed, transported and analyzed in accordance with approved procedures following EPA methods. Only groundwater is collected. Sample locations, sample collection frequencies and analytical frequencies are controlled 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 deliverables as data are received.

Analytical data results are reviewed by both station personnel and an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. 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 the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (^3He). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by TBE to analyze the environmental samples for radioactivity for the Byron Nuclear Generating Station RGPP in 2007.

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

1. Concentrations of gamma emitters in groundwater (as required by procedure).
2. Concentrations of strontium in groundwater (as required by procedure).
3. Concentrations of tritium in groundwater.

B. Data Interpretation

The radiological data collected prior to Byron Nuclear Generating Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Byron Nuclear Generating 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.

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 Byron Nuclear Generating Nuclear Power Station, Commonwealth Edison Company, Annual Report 1984, April 1985.

The pre-operational REMP contained analytical results from samples collected from the surface water and groundwater. All groundwater samples listed in the pre-Operational REMP report were <200 pCi/L.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others. Additional detail may be found by consulting references (CRA 2006).

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 2006. RadNet provides tritium precipitation concentration data for samples collected at stations through out the U.S. from 1960 up to and including 2006. 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. 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 (Table B–I.1, Appendix B). Tritium values ranged from less than the detection limit to 3,050 pCi/l. Within the station boundary, concentrations of tritium at the bottom of the Galena-Platteville aquifer ranged from 327-3050 pCi/L. Outside of the station boundary, tritium concentrations were all less than detection limit (<200 pCi/L). This is based on evaluation of groundwater sample results obtained as part of the Byron Station REMP. Of the twenty-two wells sampled in April 2007, four contained levels of tritium above the lower limit of detection (LLD) of 200 pCi/L. They were: AR-2 (548 pCi/L), AR-3 (327 pCi/L), AR-4 (3,050 pCi/L), and AR-11 (1,820 pCi/L). None of these wells showed significant change from previous results. Of the twenty-two wells sampled in October 2007, four contained levels of tritium above the LLD of 200 pCi/L. They were: AR-2 (383 pCi/L), AR-3 (965 pCi/L), AR-4 (2,890 pCi/L), and AR-11 (1,300 pCi/L). Since well AR-3 showed a measurable increase over the April 2007 result, it was reanalyzed with a result of 1,110 pCi/L tritium. Well AR-3 was sampled again in November 2007 with a result of 1,180 pCi/L. Along with elevated tritium, a corresponding increase in level was observed in the Well AR-3. The tritium increase is believed to be a result of heavy late-summer rains that introduced pre-existing tritium that was present in the soil

to the water table in the area of the well. After discussions with the Exelon Environmental Hydrologist, a monthly tritium monitoring frequency was established for Well AR-3 beginning in January 2008. As of this writing, the tritium concentration in Well AR-3 has decreased, and is now almost back to original levels. The tritium detected in groundwater samples has been isolated to the Galena-Platteville aquifer, which is isolated from the deeper regional groundwater aquifer by the semi-confining Glenwood Formation. Groundwater quality data from production wells and monitoring wells at the Station located below this aquifer do not indicate concentrations of tritium greater than the LLD of 200 pCi/L. As such, the tritium impact is limited to the Galena-Platteville aquifer.

Strontium

Strontium-89/90 was not evaluated in 2007.

Gamma Emitters

Gamma-emitting target radionuclides were not evaluated in 2007.

B. Drinking Water Well Survey

No drinking water well surveys were conducted in 2007 at Byron Station.

C. Summary of Results – Inter-Laboratory Comparison Program

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

D. Leaks, Spills, and Releases

There are no new previously unidentified leaks or plumes at Byron Station. There have been no new leaks, spills or releases at Byron Station in 2007.

E. Trends

There have been no significant changes in trends for previously identified plumes at Byron Station.

F. Investigations

Other than the AR-3 results discussed in section IV.A, there have been no anomalous results for Byron Station sample data in 2007.

G. Actions Taken

1. Compensatory Actions

Increased monitoring of Well AR-3 was initiated late in 2007 based on results described in section IV.A.

2. Installation of Monitoring Wells

No new monitoring wells were installed in 2007 at Byron Station.

3. Actions to Recover/Reverse Plumes

No actions were undertaken to recover/reverse plumes in 2007.

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APPENDIX A

LOCATION DESIGNATION

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations and Distance, Byron Nuclear Generating Station, 2007

Site	Site Type	Temporary/Permanent	Distance
AR-1	Monitoring Well	Permanent	0.36 miles/NNW
AR-10	Monitoring Well	Permanent	0.28 miles/NE
AR-11	Monitoring Well	Permanent	1.36 miles/WNW
AR-2	Monitoring Well	Permanent	0.6 miles/NW
AR-3	Monitoring Well	Permanent	0.8 miles/NW
AR-4	Monitoring Well	Permanent	1.36 miles/WNW
AR-5	Monitoring Well	Permanent	1.92 miles/WNW
AR-6	Monitoring Well	Permanent	2.04 miles/WNW
AR-7	Monitoring Well	Permanent	0.04 miles/W
AR-8	Monitoring Well	Permanent	0.12 miles/S
AR-9	Monitoring Well	Permanent	0.24 miles/E
CAR-1	Monitoring Well	Permanent	2.25 miles/WNW
CAR-2	Monitoring Well	Permanent	1.52 miles/WNW
CAR-3	Monitoring Well	Permanent	0.16 miles/SE
DF-24 (EPA well)	Monitoring Well	Permanent	1.36 miles/WNW
GW-9	Monitoring Well	Permanent	0.9 miles/WNW
MW-1 (EPA well)	Monitoring Well	Permanent	0.6 miles/NW
MW-3 (EPA well)	Monitoring Well	Permanent	0.8 miles/NW
TW-13	Monitoring Well	Permanent	2.3 miles/WNW
TW-14	Monitoring Well	Permanent	2.25 miles/WNW
TW-15	Monitoring Well	Permanent	2.2 miles/WNW
Well 7	Monitoring Well	Permanent	0.4 miles/SE

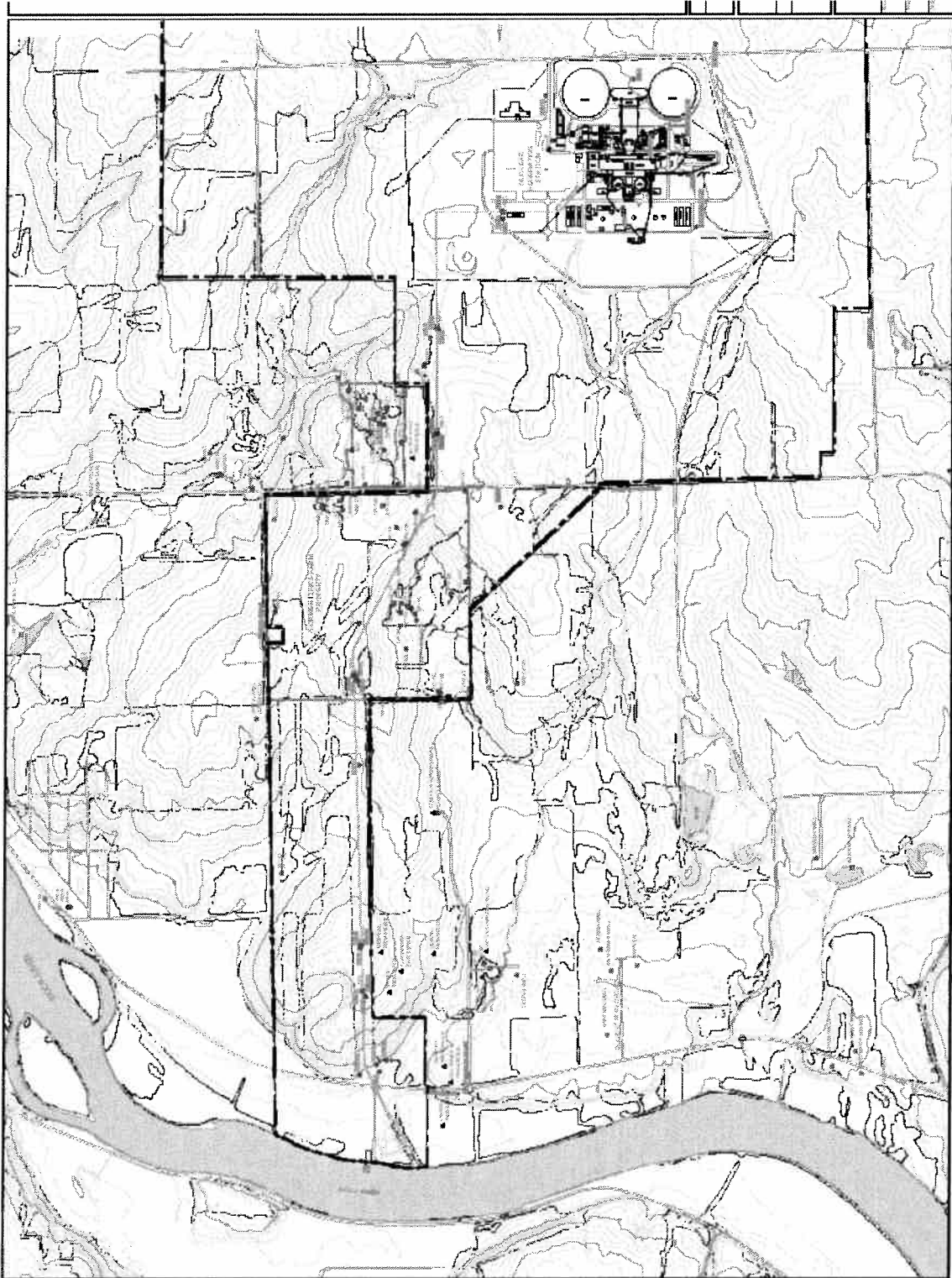


Figure A-1
Monitoring Well Location, Byron Nuclear Generating Station, 2007

APPENDIX B

DATA TABLES

**TABLE B-I.1 CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATION STATION, 2007**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION DATE	H-3
AR-1	04/20/07	< 153
AR-1	10/08/07	< 180
AR-10	04/15/07	< 156
AR-10	10/08/07	178 \pm 117
AR-11	04/23/07	1820 \pm 242
AR-11	10/10/07	1300 \pm 149
AR-2	04/18/07	548 \pm 124
AR-2	10/08/07	383 \pm 124
AR-3	04/18/07	327 \pm 112
AR-3	10/08/07	965 \pm 166
AR-3	10/08/07	1110 \pm 197
AR-3	11/27/07	1180 \pm 203
AR-4	05/01/07	3050 \pm 357
AR-4	10/10/07	2890 \pm 350
AR-5	04/21/07	< 170
AR-5	10/10/07	< 178
AR-6	04/21/07	< 169
AR-6	10/10/07	< 179
AR-7	04/15/07	< 151
AR-7	10/08/07	< 179
AR-8	04/15/07	< 152
AR-8	10/08/07	< 180
AR-9	04/20/07	< 155
AR-9	10/08/07	< 178
CAR-1	04/20/07	< 155
CAR-1	10/08/07	< 174
CAR-2	04/20/07	< 152
CAR-2	10/08/07	< 175
CAR-3	04/15/07	< 157
CAR-3	10/08/07	< 178
DF-24	04/19/07	< 170
DF-24	10/10/07	< 179
GW-9	04/21/07	< 168
GW-9	10/10/07	< 175
MW-1	04/19/07	< 149
MW-1	10/08/07	< 176
MW-3	04/19/07	< 158
MW-3	10/08/07	< 177
TW-13	04/20/07	< 152
TW-13	10/08/07	< 171
TW-14	04/20/07	< 154
TW-14	10/08/07	< 176
TW-15	04/20/07	< 156
TW-15	10/08/07	< 176
WELL 7	10/10/07	< 189

