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May 08, 2009

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U. S. Nuclear Regulatory Commission
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Washington, DC 20555-0001

Dresden Nuclear Power Station, Units 1, 2, and 3
Facility Operating License No. DPR-2
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-010, 50-237, and 50-249

Subject: Dresden Nuclear Power Station 2008 Annual Radiological Environmental Operating Report

Enclosed is the Exelon Dresden Nuclear Power Station 2008 Annual Radiological Environmental Operating Report, submitted in accordance with Section 6.9.A.3 of the Unit 1 Dresden Nuclear Power Station Technical Specifications and Section 5.6.2, "Annual Radiological Environmental Operating Report," of the Units 2 and 3 Technical Specifications. This report provides the results of the radiological environmental and meteorological monitoring programs for the 2008 calendar year.

In addition, Appendix F of the report contains the results of groundwater monitoring conducted in accordance with Exelon's Radiological Groundwater Protection Program, which is a voluntary program implemented in 2006. This information is being reported in accordance with a nuclear industry initiative.

Should you have any questions concerning this letter, please contact Stephen Taylor, Regulatory Assurance Manager, at (815) 416-2800.

Respectfully,

Tim Hanley
Site Vice President
Dresden Nuclear Power Station

Attachment - Annual Radiological Environmental Operating Report

cc: Regional Administrator - NRC Region III
NRC Senior Resident - Dresden Nuclear Power Station

NMSS01
IE25
NRR

Docket No: 50-010
50-237
50-249

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 and 3

Annual Radiological
Environmental Operating Report

1 January Through 31 December 2008

Prepared By

Teledyne Brown Engineering
Environmental Services

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Dresden Nuclear Power Station
Morris, IL 60450

May 2009

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Dresden Nuclear Power Station (DNPS) by Exelon covers the period 1 January 2008 through 31 December 2008. During that time period, 1,786 analyses were performed on 1,650 samples. In assessing all the data gathered for this report it was concluded that the operation of DNPS 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. No anthropogenic gamma emitting nuclides were detected. Gross beta and tritium activities detected were consistent with those detected in previous years.

Fish (commercially and recreationally important species) and sediment samples were analyzed for concentrations of gamma emitting nuclides. No fission or activation products were detected in fish. Sediment samples had Cesium-137 concentrations consistent with levels observed in previous years. No plant-produced fission or activation products were found in sediment.

Air particulate samples were analyzed for concentrations of gross beta and gamma emitting nuclides. Gross beta results at the indicator locations were consistent with those at the control location. 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. Concentrations of naturally occurring K-40 were found. 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

The Dresden Nuclear Power Station (DNPS), consisting of one retired reactor and two operating 912 MWe boiling water reactors owned and operated by Exelon Corporation, is located in Grundy County, Illinois. Unit No. 1 went critical in 1960 and was retired in 1978. Unit No. 2 went critical on 16 June 1970. Unit No. 3 went critical on 02 November 1971. The site is located in northern Illinois, approximately 12 miles southwest of Joliet, Illinois at the confluence of the Des Plaines and Kankakee Rivers where they form the Illinois River.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) Global Dosimetry, and Environmental Inc. Midwest Laboratory (EIML) on samples collected during the period 1 January 2008 through 31 December 2008.

An assessment of the station's radioactive effluent monitoring results and radiation dose via the principle pathways of exposure resulting from plant emissions of radioactivity including the maximum noble gas gamma and beta air doses in the unrestricted area, an annual summary of meteorological conditions including wind speed, wind direction, and atmospheric stability, and the result of the 40CFR190 uranium fuel cycle dose analysis for the calendar year are published in the station's Annual Radioactive Effluent Release Report.

A. Objective of the Radiological Environmental Monitoring Program (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 DNPS REMP were collected for Exelon Nuclear by EIML. This section describes the general collection methods used by EIML to obtain environmental samples for the DNPS REMP in 2008. Sample locations and descriptions can be found in Table B–1 and Figures B–1 and B-2, Appendix B. The collection methods used by EIML are listed in Table B-2.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, ground water, fish, and sediment. Samples were collected from three surface water locations (D-21, D-52 and D-57) and composited for analysis. Control locations were D-52 and D-57. Samples were collected quarterly or more frequently from two well water locations (D-23 and D-35). 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, largemouth bass, common carp and freshwater drum were collected semiannually at two locations, D-28 and D-46 (Control). Sediment samples composed of recently deposited substrate were collected at one location semiannually, D-27.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulate, airborne iodine, milk, and food products. Airborne iodine and particulate samples were collected at thirteen locations (D-01, D-02, D-03, D-04, D-07, D-08, D-10, D-12, D-14, D-45, D-53, D-55 and D-56). The control location was D-12. 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 one control location (D-25) from May through October, and monthly from November through April. There are no milking animals within 10 km of the site. 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 (D-Control, D-Quad 1, D-Quad 2, D-Quad 3, and D-Quad 4). The control location was D-Control. Various types of samples were collected and placed in new unused plastic bags, and sent to the laboratory for analysis.

Ambient Gamma Radiation

Direct radiation measurements were made using CaF_2 and LiF thermoluminescent dosimeters (TLD). Each location consisted of 2 TLD sets. The TLD locations were placed on and around the DNPS site as follows:

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

An outer ring consisting of 16 locations (D-201, D-202, D-203, D-204, D-205, D-206, D-207, D-208, D-209, D-210, D-211, D-212, D-213, D-214, D-215 and D-216) approximately 5 to 10 km from the site.

An other set consisting of TLDs at the 12 air sampler locations (D-01, D-02, D-03, D-04, D-07, D-08, D-10, D-14, D-45, D-53, D-55, and D-56).

The balance of one location (D-12) representing the control area.

Two TLDs – each comprised of two CaF_2 and two LiF thermoluminescent phosphors enclosed in plastic – were placed at each location. 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 EIML to analyze the environmental samples for radioactivity for the DNPS REMP in 2008. 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

For the purpose of this report, Dresden Nuclear Power 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 DNPS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is calculated the same as the LLD 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 ground and surface water and vegetation 12 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, I-131, Cs-134, Cs-137, Ba-140, and La-140 were reported.
For fish, sediment, dredge spoil, air particulate and milk 11

nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, Cs-134, Cs-137, Ba-140 and La-140 were reported.

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

D. Program Exceptions

For 2008 the DNPS 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
AP/I	D-01	01/25/08 – 02/01/08	Foreign substance was found on the flow indicator. Flow rate was estimated at 60 cfh.
AP/I	D-01	05/16/08 – 05/23/08	Low timer reading of 127.1 hours due to loss of power to the sampler.
AP/I	D-01	05/23/08 – 05/30/08	Low timer reading of 166.1 hours due to recent power restoration.
AP/I	D-01	12/19/08 – 12/26/08	Low timer reading of 139.0 hours due to power outage.
AP/I	D-02	09/19/08 – 09/26/08	Low timer reading of 166.6 hours; cause is unknown.
AP/I	D-02	12/19/08 – 12/26/08	Low timer reading of 159.8 hours due to power outage.
AP/I	D-03	07/18/08 – 07/25/08	Low timer reading of 89.6; cause is unknown.
AP/I	D-10	11/28/08 – 12/05/08	Low timer reading of 164.6 hours due to area power outage.
SW	D-21	01/25/08 – 02/29/08	Grab samples taken due to no compositor pump flow.
SW	D-21	02/29/08 – 03/28/08	Grab samples taken due to no compositor pump flow.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
AP/I	D-55	11/28/08 – 12/05/08	Low timer reading of 155.5 hours due to area power outage.
AP/I	D-56	02/08/08 – 02/15/08	Low timer reading of 157.8 hours; cause is unknown.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason

There were no missed samples for 2008.

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

There were no program changes for 2008.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken weekly and composited for analysis at three locations (D-21, D-52, and D-57). Of these locations only D-21 located downstream, could be affected by Dresden's effluent releases. The following analyses were performed:

Gross Beta

Monthly composites from all locations were analyzed for

concentrations of gross beta (Table C–I.1, Appendix C). The values ranged from 3.2 to 19.8 pCi/l. Concentrations detected were consistent with those detected in previous years (Figures C–1, C–2, and C–3, Appendix C).

Tritium

Quarterly composites from all locations were analyzed for tritium activity (Table C–I.2, Appendix C). The indicator values ranged from192 to 716 pCi/L. Control values ranged from 890 to 6440 pCi/L. Concentrations detected were consistent with those detected in previous years (Figures C–4, C–5, and C-6, Appendix C).

Gamma Spectrometry

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

2. Ground Water

Quarterly or more frequent grab samples were collected at two locations (D-23 and D-35). These locations could be affected by Dresden's effluent releases and by sources upstream on the Kankakee River. The following analyses were performed:

Tritium

All samples were analyzed for tritium activity (Table C–II.1, Appendix C). D-35 values ranged from <155 to <175 pCi/L. D-23 values ranged from 207 to 525 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C–7, Appendix C).

Gamma Spectrometry

All samples 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 channel catfish, largemouth bass, common carp and freshwater drum were collected at two locations

(D-28 and D-46) semiannually. Location D-28 could be affected by Dresden'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). Naturally occurring K-40 was found at all stations and ranged from 2,700 to 3,850 pCi/kg wet. No fission or activation products were detected.

4. Sediment

Aquatic sediment samples were collected at one location (D-27) semiannually. This downstream location could be affected by Dresden's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from the location were analyzed for gamma emitting nuclides (Table C–IV.1, Appendix C). Cesium-137 was detected in one sample.

Concentrations of the fission product Cs-137 was found in one sample at a concentration of 158 pCi/kg dry. The activity detected was consistent with those detected in previous years and is likely due to fallout from above-ground nuclear weapons testing. No other fission or activation products were detected.

5. Dredging Spoils

According to the U.S. Army Corps of Engineers in July 2008, no dredging was performed within one mile of Dresden Station in the past year. Therefore, no sampling of dredging spoils was performed.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from 13 locations on a weekly basis. The 13 locations were separated into four groups: On-site samplers (D-01, D-02,

D-03), Near-field samplers within 4 km of the site (D-04, D-07, D-45, D-53 and D-56), Far-field samplers between 4 and 10 km from the site (D-08, D-10, D-14 and D-55) and the Control sampler between 10 and 30 km from the site (D-12). 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 four groups aid in determining the effects, if any, resulting from the operation of DNPS. The results from the On-Site locations ranged from 6 to 39 E–3 pCi/m^3 with a mean of 18 E–3 pCi/m^3. The results from the Near-Field locations ranged from 5 to 48 E–3 pCi/m^3 with a mean of 20 E–3 pCi/m^3. The results from the Far-Field locations ranged from <4 to 53 E–3 pCi/m^3 with a mean of 20 E–3 pCi/m^3. The results from the Control location ranged from 9 to 47 E–3 pCi/m^3 with a mean of 21 E–3 pCi/m^3. Comparison of the 2008 air particulate data with previous years data indicate no effects from the operation of DNPS. In addition a comparison of the weekly mean values for 2008 indicate no notable differences among the four groups (Figures C–8 through C-14, Appendix C).

Gamma Spectrometry

Samples were composited quarterly and analyzed for gamma emitting nuclides (Table C–V.3, Appendix C). Naturally occurring Be-7 due to cosmic ray activity was detected in 47 of 52 samples and ranged from 43.7 to 123 E–3 pCi/m^3. K-40 was also detected in 4 samples and ranged from 26.4 to 33.3 E–3 pCi/ m^3. No anthropogenic nuclides were detected, and all required LLDs were met.

b. Airborne Iodine

Continuous air samples were collected from 13 locations (D-01, D-02, D-03, D-04, D-07, D-08, D-10, D-12, D-14, D-45, D-53, D-55 and D-56) and analyzed weekly for I-131 (Table C–VI.1, Appendix C). No nuclides were detected, and all required LLDs were met.

2. Terrestrial

a. Milk

There are no indicator locations within 10 kilometers of the station. Samples were collected from one control location (D-25) biweekly May through October and monthly November through April. The following analyses were performed:

Iodine-131

Milk samples from the location 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).

Naturally occurring K-40 activity was found in all nineteen samples. The activities ranged from 1,090 to 1,340 pCi/l. No other nuclides were detected, and all required LLDs were met.

b. Food Products

Food product samples were collected at five locations (D-Control, D-Quad 1, D-Quad 2, D-Quad 3 and D-Quad 4) when available. Four locations, (D-Quad 1, D-Quad 2, D-Quad 3 and D-Quad 4) could be affected by Dresden'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 Global Dosimetry 110 Environmental (CaF_2 and LiF) thermoluminescent dosimeters. Forty-five 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/quarter, with a range of 16 to 33 mR/quarter. A comparison of the Inner Ring, Outer Ring, and Other locations' data to the Control Location data, indicate that the ambient gamma radiation levels from the Control location (D-12-01, D-12-02) were comparable.

D. Land Use Survey

A Land Use Survey conducted on 20 August 2008 around the Dresden Nuclear Power Station (DNPS) was performed by EIML for Exelon Nuclear to comply with Section 12.6.2 of the Dresden Offsite Dose Calculation Manual (ODCM). The purpose of the survey was to document the nearest resident or industrial facility, milk producing animal, and livestock in each of the sixteen 22 ½ degree sectors within 10 km around the site. There were no changes required to the DNPS REMP as a result of this survey. The results of this survey are summarized below.

Distance in Miles from the DNPS Reactor Buildings			
Sector	Residence Miles	Livestock Miles	Milk Farm Miles
A N	1.5	1.4	-
B NNE	0.8	6.0	-
C NE	0.8	5.8	-
D ENE	0.7	1.7	-
E E	1.1	-	-
F ESE	1.0	-	-
G SE	0.6	-	-
H SSE	0.5	-	-
J S	0.5	-	16.0
K SSW	3.3	-	-
L SW	3.6	-	11.4
M WSW	5.8	-	-
N W	3.5	0.5	-
P WNW	3.7	0.5	-
Q NW	2.6	0.5	-
R NNW	0.8	1.0	-

E. Errata Data

There was no errata data discovered in 2008.

F. Summary of Results – Inter-Laboratory Comparison Program

The primary laboratory 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 ± 20% of the reference value. Performance is acceptable with warning when a mean result falls in the range from ±20% to ±30% of the reference value (i.e., 20% < bias < 30%). If the bias is greater than 30%, the results are deemed not acceptable.

For the primary laboratory, 16 out of 18 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 December 2008 Sr-89 in milk result of 18.0 pCi/L was higher than the known value of 12.6 pCi/L, resulting in a found to known ratio of 1.43. NCR 09-02 was initiated to investigate this failure.

2. Teledyne Brown Engineering's Analytics' ERA Quik Response water sample January 2008 Sr-89 result of 37.33 pCi/L exceeded the upper acceptance limit of 25.2 pCi/L. No cause could be found for the failure. Studies bracketing these results, RAD 71 and RAD 72 had acceptable Sr-89 results. NCR 08-03

For the secondary laboratory, all of the 15 analytes met the specified acceptance criteria.

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

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2008

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2008**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GR-B	36	4	10.9 (12/12) (3.7/19.8)	7.4 (22/24) (3.2/14.3)	10.9 (12/12) (3.7/19.8)	D-21 INDICATOR IL RIVER AT EJ&E BRIDGE 1.4 MILES WNW OF SITE	0
	H-3	12	2000	454 (2/4) (192/716)	3665 (2/8) (890/6440)	3665 (2/4) (890/6440)	D-57 CONTROL KANKAKEE RIVER AT WILL ROAD(CONTROL) 2.0 MILES SE OF SITE	0
	GAMMA	36						
	MN-54		15	<LLD	<LLD	-		0
	CO-58		15	<LLD	<LLD	-		0
	FE-59		30	<LLD	<LLD	-		0
	CO-60		15	<LLD	<LLD	-		0
	ZN-65		30	<LLD	<LLD	-		0
	NB-95		15	<LLD	<LLD	-		0

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2008

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2008**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (*LLD*)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0
GROUND WATER (PCI/LITER)	H-3	16	2000	403 (12/16) (207/525)	NA	403 (12/12) (207/525)	D-23 INDICATOR THORSEN WELL 0.7 MILES S OF SITE	0
	GAMMA	16						
	MN-54		15	<LLD	NA	-		0

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2008

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2008**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CO-58		15	<LLD	NA	-		0
	FE-59		30	<LLD	NA	-		0
	CO-60		15	<LLD	NA	-		0
	ZN-65		30	<LLD	NA	-		0
	NB-95		15	<LLD	NA	-		0
	ZR-95		30	<LLD	NA	-		0
	I-131		15	<LLD	NA	-		0
	CS-134		15	<LLD	NA	-		0

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2008

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**

LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2008**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
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	8						
	MN-54		130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0

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FISH (PCI/KG WET)	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0
	CS-137		150	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
SEDIMENT (PCI/KG DRY)	GAMMA MN-54	2	NA	<LLD	NA	-		0
	CO-58		NA	<LLD	NA	-		0

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NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	FE-59		NA	<LLD	NA	-		0
	CO-60		NA	<LLD	NA	-		0
	ZN-65		NA	<LLD	NA	-		0
	NB-95		NA	<LLD	NA	-		0
	ZR-95		NA	<LLD	NA	-		0
	CS-134		150	<LLD	NA	-		0
	CS-137		180	158 (1/2)	NA	158 (1/2)	D-27 INDICATOR DRESDEN LOCK AND DAM - DOWNSTREAM 0.8 MILES NW OF SITE	0
	BA-140		NA	<LLD	NA	-		0

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

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LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2008**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	LA-140		NA	<LLD	NA	-		0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	689	10	20 (635/636) (5/53)	21 (53/53) (9/47)	21 (53/53) (8/53)	D-14 INDICATOR CHANNAHON 3.7 MILES NE OF SITE	0
	GAMMA	52						
	MN-54		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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LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2008**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		50	<LLD	<LLD	-		0
	CS-137		60	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	689	70	<LLD	<LLD	-		0
MILK (PCI/LITER)	I-131	20	1	NA	<LLD	-		0

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NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**

LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2008**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	GAMMA	20						
	MN-54		NA	NA	<LLD	-		0
	CO-58		NA	NA	<LLD	-		0
	FE-59		NA	NA	<LLD	-		0
	CO-60		NA	NA	<LLD	-		0
	ZN-65		NA	NA	<LLD	-		0
	NB-95		NA	NA	<LLD	-		0
	ZR-95		NA	NA	<LLD	-		0
	CS-134		15	NA	<LLD	-		0

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2008

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	CS-137		18	NA	<LLD	-		0
	BA-140		60	NA	<LLD	-		0
	LA-140		15	NA	<LLD	-		0
VEGETATION (PCI/KG WET)	GAMMA	10						
	MN-54		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

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2008

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN(M) (F) RANGE	CONTROL LOCATION MEAN(M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	NB-95		NA	<LLD	<LLD	-		0
	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
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	360	NA	23.2 (352/352) (16/31)	22.6 (8/8) (19/33)	27.5 (4/4) (25/31)	D-214-1 INDICATOR 5.0 MILES WNW	0

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

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APPENDIX B

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

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2008

Location	Location Description	Distance & Direction From Site
A.	Surface Water	
D-21	Illinois River at EJ&E Bridge (indicator)	1.4 miles WNW
D-52	DesPlaines River, Upstream (control)	1.1 miles ESE
D-57	Kankakee River at Will Road (control)	2.0 miles SE
B.	Ground/Well Water	
D-23	Thorsen Well (indicator)	0.7 miles S
D-35	Dresden Lock and Dam (indicator)	0.8 miles NW
C.	Milk - bi-weekly / monthly	
D-25	Biros Farm (control)	11.3 miles SW
D.	Air Particulates / Air Iodine	
D-01	Onsite 1 (indicator)	0.8 miles NW
D-02	Onsite 2 (indicator)	0.3 miles NNE
D-03	Onsite 3 (indicator)	0.4 miles S
D-04	Collins Road (indicator)	0.8 miles W
D-07	Clay Products (indicator)	2.6 miles S
D-08	Prairie Park (indicator)	3.8 miles SW
D-10	Goose Lake Village (indicator)	3.5 miles SSW
D-12	Lisbon (control)	10.5 miles NW
D-14	Channahon (indicator)	3.7 miles NE
D-45	McKinley Woods Road (indicator)	1.7 miles ENE
D-53	Grundy County Road (indicator)	2.1 miles SSE
D-55	Ridge Road (indicator)	4.3 miles N
D-56	Wildfeather (indicator)	1.7 miles SE
E.	Fish	
D-28	Dresden Pool of Illinois River, Downstream (indicator)	0.9 miles NNW
D-46	DesPlaines River, Upstream (control)	1.2 miles ESE
F.Sediment		
D-27	Dresden Lock and Dam, Downstream (indicator)	0.8 miles NW
G.	Vegetation	
Quadrant 1	Chris Locknar	2.8 miles NE
Quadrant 2	Robert Pagliano	3.2 miles SSE
Quadrant 3	Jim Bloom	3.9 miles SSW
Quadrant 4	J.D. Carmichael	1.6 miles NNW
Control	Glasscock Farm	12.8 miles ENE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2008

Location	Location Description	Distance & Direction From Site
H. Environmental Dosimetry - TLD		
Inner Ring		
D-101-1 and -2		1.0 miles N
D-102-1 and -2		1.3 miles NNE
D-103-1 and -2		1.2 miles NE
D-104-1 and -2		1.7 miles ENE
D-105-1 and –2		1.5 miles E
D-106-1 and -2		1.1 miles ESE
D-107-1 and -2		1.4 miles SE
D-108-1 and -2		1.9 miles SSE
D-109-1 and -2		0.8 miles S
D-110-3 and -4		0.9 miles SSW
D-111-1 and -2		0.6 miles SW
D-112a-1 and -2		0.7 miles WSW
D-113-1 and -2		0.9 miles W
D-114-1 and -2		0.9 miles WNW
D-115-1 and -2		0.8 miles NW
D-116-1 and -2		1.0 miles NNW
Outer Ring		
D-201-1 and -2		4.8 miles N
D-202-1 and -2		5.1 miles NNE
D-203-1 and -2		4.7 miles NE
D-204-1 and -2		5.0 miles ENE
D-205-1 and -2		4.0 miles E
D-206 -1 and -2		3.5 miles ESE
D-207-1 and -2		4.2 miles SE
D-208-1 and -2		4.9 miles SSE
D-209-1 and -2		4.1 miles S
D-210-1 and -2		4.9 miles SSW
D-211-1 and -2		4.8 miles SW
D-212-3 and -4		6.0 miles WSW
D-213-1 and -2		4.5 miles W
D-214-1 and -2		5.0 miles WNW
D-215-1 and -2		4.8 miles NW
D-216-1 and -2		4.9 miles NNW
Other		
D-01-1 and -2	Onsite 1	0.8 miles NW
D-02-1 and -2	Onsite 2	0.3 miles NNE
D-03-1 and -2	Onsite 3	0.4 miles S
D-04-1 and -2	Collins Road	0.8 miles W
D-07-1 and -2	Clay Products	2.6 miles S
D-08-1 and -2	Prairie Park	3.8 miles SW
D-10-1 and -2	Goose Lake Village	3.5 miles SSW
D-14-1 and -2	Channahon	3.7 miles NE
D-45-1 and -2	McKinley Woods Road	1.7 miles ENE
D-53-1 and -2	Grundy County Road	2.1 miles SSE
D-55-1 and -2	Ridge Road	4.3 miles N
D-56-1 and –2	Wildfeather	1.7 miles SE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2008

Location	Location Description	Distance & Direction From Site
Control		
D-12-1 and -2	Lisbon	10.5 miles NW

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Dresden Nuclear Power Station, 2008

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite sample or monthly composite from weekly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual TBE, TBE-2023 Compositing of samples EIML-COMP-01 procedure for compositing water and milk samples	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis
Surface Water	Gross Beta	Monthly composite sample or monthly composite from weekly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual TBE, TBE-2023 Compositing of samples EIML-COMP-01 procedure for compositing water and milk samples	2 gallon	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Surface Water	Tritium	Quarterly composite of monthly composite samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual TBE, TBE-2023 Compositing of samples EIML-COMP-01 procedure for compositing water and milk samples	500 ml	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Ground Water	Gamma Spectroscopy	Quarterly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis
Ground Water	Tritium	Quarterly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	500 ml	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Fish	Gamma Spectroscopy	Samples collected twice annually via electroshocking or other techniques	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1000 grams (wet)	TBE-2007 Gamma emitting radioisotope analysis
Sediment	Gamma Spectroscopy	Semi-annual grab samples	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	500 grams (dry)	TBE, TBE-2007 Gamma emitting radioisotope analysis

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Dresden Nuclear Power Station, 2008

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Dredging Spoils	Gamma Spectroscopy	Annual grab samples if dredging occurred within 1 mile of Dresden Station during the year.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	500 grams (dry)	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Particulates	Gross Beta	One-week of continuous air sampling through glass fiber filter paper	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2023 Compositing of samples Env. Inc., AP-03 Procedure for compositing air particulate filters for gamma spectroscopic analysis	13 filters	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Iodine	Gamma Spectroscopy	One- or two-week composite of continuous air sampling through charcoal filter	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2007 Gamma emitting radioisotope analysis
Milk	I-131	Bi-weekly grab sample May through October. Monthly all other times	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 gallon	TBE, TBE-2012 Radioiodine in various matrices
Milk	Gamma Spectroscopy	Bi-weekly grab sample May through October. Monthly all other times	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis
Food Products	Gamma Spectroscopy	Annual grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1000 grams	TBE, TBE-2007 Gamma emitting radioisotope analysis
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two Global Dosimetry TLDs, with two CaF_2 elements and two LiF elements in each TLD.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 dosimeters	Global Dosimetry

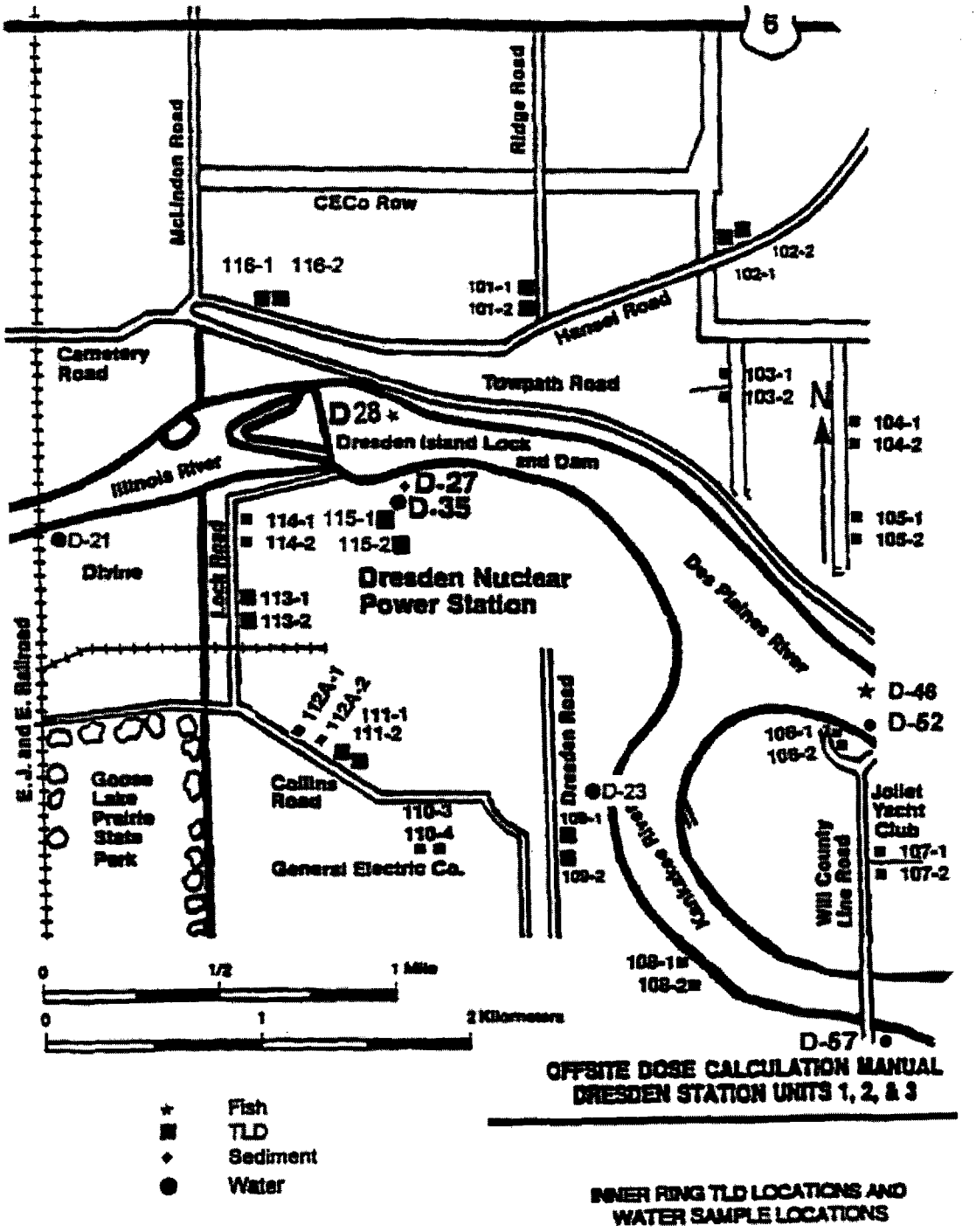

Figure B-1
Dresden Station Inner Ring TLD Locations, Fish, Water, and Sediment Location, 2008

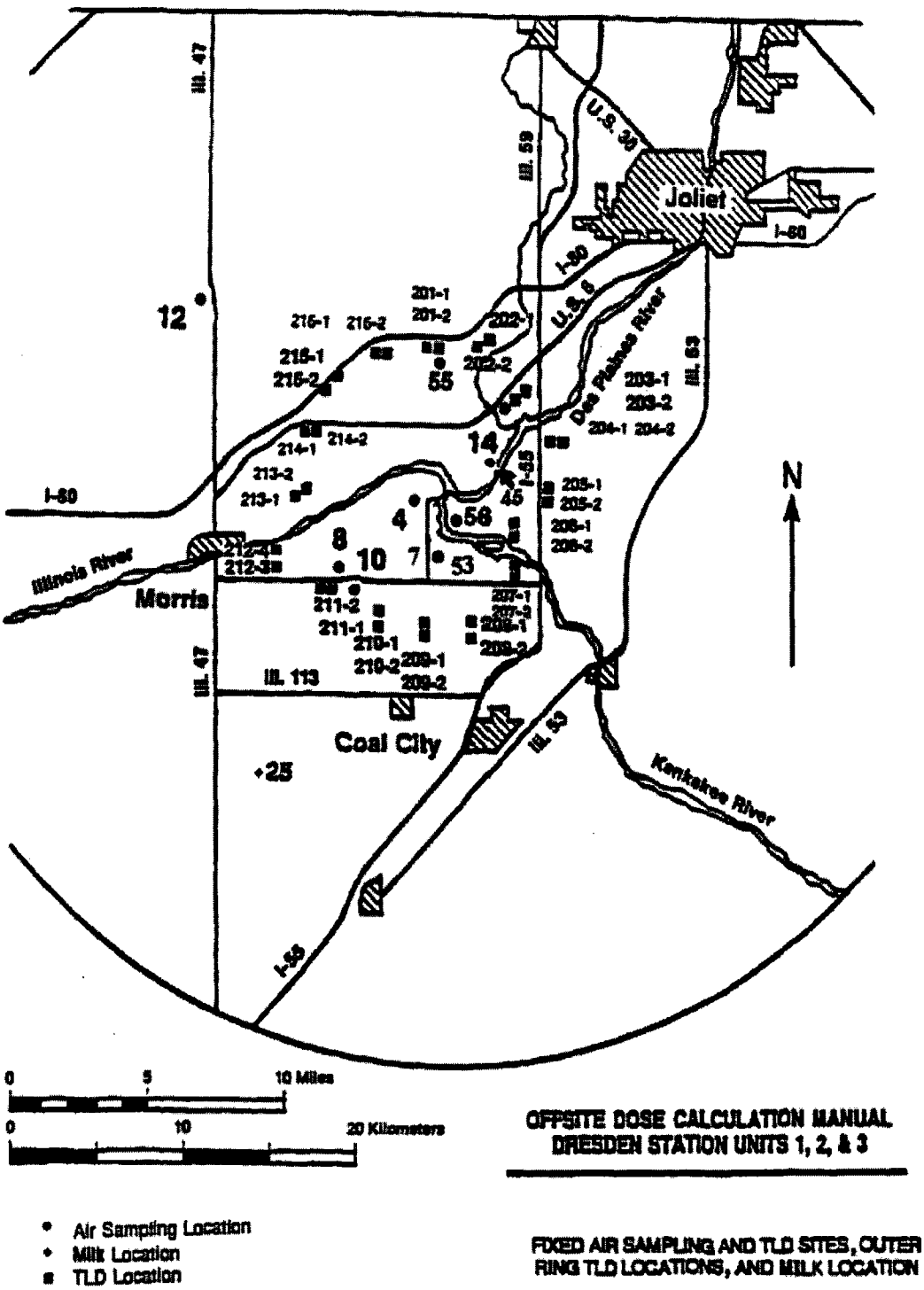

Figure B-2
Dresden Station Fixed Air Sampling and TLD Sites, Outer Ring TLD Locations and Milk Location, 2008

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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 DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
01/04/08 - 01/25/08	15 ± 3.1	14 ± 2.8	6.3 ± 1.8
02/01/08 - 02/29/08	9.6 ± 2.5	13 ± 3.2	8.2 ± 2.3
03/07/08 - 03/28/08	3.7 ± 2.1	9.7 ± 3.3	4.8 ± 2.5
04/04/08 - 04/25/08	20 ± 3.2	4.3 ± 1.9	5.2 ± 2.0
05/02/08 - 05/30/08	10 ± 3.6	< 3.4	13 ± 4.1
06/06/08 - 06/27/08	8.1 ± 2.7	7.8 ± 2.4	10 ± 2.4
07/04/08 - 07/25/08	8.5 ± 2.5	5.1 ± 2.0	6.4 ± 2.2
08/01/08 - 08/29/08	16 ± 3.2	5.6 ± 2.5	11 ± 2.9
09/05/08 - 09/26/08	9.7 ± 2.4	6.3 ± 2.0	4.9 ± 1.9
10/03/08 - 10/31/08	13 ± 2.6	8.5 ± 2.3	5.1 ± 2.0
11/07/08 - 11/28/08	8.4 ± 2.5	4.9 ± 2.3	< 3.0
12/05/08 - 12/26/08	9.1 ± 2.8	3.2 ± 2.0	4.5 ± 2.3
MEAN*	10.9 ± 8.66	7.53 ± 7.24	7.24 ± 5.94

TABLE C-I.2 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
01/04/08 - 03/28/08	< 172	< 172	< 178
03/28/08 - 06/27/08	716 ± 152	< 194	6440 ± 706
07/04/08 - 09/26/08	< 148	< 146	< 161
10/03/08 - 12/26/08	192 ± 118	< 179	890 ± 165
MEAN*	454 ± 741	-	3665 ± 7849

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

TABLE C-I.3 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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
D-21	12/28/07 - 01/25/08	< 2	< 2	< 6	< 2	< 4	< 2	< 5	< 13	< 2	< 2	< 38	< 12
	01/25/08 - 02/29/08	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 8	< 2	< 2	< 16	< 5
	02/29/08 - 03/28/08	< 5	< 5	< 13	< 6	< 11	< 5	< 8	< 8	< 5	< 6	< 23	< 8
	03/28/08 - 04/25/08	< 3	< 3	< 6	< 3	< 6	< 3	< 5	< 5	< 3	< 3	< 15	< 5
	04/25/08 - 05/30/08	< 3	< 4	< 8	< 4	< 7	< 4	< 6	< 8	< 3	< 4	< 20	< 6
	05/30/08 - 06/27/08	< 0	< 0	< 1	< 0	< 1	< 1	< 1	< 1	< 0	< 0	< 3	< 1
	06/27/08 - 07/25/08	< 4	< 5	< 8	< 3	< 8	< 4	< 7	< 14	< 4	< 4	< 30	< 9
	07/25/08 - 08/29/08	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 12	< 1	< 1	< 18	< 5
	08/29/08 - 09/26/08	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 15	< 2	< 2	< 24	< 8
	09/26/08 - 10/31/08	< 1	< 2	< 5	< 1	< 3	< 2	< 3	< 8	< 1	< 1	< 48	< 14
	10/31/08 - 11/28/08	< 3	< 3	< 7	< 3	< 6	< 4	< 5	< 13	< 3	< 3	< 23	< 7
	11/28/08 - 12/26/08	< 3	< 3	< 7	< 2	< 7	< 4	< 6	< 9	< 3	< 3	< 22	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-52	01/04/08 - 01/25/08	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 18	< 5
	02/01/08 - 02/29/08	< 4	< 4	< 9	< 4	< 8	< 4	< 7	< 14	< 3	< 3	< 26	< 9
	03/07/08 - 03/28/08	< 6	< 5	< 12	< 7	< 9	< 6	< 10	< 10	< 6	< 6	< 27	< 7
	04/04/08 - 04/25/08	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 3	< 2	< 2	< 9	< 3
	05/02/08 - 05/30/08	< 5	< 6	< 11	< 5	< 10	< 5	< 9	< 14	< 5	< 7	< 26	< 9
	06/06/08 - 06/27/08	< 0	< 0	< 1	< 1	< 1	< 1	< 1	< 2	< 1	< 0	< 3	< 1
	07/04/08 - 07/25/08	< 3	< 4	< 8	< 3	< 6	< 4	< 7	< 15	< 3	< 4	< 28	< 8
	08/01/08 - 08/29/08	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 13	< 3
	09/05/08 - 09/26/08	< 3	< 3	< 7	< 3	< 6	< 3	< 5	< 12	< 2	< 3	< 23	< 9
	10/03/08 - 10/31/08	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 8	< 1	< 1	< 29	< 8
	11/07/08 - 11/28/08	< 3	< 3	< 6	< 3	< 6	< 4	< 6	< 12	< 3	< 3	< 22	< 8
	12/05/08 - 12/26/08	< 3	< 3	< 6	< 2	< 6	< 3	< 5	< 8	< 3	< 3	< 19	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

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
D-57	12/28/07 - 01/25/08	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 20	< 6
	01/25/08 - 02/29/08	< 3	< 3	< 7	< 3	< 6	< 4	< 6	< 13	< 3	< 3	< 26	< 7
	02/29/08 - 03/28/08	< 6	< 4	< 11	< 5	< 12	< 6	< 9	< 7	< 5	< 6	< 21	< 7
	03/28/08 - 04/25/08	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 3	< 2	< 2	< 10	< 3
	04/25/08 - 05/30/08	< 4	< 4	< 8	< 5	< 9	< 4	< 8	< 8	< 4	< 4	< 20	< 7
	05/30/08 - 06/27/08	< 1	< 1	< 1	< 0	< 1	< 1	< 1	< 1	< 0	< 1	< 3	< 1
	06/27/08 - 07/25/08	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 13	< 3	< 3	< 24	< 8
	07/25/08 - 08/29/08	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 11	< 1	< 1	< 17	< 6
	08/29/08 - 09/26/08	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 12	< 2	< 3	< 21	< 7
	09/26/08 - 10/31/08	< 1	< 1	< 3	< 1	< 2	< 1	< 3	< 9	< 1	< 1	< 34	< 11
	10/31/08 - 11/28/08	< 3	< 3	< 9	< 4	< 7	< 4	< 6	< 13	< 3	< 4	< 28	< 8
	11/28/08 - 12/26/08	< 4	< 4	< 9	< 4	< 8	< 5	< 8	< 11	< 4	< 4	< 26	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.1 **CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-23	D-35
01/11/08	389 ± 115	< 155
02/08/08	480 ± 122	
03/14/08	525 ± 129	
04/04/08	462 ± 128	< 170
05/09/08	458 ± 125	
06/13/08	387 ± 120	
07/11/08	354 ± 125	< 175
08/07/08	336 ± 117	
09/12/08	488 ± 108	
10/10/08	207 ± 118	< 174
11/07/08	333 ± 129	
12/12/08	422 ± 130	
MEAN	403 ± 176	-

TABLES C-II.2 CONCENTRATIONS OF GAMMA EMITTERS IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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
D-23	01/11/08	< 6	< 6	< 12	< 6	< 12	< 7	< 11	< 12	< 6	< 6	< 32	< 12
	02/08/08	< 2	< 2	< 5	< 3	< 5	< 3	< 5	< 5	< 2	< 3	< 13	< 4
	03/14/08	< 1	< 2	< 3	< 1	< 3	< 1	< 3	< 4	< 1	< 1	< 9	< 3
	04/04/08	< 5	< 7	< 13	< 6	< 13	< 7	< 11	< 12	< 6	< 7	< 31	< 9
	05/09/08	< 5	< 6	< 14	< 7	< 13	< 6	< 10	< 12	< 5	< 6	< 35	< 11
	06/13/08	< 5	< 4	< 8	< 5	< 9	< 6	< 8	< 9	< 5	< 5	< 21	< 8
	07/11/08	< 3	< 4	< 8	< 3	< 7	< 4	< 6	< 14	< 3	< 3	< 26	< 8
	08/07/08	< 2	< 3	< 7	< 2	< 5	< 3	< 5	< 15	< 3	< 3	< 21	< 8
	09/12/08	< 4	< 3	< 8	< 4	< 7	< 4	< 7	< 15	< 3	< 4	< 31	< 10
	10/10/08	< 3	< 3	< 7	< 3	< 6	< 4	< 6	< 13	< 3	< 3	< 26	< 9
	11/07/08	< 1	< 1	< 4	< 1	< 2	< 2	< 3	< 12	< 1	< 1	< 43	< 15
	12/12/08	< 3	< 3	< 8	< 3	< 6	< 3	< 6	< 14	< 3	< 4	< 29	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-35	01/11/08	< 6	< 6	< 14	< 6	< 12	< 7	< 11	< 14	< 6	< 7	< 35	< 13
	04/04/08	< 5	< 5	< 12	< 7	< 11	< 6	< 10	< 8	< 5	< 6	< 25	< 8
	07/11/08	< 4	< 4	< 8	< 3	< 8	< 4	< 7	< 15	< 3	< 4	< 29	< 9
	10/10/08	< 3	< 3	< 6	< 2	< 5	< 3	< 5	< 13	< 2	< 3	< 24	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

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
D-28												
Freshwater Drum	05/20/08	< 46	< 59	< 123	< 26	< 100	< 50	< 94	< 41	< 39	< 1350	< 337
Largemouth Bass	05/20/08	< 33	< 45	< 86	< 28	< 65	< 39	< 86	< 33	< 33	< 1040	< 321
Common Carp	10/14/08	< 61	< 78	< 152	< 60	< 153	< 102	< 138	< 59	< 62	< 1590	< 280
Largemouth Bass	10/14/08	< 39	< 42	< 137	< 36	< 108	< 63	< 114	< 40	< 47	< 1010	< 209
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-46												
Channel Catfish	05/20/08	< 51	< 72	< 171	< 32	< 116	< 74	< 129	< 45	< 40	< 1570	< 346
Common Carp	05/20/08	< 37	< 41	< 98	< 40	< 74	< 54	< 82	< 31	< 39	< 931	< 285
Common Carp	10/14/08	< 36	< 54	< 156	< 49	< 123	< 65	< 126	< 47	< 56	< 1010	< 388
Largemouth Bass	10/14/08	< 48	< 52	< 179	< 54	< 116	< 66	< 120	< 40	< 50	< 1380	< 365
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IV.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PC/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
D-27	05/16/08	< 45	< 51	< 129	< 41	< 105	< 62	< 98	< 43	158 ± 61	< 392	< 116
	10/03/08	< 44	< 62	< 135	< 35	< 119	< 61	< 91	< 38	< 48	< 818	< 269
	MEAN	-	-	-	-	-	-	-	-	158 ± 0	-	-

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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

COLLECTION PERIOD	GROUP I			GROUP II				
	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56
12/28/07 - 01/04/08	26 ± 5	33 ± 5	28 ± 5	35 ± 5	38 ± 5	34 ± 5	33 ± 5	30 ± 5
01/04/08 - 01/11/08	20 ± 4	18 ± 4	18 ± 4	23 ± 5	20 ± 4	18 ± 4	16 ± 4	19 ± 4
01/11/08 - 01/18/08	36 ± 5	30 ± 5	36 ± 5	40 ± 6	29 ± 5	38 ± 6	32 ± 5	36 ± 5
01/18/08 - 01/25/08	24 ± 5	25 ± 5	28 ± 5	28 ± 5	23 ± 5	32 ± 5	31 ± 5	29 ± 5
01/25/08 - 02/01/08	30 ± 5	29 ± 5	25 ± 5	30 ± 5	26 ± 5	21 ± 5	27 ± 5	30 ± 5
02/01/08 - 02/08/08	18 ± 4	14 ± 4	17 ± 4	17 ± 4	18 ± 4	15 ± 4	17 ± 4	17 ± 4
02/08/08 - 02/15/08	31 ± 5	34 ± 5	29 ± 5	34 ± 5	34 ± 5	33 ± 5	33 ± 5	33 ± 5
02/15/08 - 02/22/08	25 ± 4	21 ± 4	23 ± 4	24 ± 4	22 ± 4	26 ± 5	24 ± 4	23 ± 4
02/22/08 - 02/29/08	20 ± 4	15 ± 4	12 ± 4	19 ± 4	16 ± 4	16 ± 4	15 ± 4	17 ± 4
02/29/08 - 03/07/08	22 ± 4	22 ± 4	21 ± 4	27 ± 5	25 ± 5	24 ± 5	22 ± 4	26 ± 5
03/07/08 - 03/14/08	23 ± 5	18 ± 4	19 ± 5	21 ± 5	22 ± 5	21 ± 5	22 ± 5	25 ± 5
03/14/08 - 03/21/08	16 ± 4	17 ± 4	14 ± 4	15 ± 4	16 ± 4	15 ± 4	16 ± 4	15 ± 4
03/21/08 - 03/28/08	15 ± 4	13 ± 4	16 ± 4	14 ± 4	15 ± 4	11 ± 4	17 ± 4	15 ± 4
03/28/08 - 04/04/08	15 ± 4	11 ± 4	14 ± 4	11 ± 4	13 ± 4	10 ± 4	12 ± 4	14 ± 4
04/04/08 - 04/11/08	16 ± 4	18 ± 4	14 ± 4	15 ± 4	14 ± 4	16 ± 4	16 ± 4	16 ± 4
04/11/08 - 04/18/08	14 ± 4	12 ± 4	12 ± 4	11 ± 4	13 ± 4	13 ± 4	12 ± 4	11 ± 4
04/18/08 - 04/25/08	16 ± 4	19 ± 5	14 ± 4	18 ± 5	16 ± 4	19 ± 5	17 ± 4	21 ± 5
04/25/08 - 05/02/08	19 ± 4	22 ± 4	18 ± 4	25 ± 4	21 ± 4	20 ± 4	24 ± 4	19 ± 4
05/02/08 - 05/09/08	15 ± 4	12 ± 4	17 ± 4	16 ± 4	15 ± 4	16 ± 4	15 ± 4	15 ± 4
05/09/08 - 05/16/08	11 ± 4	8 ± 4	10 ± 4	12 ± 4	8 ± 4	13 ± 4	14 ± 4	11 ± 4
05/16/08 - 05/23/08	11 ± 5	7 ± 4	8 ± 4	8 ± 4	9 ± 4	9 ± 4	5 ± 3	9 ± 4
05/23/08 - 05/30/08	10 ± 4	10 ± 4	12 ± 4	13 ± 4	10 ± 4	10 ± 4	12 ± 4	10 ± 4
05/30/08 - 06/06/08	12 ± 4	10 ± 4	12 ± 4	14 ± 4	12 ± 4	11 ± 4	16 ± 4	15 ± 4
06/06/08 - 06/13/08	10 ± 4	10 ± 4	10 ± 4	11 ± 4	12 ± 4	13 ± 4	11 ± 4	13 ± 4
06/13/08 - 06/20/08	9 ± 4	6 ± 3	14 ± 4	11 ± 4	11 ± 4	14 ± 4	9 ± 4	9 ± 4
06/20/08 - 06/27/08	11 ± 4	14 ± 4	15 ± 4	15 ± 4	15 ± 4	16 ± 4	20 ± 4	18 ± 4
06/27/08 - 07/04/08	11 ± 4	9 ± 4	9 ± 4	10 ± 4	10 ± 4	9 ± 4	13 ± 4	11 ± 4
07/04/08 - 07/11/08	13 ± 4	12 ± 4	14 ± 4	12 ± 4	14 ± 4	17 ± 4	13 ± 4	14 ± 4
07/11/08 - 07/18/08	13 ± 4	17 ± 4	17 ± 4	21 ± 5	22 ± 5	21 ± 5	21 ± 5	23 ± 5
07/18/08 - 07/25/08	13 ± 4	15 ± 4	12 ± 7	14 ± 4	16 ± 4	20 ± 5	15 ± 4	14 ± 4
07/25/08 - 08/01/08	17 ± 5	14 ± 4	18 ± 5	18 ± 5	17 ± 5	16 ± 4	16 ± 5	23 ± 5
08/01/08 - 08/08/08	18 ± 4	14 ± 4	20 ± 4	20 ± 5	15 ± 4	18 ± 4	16 ± 4	21 ± 4
08/08/08 - 08/15/08	14 ± 4	9 ± 4	11 ± 4	12 ± 3	14 ± 4	11 ± 4	12 ± 4	11 ± 4
08/15/08 - 08/22/08	24 ± 5	23 ± 5	31 ± 5	27 ± 5	26 ± 5	29 ± 5	26 ± 5	28 ± 5
08/22/08 - 08/29/08	20 ± 4	18 ± 4	22 ± 5	24 ± 5	19 ± 4	22 ± 4	25 ± 5	28 ± 5
08/29/08 - 09/05/08	16 ± 4	15 ± 4	17 ± 4	17 ± 4	19 ± 5	16 ± 4	24 ± 5	21 ± 5
09/05/08 - 09/12/08	21 ± 5	18 ± 4	19 ± 4	17 ± 4	19 ± 4	20 ± 5	19 ± 4	21 ± 5
09/12/08 - 09/19/08	11 ± 4	9 ± 4	13 ± 4	8 ± 4	11 ± 4	16 ± 4	15 ± 4	15 ± 4
09/19/08 - 09/26/08	37 ± 5	34 ± 5	38 ± 5	46 ± 6	43 ± 6	43 ± 6	46 ± 6	48 ± 6
09/26/08 - 10/03/08	21 ± 5	21 ± 5	24 ± 5	24 ± 5	22 ± 5	24 ± 5	25 ± 5	25 ± 5
10/03/08 - 10/10/08	16 ± 4	14 ± 4	15 ± 4	17 ± 4	21 ± 4	18 ± 4	21 ± 4	22 ± 4
10/10/08 - 10/17/08	21 ± 4	18 ± 4	21 ± 4	23 ± 4	22 ± 4	26 ± 5	23 ± 4	28 ± 5
10/17/08 - 10/24/08	14 ± 4	10 ± 4	16 ± 4	9 ± 4	13 ± 4	15 ± 4	15 ± 4	15 ± 4
10/24/08 - 10/31/08	16 ± 4	20 ± 4	19 ± 4	20 ± 4	18 ± 4	16 ± 4	21 ± 4	19 ± 4
10/31/08 - 11/07/08	31 ± 5	39 ± 5	31 ± 5	25 ± 5	38 ± 5	28 ± 5	36 ± 5	31 ± 5
11/07/08 - 11/14/08	15 ± 4	17 ± 4	18 ± 4	15 ± 4	20 ± 4	12 ± 4	15 ± 4	19 ± 4
11/14/08 - 11/21/08	14 ± 4	13 ± 4	15 ± 4	14 ± 4	13 ± 4	12 ± 4	17 ± 4	15 ± 4
11/21/08 - 11/28/08	24 ± 5	21 ± 5	24 ± 5	23 ± 5	21 ± 5	22 ± 5	20 ± 5	21 ± 5
11/28/08 - 12/05/08	14 ± 4	16 ± 4	20 ± 4	15 ± 4	12 ± 4	16 ± 4	13 ± 4	21 ± 5
12/05/08 - 12/12/08	23 ± 5	24 ± 5	24 ± 5	21 ± 4	17 ± 4	28 ± 5	23 ± 5	27 ± 5
12/12/08 - 12/19/08	18 ± 4	30 ± 5	27 ± 5	27 ± 5	26 ± 5	29 ± 5	29 ± 5	30 ± 5
12/19/08 - 12/26/08	27 ± 5	29 ± 5	33 ± 5	28 ± 5	32 ± 5	31 ± 5	35 ± 5	39 ± 5
12/26/08 - 01/02/09	16 ± 4	28 ± 5	25 ± 5	25 ± 5	24 ± 5	29 ± 5	24 ± 5	26 ± 5
MEAN	18 ± 13	18 ± 16	19 ± 14	20 ± 16	19 ± 15	20 ± 16	20 ± 16	21 ± 16

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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

COLLECTION PERIOD	GROUP III				GROUP IV
	D-08	D-10	D-14	D-55	D-12
12/28/07 - 01/04/08	31 ± 5	35 ± 5	31 ± 5	34 ± 5	33 ± 5
01/04/08 - 01/11/08	19 ± 4	19 ± 5	16 ± 4	19 ± 4	19 ± 4
01/11/08 - 01/18/08	30 ± 5	32 ± 5	35 ± 5	34 ± 5	31 ± 5
01/18/08 - 01/25/08	27 ± 5	26 ± 5	28 ± 5	33 ± 5	25 ± 5
01/25/08 - 02/01/08	30 ± 5	26 ± 5	27 ± 5	20 ± 5	27 ± 5
02/01/08 - 02/08/08	17 ± 4	17 ± 4	18 ± 4	14 ± 4	19 ± 4
02/08/08 - 02/15/08	34 ± 5	42 ± 6	37 ± 5	35 ± 5	36 ± 5
02/15/08 - 02/22/08	24 ± 4	22 ± 4	28 ± 5	25 ± 4	21 ± 4
02/22/08 - 02/29/08	19 ± 4	17 ± 4	16 ± 4	15 ± 4	14 ± 4
02/29/08 - 03/07/08	21 ± 4	20 ± 4	30 ± 5	26 ± 5	21 ± 4
03/07/08 - 03/14/08	20 ± 5	20 ± 5	19 ± 5	18 ± 4	23 ± 5
03/14/08 - 03/21/08	15 ± 4	15 ± 4	17 ± 4	17 ± 4	16 ± 4
03/21/08 - 03/28/08	13 ± 4	13 ± 4	15 ± 4	15 ± 4	14 ± 4
03/28/08 - 04/04/08	11 ± 4	13 ± 4	12 ± 4	13 ± 4	13 ± 4
04/04/08 - 04/11/08	18 ± 4	16 ± 4	16 ± 4	12 ± 4	16 ± 4
04/11/08 - 04/18/08	12 ± 4	13 ± 4	11 ± 4	14 ± 4	11 ± 4
04/18/08 - 04/25/08	21 ± 5	21 ± 5	19 ± 5	20 ± 5	18 ± 5
04/25/08 - 05/02/08	24 ± 5	26 ± 5	24 ± 4	20 ± 4	24 ± 4
05/02/08 - 05/09/08	16 ± 4	15 ± 4	20 ± 4	19 ± 4	15 ± 4
05/09/08 - 05/16/08	10 ± 4	11 ± 4	12 ± 4	14 ± 4	13 ± 4
05/16/08 - 05/23/08	10 ± 4	12 ± 4	8 ± 4	9 ± 3	9 ± 4
05/23/08 - 05/30/08	12 ± 4	12 ± 4	12 ± 4	12 ± 4	10 ± 4
05/30/08 - 06/06/08	15 ± 4	12 ± 4	13 ± 4	6 ± 4	16 ± 4
06/06/08 - 06/13/08	14 ± 4	11 ± 4	12 ± 4	11 ± 4	13 ± 4
06/13/08 - 06/20/08	10 ± 4	15 ± 4	10 ± 4	12 ± 4	10 ± 4
06/20/08 - 06/27/08	15 ± 4	17 ± 4	16 ± 4	18 ± 4	13 ± 4
06/27/08 - 07/04/08	15 ± 4	14 ± 4	12 ± 4	12 ± 4	14 ± 4
07/04/08 - 07/11/08	15 ± 4	13 ± 4	16 ± 4	14 ± 4	13 ± 4
07/11/08 - 07/18/08	21 ± 5	25 ± 5	20 ± 5	22 ± 5	18 ± 4
07/18/08 - 07/25/08	17 ± 4	14 ± 4	16 ± 4	18 ± 4	18 ± 4
07/25/08 - 08/01/08	19 ± 5	18 ± 5	17 ± 5	22 ± 5	25 ± 5
08/01/08 - 08/08/08	22 ± 4	17 ± 4	22 ± 4	20 ± 4	18 ± 4
08/08/08 - 08/15/08	16 ± 4	10 ± 4	12 ± 4	13 ± 4	17 ± 4
08/15/08 - 08/22/08	27 ± 5	30 ± 5	31 ± 5	24 ± 5	22 ± 5
08/22/08 - 08/29/08	21 ± 4	25 ± 5	24 ± 5	22 ± 4	24 ± 5
08/29/08 - 09/05/08	19 ± 5	19 ± 5	18 ± 5	15 ± 4	22 ± 5
09/05/08 - 09/12/08	22 ± 5	21 ± 5	21 ± 5	22 ± 5	24 ± 5
09/12/08 - 09/19/08	11 ± 4	11 ± 4	19 ± 5	13 ± 4	14 ± 4
09/19/08 - 09/26/08	44 ± 6	44 ± 6	53 ± 6	42 ± 6	47 ± 6
09/26/08 - 10/03/08	26 ± 5	24 ± 5	30 ± 5	24 ± 5	26 ± 5
10/03/08 - 10/10/08	14 ± 4	17 ± 4	19 ± 4	19 ± 4	18 ± 4
10/10/08 - 10/17/08	24 ± 5	21 ± 4	25 ± 5	29 ± 5	27 ± 5
10/17/08 - 10/24/08	14 ± 4	13 ± 4	17 ± 4	14 ± 4	18 ± 5
10/24/08 - 10/31/08	< 4	17 ± 4	15 ± 4	18 ± 4	17 ± 4
10/31/08 - 11/07/08	41 ± 6	37 ± 5	38 ± 5	37 ± 5	33 ± 5
11/07/08 - 11/14/08	17 ± 4	16 ± 4	17 ± 4	17 ± 4	19 ± 4
11/14/08 - 11/21/08	15 ± 4	18 ± 4	16 ± 4	16 ± 4	13 ± 4
11/21/08 - 11/28/08	23 ± 5	19 ± 5	23 ± 5	27 ± 5	21 ± 5
11/28/08 - 12/05/08	18 ± 4	17 ± 4	18 ± 4	18 ± 5	21 ± 5
12/05/08 - 12/12/08	27 ± 5	24 ± 5	29 ± 5	26 ± 5	24 ± 5
12/12/08 - 12/19/08	23 ± 5	25 ± 5	27 ± 5	31 ± 5	32 ± 5
12/19/08 - 12/26/08	34 ± 5	34 ± 5	40 ± 5	29 ± 5	42 ± 5
12/26/08 - 01/02/09	23 ± 5	21 ± 4	21 ± 4	20 ± 4	25 ± 5
MEAN	20 ± 15	20 ± 16	21 ± 18	20 ± 15	21 ± 16

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

TABLE C-V.2 MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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

Remember: STDEV is based on all individual results - not the STDEV of the monthly averages

GROUP I - ON-SITE LOCATIONS				GROUP II - NEAR-FIELD LOCATIONS				GROUP III - FAR-FIELD LOCATIONS				GROUP IV - CONTROL LOCATION			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
12/28/07 - 02/01/08	18	36	27 ± 11	12/28/07 - 02/01/08	16	40	29 ± 13	12/28/07 - 02/01/08	16	35	27 ± 12	12/28/07 - 02/01/08	19	33	27 ± 11
02/01/08 - 02/29/08	12	34	22 ± 14	02/01/08 - 02/29/08	15	34	22 ± 14	02/01/08 - 02/29/08	14	42	24 ± 18	02/01/08 - 02/29/08	14	36	23 ± 19
02/29/08 - 03/28/08	13	23	18 ± 7	02/29/08 - 03/28/08	11	27	19 ± 9	02/29/08 - 03/28/08	13	30	18 ± 9	02/29/08 - 03/28/08	14	23	18 ± 9
03/28/08 - 05/02/08	11	22	15 ± 6	03/28/08 - 05/02/08	10	25	16 ± 8	03/28/08 - 05/02/08	11	26	17 ± 10	03/28/08 - 05/02/08	11	24	16 ± 10
05/02/08 - 05/30/08	7	17	11 ± 6	05/02/08 - 05/30/08	5	16	12 ± 6	05/02/08 - 05/30/08	8	20	13 ± 7	05/02/08 - 05/30/08	9	15	11 ± 5
05/30/08 - 06/27/08	6	15	11 ± 5	05/30/08 - 06/27/08	9	20	13 ± 6	05/30/08 - 06/27/08	6	18	13 ± 6	05/30/08 - 06/27/08	10	16	13 ± 5
06/27/08 - 08/01/08	9	18	14 ± 6	06/27/08 - 08/01/08	9	23	16 ± 9	06/27/08 - 08/01/08	12	25	17 ± 7	06/27/08 - 08/01/08	13	25	18 ± 9
08/01/08 - 08/29/08	9	31	19 ± 12	08/01/08 - 08/29/08	11	29	20 ± 13	08/01/08 - 08/29/08	10	31	21 ± 12	08/01/08 - 08/29/08	17	24	20 ± 7
08/29/08 - 10/03/08	9	38	21 ± 18	08/29/08 - 10/03/08	8	48	24 ± 23	08/29/08 - 10/03/08	11	53	25 ± 24	08/29/08 - 10/03/08	14	47	26 ± 24
10/03/08 - 10/31/08	10	21	17 ± 6	10/03/08 - 10/31/08	9	28	19 ± 9	10/03/08 - 10/31/08	< 4	29	18 ± 9	10/03/08 - 10/31/08	17	27	20 ± 10
10/31/08 - 11/28/08	13	39	22 ± 16	10/31/08 - 11/28/08	12	38	21 ± 15	10/31/08 - 11/28/08	15	41	24 ± 19	10/31/08 - 11/28/08	13	33	21 ± 17
11/28/08 - 01/02/09	14	33	24 ± 11	11/28/08 - 01/02/09	12	39	25 ± 13	11/28/08 - 01/02/09	17	40	25 ± 13	11/28/08 - 01/02/09	21	42	29 ± 17
12/28/07 - 01/02/09	6	39	18 ± 14	12/28/07 - 01/02/09	5	48	20 ± 16	12/28/07 - 01/02/09	< 4	53	20 ± 16	12/28/07 - 01/02/09	9	47	21 ± 16

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

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

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
D-01	12/28/07 - 03/28/08	< 3	< 3	< 10	< 3	< 7	< 4	< 6	< 2	< 3	< 68	< 25
	03/28/08 - 06/27/08	< 2	< 3	< 7	< 3	< 7	< 3	< 5	< 3	< 2	< 84	< 32
	06/27/08 - 10/03/08	< 3	< 6	< 21	< 2	< 7	< 8	< 11	< 3	< 2	< 2430	< 1130
	10/03/08 - 01/02/09	< 3	< 4	< 8	< 3	< 8	< 3	< 7	< 4	< 4	< 29	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-02	12/28/07 - 03/28/08	< 2	< 3	< 5	< 3	< 5	< 2	< 5	< 2	< 2	< 56	< 20
	03/28/08 - 06/27/08	< 4	< 5	< 15	< 2	< 6	< 6	< 7	< 4	< 3	< 125	< 37
	06/27/08 - 10/03/08	< 3	< 7	< 26	< 4	< 6	< 8	< 17	< 3	< 3	< 3520	< 849
	10/03/08 - 01/02/09	< 3	< 3	< 8	< 3	< 7	< 3	< 6	< 3	< 3	< 28	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-03	12/28/07 - 03/28/08	< 2	< 3	< 7	< 2	< 6	< 2	< 5	< 3	< 2	< 69	< 27
	03/28/08 - 06/27/08	< 4	< 4	< 10	< 2	< 6	< 4	< 8	< 3	< 2	< 106	< 43
	06/27/08 - 10/03/08	< 3	< 7	< 23	< 3	< 8	< 7	< 12	< 2	< 2	< 2650	< 800
	10/03/08 - 01/02/09	< 2	< 3	< 7	< 3	< 7	< 3	< 5	< 3	< 2	< 24	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-04	12/28/07 - 03/28/08	< 3	< 4	< 11	< 3	< 8	< 4	< 7	< 3	< 3	< 80	< 29
	03/28/08 - 06/27/08	< 3	< 4	< 9	< 2	< 8	< 5	< 7	< 3	< 3	< 94	< 40
	06/27/08 - 10/03/08	< 4	< 7	< 25	< 3	< 9	< 7	< 13	< 3	< 3	< 3670	< 1180
	10/03/08 - 01/02/09	< 3	< 4	< 9	< 3	< 8	< 3	< 6	< 4	< 3	< 41	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

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
D-07	12/28/07 - 03/28/08	< 3	< 5	< 12	< 3	< 9	< 4	< 7	< 3	< 3	< 89	< 35
	03/28/08 - 06/27/08	< 4	< 5	< 13	< 2	< 8	< 5	< 9	< 4	< 3	< 120	< 42
	06/27/08 - 10/03/08	< 2	< 5	< 19	< 3	< 7	< 6	< 11	< 2	< 2	< 2590	< 714
	10/03/08 - 01/02/09	< 2	< 3	< 7	< 3	< 6	< 3	< 5	< 2	< 2	< 26	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-08	12/28/07 - 03/28/08	< 3	< 4	< 8	< 2	< 7	< 4	< 6	< 3	< 3	< 62	< 24
	03/28/08 - 06/27/08	< 3	< 4	< 8	< 3	< 7	< 3	< 7	< 3	< 3	< 116	< 39
	06/27/08 - 10/03/08	< 3	< 7	< 27	< 3	< 7	< 8	< 12	< 3	< 2	< 2940	< 599
	10/03/08 - 01/02/09	< 2	< 3	< 6	< 3	< 7	< 3	< 5	< 3	< 3	< 34	< 15
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-10	12/28/07 - 03/28/08	< 3	< 3	< 7	< 2	< 6	< 4	< 6	< 2	< 2	< 49	< 29
	03/28/08 - 06/27/08	< 2	< 3	< 9	< 3	< 6	< 3	< 6	< 3	< 2	< 83	< 34
	06/27/08 - 10/03/08	< 3	< 4	< 21	< 2	< 7	< 6	< 12	< 2	< 2	< 3030	< 1150
	10/03/08 - 01/02/09	< 3	< 2	< 7	< 4	< 5	< 3	< 6	< 2	< 2	< 32	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-12	12/28/07 - 03/28/08	< 3	< 4	< 9	< 2	< 8	< 4	< 7	< 4	< 3	< 99	< 22
	03/28/08 - 06/27/08	< 2	< 4	< 7	< 3	< 8	< 5	< 8	< 4	< 3	< 110	< 38
	06/27/08 - 10/03/08	< 3	< 7	< 34	< 3	< 10	< 9	< 14	< 4	< 3	< 3310	< 1310
	10/03/08 - 01/02/09	< 3	< 3	< 10	< 3	< 8	< 4	< 9	< 4	< 3	< 42	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

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
D-14	12/28/07 - 03/28/08	< 2	< 3	< 6	< 3	< 5	< 3	< 6	< 2	< 2	< 57	< 28
	03/28/08 - 06/27/08	< 3	< 3	< 7	< 3	< 4	< 3	< 6	< 2	< 2	< 74	< 18
	06/27/08 - 10/03/08	< 3	< 6	< 18	< 2	< 8	< 7	< 14	< 3	< 2	< 2900	< 1100
	10/03/08 - 01/02/09	< 3	< 3	< 6	< 3	< 7	< 3	< 6	< 4	< 3	< 29	< 14
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-45	12/28/07 - 03/28/08	< 2	< 3	< 8	< 3	< 5	< 3	< 5	< 3	< 2	< 61	< 23
	03/28/08 - 06/27/08	< 3	< 5	< 10	< 4	< 9	< 4	< 9	< 4	< 3	< 132	< 61
	06/27/08 - 10/03/08	< 3	< 5	< 23	< 3	< 7	< 6	< 12	< 2	< 2	< 2470	< 1060
	10/03/08 - 01/02/09	< 3	< 3	< 8	< 3	< 7	< 4	< 6	< 3	< 3	< 33	< 13
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-53	12/28/07 - 03/28/08	< 2	< 3	< 8	< 2	< 7	< 3	< 5	< 3	< 2	< 60	< 31
	03/28/08 - 06/27/08	< 3	< 3	< 10	< 3	< 6	< 4	< 7	< 3	< 3	< 84	< 36
	06/27/08 - 10/03/08	< 2	< 7	< 23	< 1	< 6	< 7	< 13	< 3	< 3	< 2650	< 1140
	10/03/08 - 01/02/09	< 3	< 4	< 6	< 4	< 10	< 3	< 7	< 4	< 3	< 42	< 18
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-55	12/28/07 - 03/28/08	< 3	< 4	< 11	< 3	< 9	< 4	< 8	< 4	< 3	< 76	< 52
	03/28/08 - 06/27/08	< 2	< 4	< 6	< 3	< 7	< 4	< 5	< 3	< 3	< 86	< 33
	06/27/08 - 10/03/08	< 3	< 5	< 18	< 2	< 6	< 6	< 12	< 3	< 2	< 2330	< 1300
	10/03/08 - 01/02/09	< 3	< 3	< 7	< 2	< 6	< 3	< 5	< 2	< 2	< 28	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

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
D-56	12/28/07 - 03/28/08	< 3	< 4	< 8	< 4	< 9	< 5	< 9	< 3	< 4	< 107	< 34
	03/28/08 - 06/27/08	< 3	< 4	< 13	< 3	< 8	< 5	< 8	< 3	< 3	< 109	< 63
	06/27/08 - 10/03/08	< 3	< 5	< 28	< 2	< 6	< 6	< 11	< 2	< 2	< 3020	< 1040
	10/03/08 - 01/02/09	< 3	< 3	< 7	< 3	< 8	< 4	< 5	< 4	< 3	< 43	< 13
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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

COLLECTION PERIOD	GROUP I			GROUP II				
	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56
12/28/07 - 01/04/08	< 25	< 45	< 45	< 45	< 45	< 62	< 60	< 58
01/04/08 - 01/11/08	< 15	< 30	< 30	< 31	< 30	< 30	< 29	< 29
01/11/08 - 01/18/08	< 21	< 39	< 39	< 38	< 39	< 47	< 47	< 47
01/18/08 - 01/25/08	< 11	< 18	< 18	< 18	< 19	< 20	< 20	< 20
01/25/08 - 02/01/08	< 19	< 34	< 34	< 33	< 34	< 59	< 56	< 58
02/01/08 - 02/08/08	< 26	< 44	< 44	< 43	< 44	< 45	< 44	< 44
02/08/08 - 02/15/08	< 52	< 28	< 52	< 52	< 52	< 63	< 63	< 66
02/15/08 - 02/22/08	< 23	< 23	< 16	< 23	< 24	< 22	< 22	< 22
02/22/08 - 02/29/08	< 12	< 20	< 20	< 20	< 20	< 27	< 27	< 27
02/29/08 - 03/07/08	< 22	< 22	< 22	< 13	< 13	< 31	< 30	< 30
03/07/08 - 03/14/08	< 11	< 17	< 17	< 17	< 17	< 20	< 19	< 19
03/14/08 - 03/21/08	< 41	< 41	< 41	< 41	< 27	< 47	< 46	< 46
03/21/08 - 03/28/08	< 21	< 38	< 38	< 38	< 38	< 36	< 56	< 56
03/28/08 - 04/04/08	< 20	< 20	< 20	< 20	< 23	< 21	< 20	< 20
04/04/08 - 04/11/08	< 37	< 50	< 50	< 51	< 50	< 41	< 40	< 40
04/11/08 - 04/18/08	< 32	< 47	< 48	< 47	< 46	< 62	< 65	< 63
04/18/08 - 04/25/08	< 29	< 39	< 39	< 39	< 39	< 43	< 36	< 36
04/25/08 - 05/02/08	< 22	< 36	< 36	< 36	< 37	< 45	< 43	< 43
05/02/08 - 05/09/08	< 17	< 28	< 28	< 28	< 28	< 33	< 35	< 35
05/09/08 - 05/16/08	< 22	< 52	< 52	< 52	< 54	< 39	< 34	< 34
05/16/08 - 05/23/08	< 26	< 27	< 27	< 27	< 26	< 65	< 64	< 64
05/23/08 - 05/30/08	< 18	< 30	< 29	< 29	< 31	< 29	< 46	< 47
05/30/08 - 06/06/08	< 22	< 40	< 40	< 40	< 41	< 56	< 55	< 55
06/06/08 - 06/13/08	< 15	< 24	< 24	< 24	< 25	< 34	< 35	< 35
06/13/08 - 06/20/08	< 27	< 45	< 45	< 45	< 45	< 67	< 60	< 60
06/20/08 - 06/27/08	< 23	< 37	< 37	< 37	< 37	< 40	< 45	< 45
06/27/08 - 07/04/08	< 43	< 65	< 65	< 65	< 65	< 63	< 63	< 63
07/04/08 - 07/11/08	< 17	< 28	< 28	< 28	< 28	< 36	< 38	< 38
07/11/08 - 07/18/08	< 17	< 28	< 28	< 28	< 28	< 45	< 43	< 43
07/18/08 - 07/25/08	< 17	< 10	< 33	< 17	< 18	< 17	< 15	< 15
07/25/08 - 08/01/08	< 14	< 25	< 25	< 25	< 24	< 28	< 28	< 28
08/01/08 - 08/08/08	< 32	< 54	< 54	< 69	< 54	< 51	< 50	< 50
08/08/08 - 08/15/08	< 17	< 30	< 30	< 26	< 31	< 45	< 44	< 44
08/15/08 - 08/22/08	< 23	< 43	< 45	< 43	< 45	< 47	< 67	< 67
08/22/08 - 08/29/08	< 26	< 48	< 48	< 48	< 48	< 70	< 47	< 46
08/29/08 - 09/05/08	< 31	< 56	< 56	< 56	< 56	< 59	< 66	< 66
09/05/08 - 09/12/08	< 29	< 53	< 53	< 53	< 52	< 44	< 49	< 49
09/12/08 - 09/19/08	< 37	< 62	< 62	< 62	< 62	< 50	< 52	< 52
09/19/08 - 09/26/08	< 18	< 35	< 34	< 33	< 34	< 28	< 43	< 43
09/26/08 - 10/03/08	< 34	< 62	< 62	< 62	< 63	< 52	< 60	< 60
10/03/08 - 10/10/08	< 35	< 64	< 64	< 63	< 62	< 52	< 55	< 55
10/10/08 - 10/17/08	< 16	< 29	< 29	< 29	< 29	< 33	< 50	< 52
10/17/08 - 10/24/08	< 43	< 23	< 42	< 43	< 42	< 47	< 45	< 45
10/24/08 - 10/31/08	< 24	< 44	< 44	< 43	< 44	< 52	< 70	< 69
10/31/08 - 11/07/08	< 23	< 42	< 43	< 43	< 44	< 66	< 63	< 63
11/07/08 - 11/14/08	< 35	< 69	< 69	< 69	< 69	< 60	< 60	< 60
11/14/08 - 11/21/08	< 23	< 41	< 41	< 41	< 39	< 41	< 64	< 64
11/21/08 - 11/28/08	< 24	< 35	< 35	< 35	< 36	< 40	< 40	< 40
11/28/08 - 12/05/08	< 43	< 64	< 64	< 64	< 61	< 62	< 60	< 60
12/05/08 - 12/12/08	< 35	< 63	< 63	< 63	< 63	< 62	< 63	< 63
12/12/08 - 12/19/08	< 26	< 47	< 47	< 47	< 47	< 56	< 63	< 63
12/19/08 - 12/26/08	< 39	< 67	< 65	< 64	< 63	< 69	< 60	< 60
12/26/08 - 01/02/09	< 36	< 70	< 65	< 65	< 67	< 56	< 50	< 50
MEAN	-	-	-	-	-	-	-	-

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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

COLLECTION PERIOD	GROUP III				GROUP IV
	D-08	D-10	D-14	D-55	D-12
12/28/07 - 01/04/08	< 32	< 32	< 31	< 63	< 32
01/04/08 - 01/11/08	< 31	< 33	< 31	< 30	< 31
01/11/08 - 01/18/08	< 40	< 40	< 40	< 47	< 40
01/18/08 - 01/25/08	< 22	< 21	< 22	< 20	< 22
01/25/08 - 02/01/08	< 34	< 34	< 35	< 58	< 34
02/01/08 - 02/08/08	< 40	< 40	< 40	< 45	< 40
02/08/08 - 02/15/08	< 51	< 53	< 53	< 63	< 53
02/15/08 - 02/22/08	< 64	< 62	< 64	< 22	< 64
02/22/08 - 02/29/08	< 32	< 32	< 32	< 28	< 32
02/29/08 - 03/07/08	< 30	< 29	< 30	< 31	< 30
03/07/08 - 03/14/08	< 19	< 19	< 19	< 20	< 19
03/14/08 - 03/21/08	< 52	< 52	< 52	< 47	< 52
03/21/08 - 03/28/08	< 28	< 36	< 36	< 55	< 35
03/28/08 - 04/04/08	< 14	< 22	< 22	< 21	< 22
04/04/08 - 04/11/08	< 38	< 38	< 38	< 41	< 38
04/11/08 - 04/18/08	< 63	< 35	< 62	< 64	< 62
04/18/08 - 04/25/08	< 25	< 40	< 43	< 38	< 44
04/25/08 - 05/02/08	< 44	< 42	< 43	< 45	< 43
05/02/08 - 05/09/08	< 34	< 34	< 20	< 33	< 33
05/09/08 - 05/16/08	< 38	< 38	< 39	< 36	< 39
05/16/08 - 05/23/08	< 25	< 25	< 25	< 61	< 25
05/23/08 - 05/30/08	< 17	< 28	< 29	< 49	< 29
05/30/08 - 06/06/08	< 38	< 38	< 38	< 56	< 38
06/06/08 - 06/13/08	< 23	< 34	< 34	< 36	< 34
06/13/08 - 06/20/08	< 41	< 67	< 67	< 61	< 67
06/20/08 - 06/27/08	< 24	< 39	< 40	< 46	< 40
06/27/08 - 07/04/08	< 35	< 63	< 63	< 64	< 63
07/04/08 - 07/11/08	< 20	< 36	< 36	< 39	< 36
07/11/08 - 07/18/08	< 23	< 45	< 45	< 44	< 45
07/18/08 - 07/25/08	< 9	< 17	< 17	< 16	< 17
07/25/08 - 08/01/08	< 14	< 28	< 28	< 28	< 28
08/01/08 - 08/08/08	< 47	< 47	< 48	< 51	< 48
08/08/08 - 08/15/08	< 28	< 28	< 28	< 45	< 28
08/15/08 - 08/22/08	< 38	< 47	< 47	< 69	< 47
08/22/08 - 08/29/08	< 46	< 69	< 70	< 47	< 70
08/29/08 - 09/05/08	< 46	< 57	< 59	< 68	< 58
09/05/08 - 09/12/08	< 34	< 43	< 44	< 50	< 43
09/12/08 - 09/19/08	< 28	< 50	< 50	< 53	< 50
09/19/08 - 09/26/08	< 21	< 27	< 28	< 44	< 27
09/26/08 - 10/03/08	< 42	< 53	< 52	< 61	< 53
10/03/08 - 10/10/08	< 62	< 64	< 61	< 52	< 62
10/10/08 - 10/17/08	< 25	< 32	< 33	< 55	< 30
10/17/08 - 10/24/08	< 43	< 46	< 47	< 44	< 46
10/24/08 - 10/31/08	< 41	< 55	< 52	< 65	< 52
10/31/08 - 11/07/08	< 47	< 47	< 47	< 66	< 47
11/07/08 - 11/14/08	< 52	< 52	< 52	< 60	< 52
11/14/08 - 11/21/08	< 33	< 41	< 41	< 65	< 41
11/21/08 - 11/28/08	< 22	< 40	< 40	< 41	< 40
11/28/08 - 12/05/08	< 69	< 70	< 69	< 67	< 69
12/05/08 - 12/12/08	< 36	< 60	< 60	< 64	< 60
12/12/08 - 12/19/08	< 44	< 55	< 56	< 64	< 56
12/19/08 - 12/26/08	< 38	< 69	< 70	< 61	< 70
12/26/08 - 01/02/09	< 44	< 55	< 56	< 52	< 55
MEAN	-	-	-	-	-

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	CONTROL FARM D-25
01/03/08	< 0.6
02/01/08	< 0.8
03/06/08	< 0.5
04/03/08	< 0.8
05/01/08	< 0.7
05/15/08	< 0.7
05/29/08	< 0.8
06/12/08	< 0.7
06/26/08	< 0.7
07/10/08	< 0.7
07/24/08	< 0.7
08/06/08	< 0.8
08/21/08	< 0.8
09/04/08	< 0.7
09/18/08	< 0.9
10/02/08	< 0.8
10/16/08	< 0.8
10/30/08	< 0.9
11/13/08	< 0.7
12/04/08	< 0.9
MEAN	-

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

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
D-25	01/03/08	< 7	< 7	< 13	< 7	< 18	< 9	< 14	< 6	< 9	< 31	< 10
	02/01/08	< 5	< 5	< 12	< 7	< 13	< 6	< 10	< 5	< 6	< 34	< 12
	03/06/08	< 5	< 5	< 12	< 6	< 12	< 6	< 7	< 5	< 6	< 26	< 9
	04/03/08	< 5	< 5	< 12	< 5	< 13	< 5	< 8	< 5	< 5	< 24	< 8
	05/01/08	< 6	< 7	< 16	< 8	< 17	< 7	< 12	< 8	< 7	< 43	< 11
	05/15/08	< 7	< 7	< 15	< 6	< 15	< 6	< 12	< 6	< 6	< 37	< 13
	05/29/08	< 4	< 5	< 11	< 4	< 10	< 5	< 9	< 5	< 5	< 34	< 9
	06/12/08	< 6	< 7	< 16	< 6	< 16	< 6	< 12	< 6	< 6	< 40	< 12
	06/26/08	< 4	< 5	< 11	< 5	< 11	< 5	< 9	< 4	< 5	< 33	< 10
	07/10/08	< 7	< 7	< 16	< 6	< 17	< 7	< 14	< 6	< 7	< 37	< 13
	07/24/08	< 3	< 3	< 8	< 3	< 6	< 4	< 6	< 3	< 3	< 43	< 10
	08/06/08	< 7	< 7	< 17	< 6	< 16	< 6	< 13	< 5	< 7	< 46	< 9
	08/21/08	< 4	< 4	< 9	< 5	< 9	< 5	< 8	< 3	< 4	< 24	< 6
	09/04/08	< 6	< 7	< 17	< 6	< 12	< 7	< 13	< 5	< 6	< 52	< 15
	09/18/08	< 5	< 5	< 14	< 4	< 11	< 6	< 9	< 4	< 4	< 46	< 12
	10/02/08	< 2	< 3	< 8	< 2	< 5	< 3	< 6	< 2	< 2	< 51	< 14
	10/16/08	< 4	< 5	< 10	< 5	< 10	< 5	< 9	< 4	< 5	< 44	< 13
	10/30/08	< 2	< 2	< 6	< 2	< 3	< 2	< 4	< 1	< 2	< 46	< 15
	11/13/08	< 1	< 2	< 5	< 1	< 3	< 2	< 3	< 1	< 1	< 47	< 13
	12/04/08	< 6	< 6	< 14	< 5	< 11	< 6	< 9	< 5	< 5	< 31	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VIII.1 **CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

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	I-131	Cs-134	Cs-137	Ba-140	La-140
D-CONTROL													
Cabbage	09/12/08	< 14	< 17	< 38	< 20	< 30	< 17	< 29	< 60	< 13	< 15	< 116	< 34
Carrots	09/12/08	< 13	< 12	< 34	< 11	< 26	< 14	< 24	< 50	< 12	< 14	< 104	< 24
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 1													
Broccoli	09/12/08	< 13	< 13	< 28	< 14	< 33	< 14	< 25	< 55	< 13	< 14	< 96	< 34
Potatoes	09/12/08	< 14	< 16	< 41	< 15	< 38	< 16	< 24	< 55	< 13	< 13	< 110	< 28
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 2													
Beet greens	09/12/08	< 12	< 13	< 31	< 12	< 28	< 13	< 23	< 49	< 11	< 23	< 100	< 22
Beets	09/12/08	< 15	< 17	< 42	< 14	< 31	< 16	< 26	< 59	< 13	< 16	< 123	< 36
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 3													
Cabbage	09/12/08	< 10	< 11	< 24	< 8	< 24	< 11	< 19	< 40	< 9	< 9	< 77	< 21
Sweet potatoes	09/12/08	< 11	< 10	< 23	< 10	< 20	< 12	< 17	< 41	< 8	< 10	< 70	< 20
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 4													
Cabbage	09/12/08	< 9	< 10	< 24	< 9	< 22	< 10	< 15	< 40	< 8	< 10	< 71	< 25
Onions	09/12/08	< 7	< 12	< 32	< 10	< 20	< 14	< 19	< 45	< 9	< 15	< 84	< 31
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2008

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

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-01-1	23.0 ± 2.8	24	23	21	24
D-01-2	22.5 ± 2.6	24	22	21	23
D-02-1	24.0 ± 2.8	25	24	22	25
D-02-2	23.8 ± 3.8	25	24	21	25
D-03-1	20.8 ± 3.4	20	21	19	23
D-03-2	20.8 ± 3.4	21	20	19	23
D-04-1	23.3 ± 3.0	25	22	22	24
D-04-2	23.0 ± 2.8	25	22	22	23
D-07-1	22.0 ± 1.6	23	22	21	22
D-07-2	23.3 ± 5.0	26	23	20	24
D-08-1	23.3 ± 1.9	24	23	22	24
D-08-2	24.3 ± 3.0	25	25	22	25
D-10-1	25.0 ± 4.3	25	23	24	28
D-10-2	22.5 ± 3.8	25	21	21	23
D-12-1	24.3 ± 12	23	21	20	33
D-12-2	21.0 ± 3.7	23	20	19	22
D-14-1	21.3 ± 3.4	22	21	19	23
D-14-2	21.5 ± 2.0	22	22	20	22
D-45-1	24.5 ± 2.6	25	24	23	26
D-45-2	25.8 ± 4.1	28	26	23	26
D-53-1	19.0 ± 2.8	20	20	17	19
D-53-2	19.0 ± 4.3	21	19	16	20
D-55-1	25.3 ± 3.4	25	27	23	26
D-55-2	24.5 ± 5.3	28	23	22	25
D-56-1	20.3 ± 4.1	23	20	18	20
D-56-2	20.8 ± 1.9	21	20	20	22
D-101-1	24.0 ± 2.8	25	25	22	24
D-101-2	23.5 ± 6.2	25	27	20	22
D-102-1	26.3 ± 3.8	29	25	25	26
D-102-2	25.8 ± 6.6	28	24	22	29
D-103-1	23.3 ± 5.5	26	25	20	22
D-103-2	24.8 ± 5.3	27	23	22	27
D-104-1	25.0 ± 2.3	26	24	26	24
D-104-2	23.5 ± 3.8	26	22	22	24
D-105-1	24.0 ± 4.0	25	25	21	25
D-105-2	23.0 ± 2.8	24	23	21	24
D-106-1	21.0 ± 3.3	23	21	19	21
D-106-2	20.0 ± 4.3	23	20	18	19
D-107-1	19.5 ± 2.6	21	19	18	20
D-107-2	20.0 ± 2.8	21	20	18	21
D-108-1	25.0 ± 4.3	28	24	23	25
D-108-2	22.5 ± 3.8	23	21	21	25
D-109-1	25.0 ± 4.6	27	23	23	27
D-109-2	25.3 ± 5.3	27	23	23	28
D-110-3	26.8 ± 5.0	27	26	24	30
D-110-4	25.8 ± 6.6	28	26	21	28
D-111-1	26.3 ± 5.5	28	25	23	29
D-111-2	23.5 ± 2.0	24	24	22	24
D-113-1	20.5 ± 2.6	22	20	19	21
D-113-2	22.3 ± 5.3	26	22	21	20
D-114-1	22.0 ± 4.3	22	21	20	25
D-114-2	21.5 ± 3.5	23	22	19	22
D-115-1	23.3 ± 4.4	24	22	21	26

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2008

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

STATION	MEAN	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-115-2	23.8 ± 3.4	24	23	22	26
D-116-1	26.0 ± 4.3	29	25	26	24
D-116-2	25.0 ± 5.2	26	24	22	28
D-201-1	27.3 ± 5.3	27	26	25	31
D-201-2	26.3 ± 4.4	29	25	24	27
D-202-1	25.8 ± 6.6	28	24	22	29
D-202-2	22.3 ± 1.9	23	22	21	23
D-203-1	23.5 ± 4.2	26	24	21	23
D-203-2	22.5 ± 5.0	26	22	20	22
D-204-1	21.3 ± 4.1	24	21	19	21
D-204-2	20.8 ± 3.0	22	22	19	20
D-205-1	24.5 ± 4.2	24	25	22	27
D-205-2	24.8 ± 5.3	27	23	22	27
D-206-1	23.8 ± 3.4	26	22	24	23
D-206-2	24.5 ± 4.2	27	24	22	25
D-207-1	21.3 ± 1.9	22	22	20	21
D-207-2	22.3 ± 4.1	25	22	20	22
D-208-1	20.5 ± 4.2	23	20	18	21
D-208-2	20.0 ± 2.8	21	20	18	21
D-209-1	20.5 ± 4.8	22	23	18	19
D-209-2	20.0 ± 1.6	21	20	19	20
D-210-1	24.0 ± 3.3	24	24	22	26
D-210-2	24.0 ± 3.7	26	23	22	25
D-211-1	25.0 ± 4.3	28	24	23	25
D-211-2	24.0 ± 4.3	27	23	22	24
D-212-3	20.8 ± 2.5	21	21	19	22
D-212-4	21.5 ± 4.2	24	21	19	22
D-213-1	21.8 ± 4.4	23	21	19	24
D-213-2	19.8 ± 5.0	23	19	17	20
D-214-1	27.5 ± 5.0	27	27	25	31
D-214-2	26.8 ± 5.7	30	27	23	27
D-215-1	26.8 ± 5.0	30	26	24	27
D-215-2	25.8 ± 4.1	27	24	24	28
D-216-1	23.0 ± 4.3	26	23	21	22
D-216-2	25.5 ± 5.0	26	26	22	28
D-112A-1	22.0 ± 3.3	22	22	20	24
D-112A-2	22.3 ± 3.4	24	23	20	22

TABLE C-IX.2 MEAN QUARTERLY TLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR DRESDEN NUCLEAR POWER STATION, 2008

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

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	25.1 ± 4.7	25.2 ± 5.2	23.8 ± 4.4	23.0 ± 0.0
APR-JUN	23.1 ± 4.0	23.0 ± 4.2	22.4 ± 4.0	20.5 ± 1.4
JUL-SEP	21.4 ± 4.2	21.1 ± 4.5	20.8 ± 4.0	19.5 ± 1.4
OCT-DEC	24.4 ± 5.8	24.2 ± 6.6	23.5 ± 4.2	27.5 ± 15.6

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	128	18	30	23.5 ± 5.5
OUTER RING	128	17	31	23.4 ± 6.0
OTHER	96	16	28	22.6 ± 4.8
CONTROL	8	19	33	22.6 ± 8.9

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

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

OTHER STATIONS - D-01-1, D-01-2, D-02-1, D-02-2, D-03-1, D-03-2, D-04-1, D-04-2, D-07-1, D-07-2, D-08-1, D-08-2, D-10-1, D-10-2, D-14-1, D-14-2, D-45-1, D-45-2, D-53-1, D-53-2, D-55-1, D-55-2, D-56-1, D-56-2

CONTROL STATIONS - D-12-1, D-12-2

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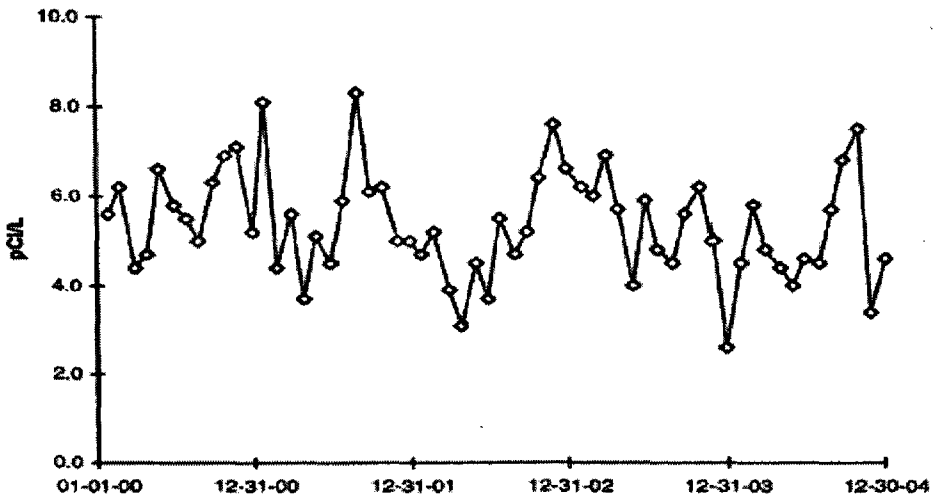
FIGURE C-1
SURFACE WATER - GROSS BETA - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-51 Dresden Lock & Dam



D-52 (C) DesPlaines River

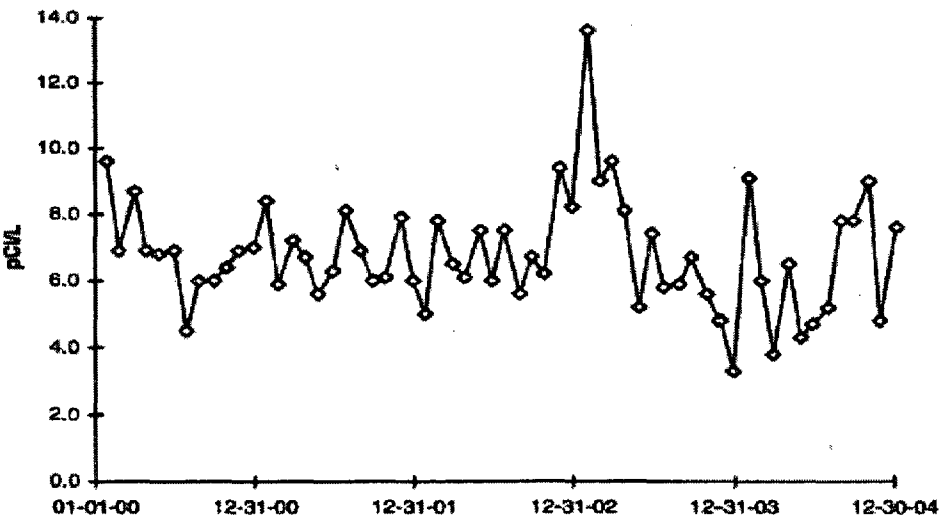
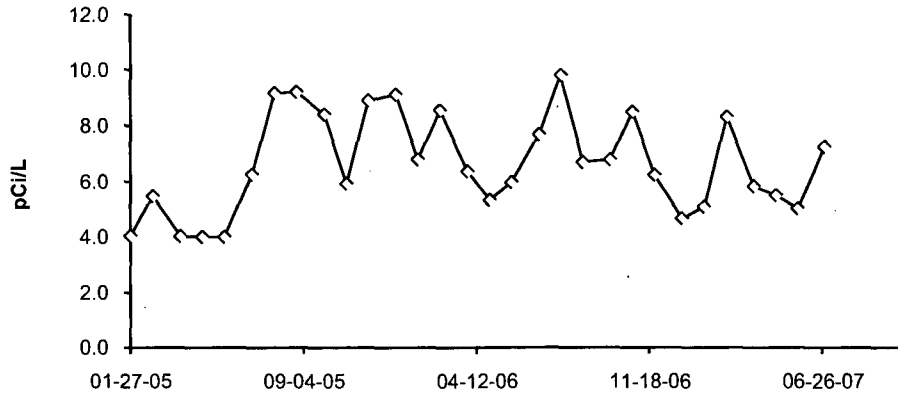
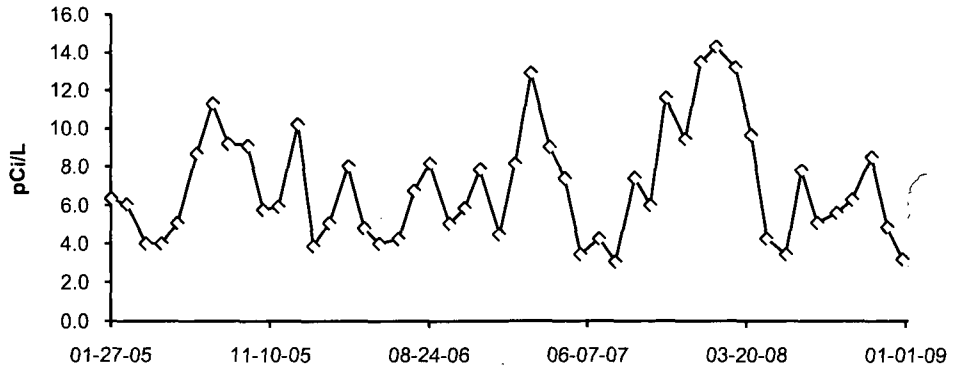


FIGURE C-1 (cont.)
SURFACE WATER - GROSS BETA - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-51 Dresden Lock & Dam



D-52 (C) DesPlaines River



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

D-51 LOCATION REMOVED FROM PROGRAM JUNE 29, 2007 AND REPLACED WITH D-21

FIGURE C-2
SURFACE WATER - GROSS BETA - STATION D-54 (C)
COLLECTED IN THE VICINITY OF DNPS, 2002 - 2004

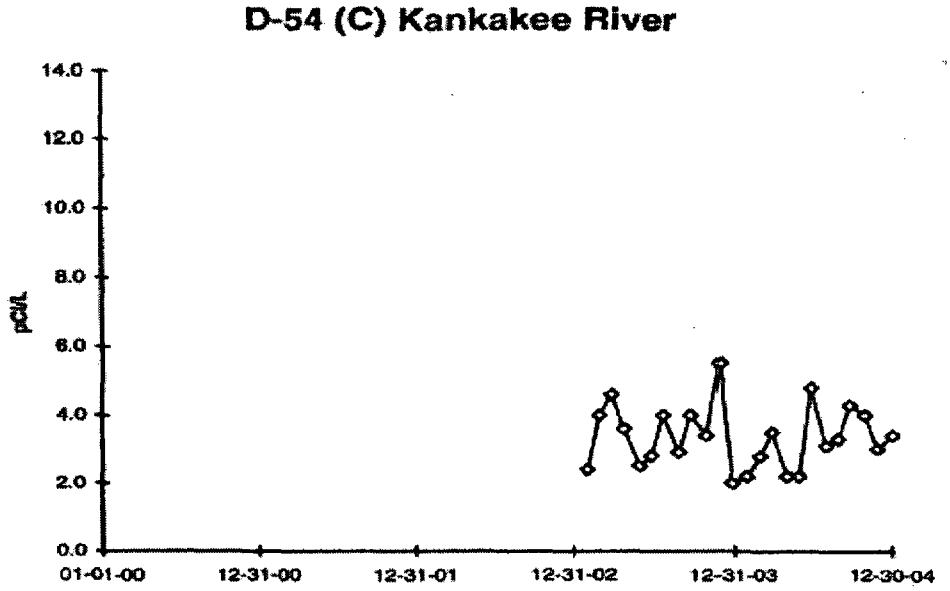
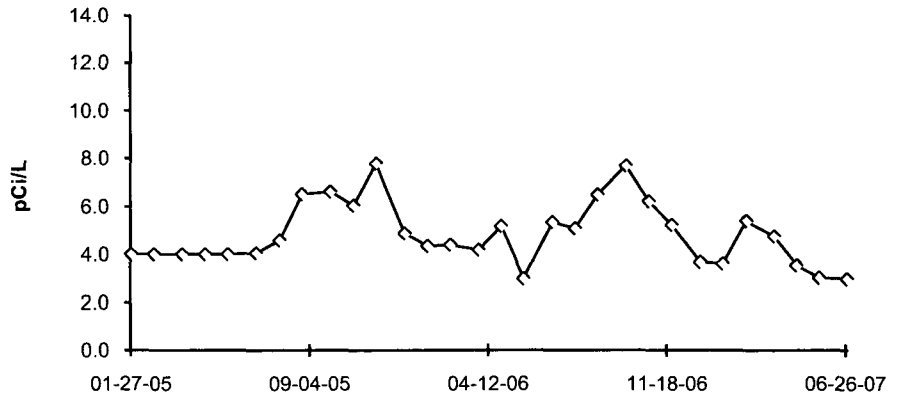
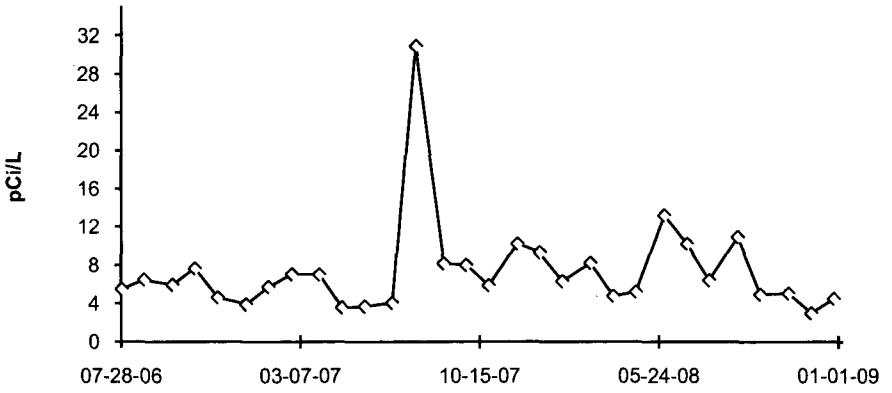


FIGURE C-2 (cont.)
SURFACE WATER - GROSS BETA - STATION D-54 (C) and D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-54 (C) Kankakee River



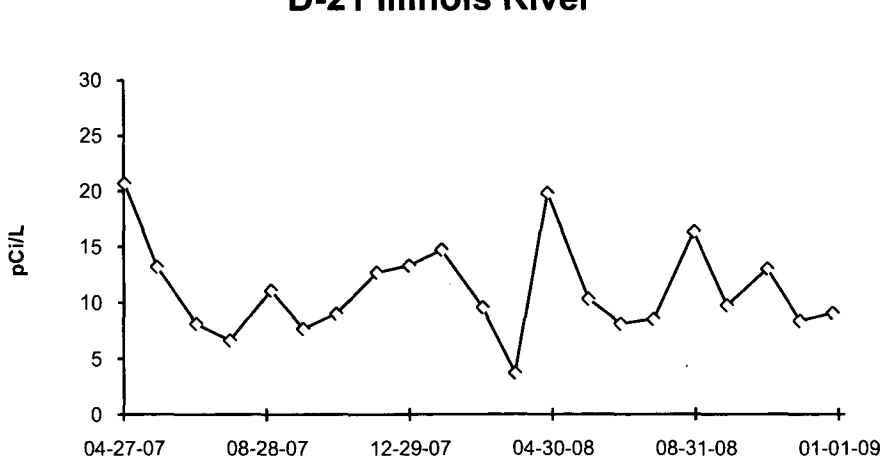
D-57 (C) Kankakee River



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

D-54 LOCATION REMOVED FROM PROGRAM JUNE 28, 2007 AND REPLACED WITH D-57

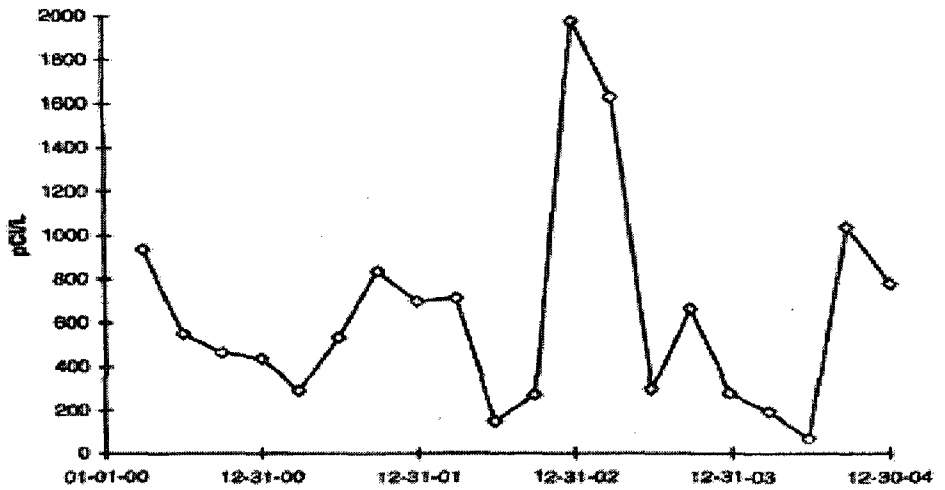
FIGURE C-3
SURFACE WATER - GROSS BETA - STATION D-21
COLLECTED IN THE VICINITY OF DNPS, 2007 - 2008



D-21 PLACED INTO SERVICE ON MARCH 30, 2007, REPLACED D-51

FIGURE C-4
SURFACE WATER - TRITIUM - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-51 Dresden Lock & Dam



D-52 (C) Des Plaines River

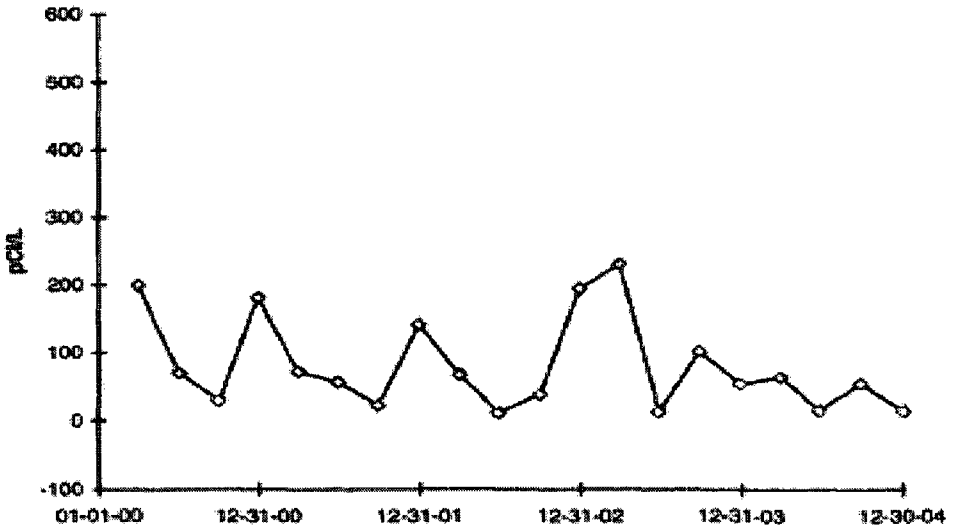
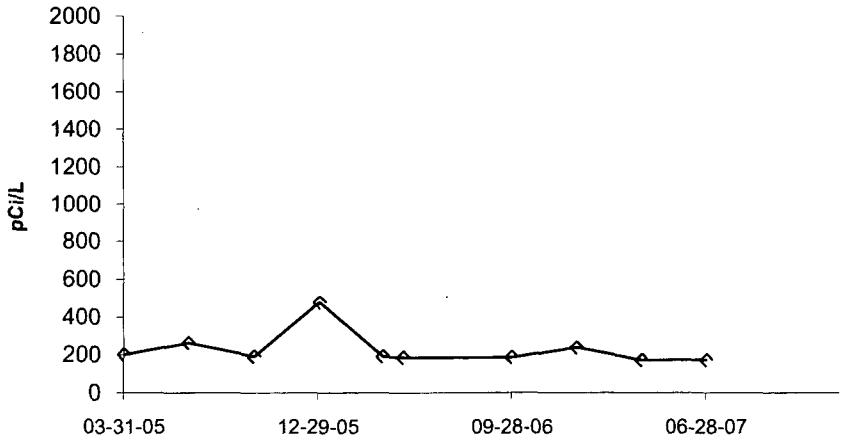
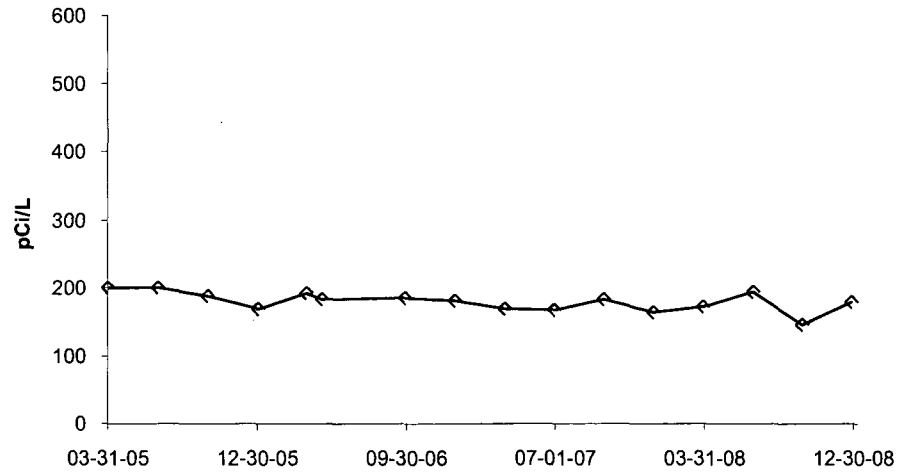


FIGURE C-4 (cont.)
SURFACE WATER - TRITIUM - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-51 Dresden Lock & Dam



D-52 (C) Des Plaines River



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

D-51 LOCATION REMOVED FROM PROGRAM JUNE 29, 2007 AND REPLACED WITH D-21

FIGURE C-5
SURFACE WATER - TRITIUM - STATION D-54 (C)
COLLECTED IN THE VICINITY OF DNPS, 2002 - 2004

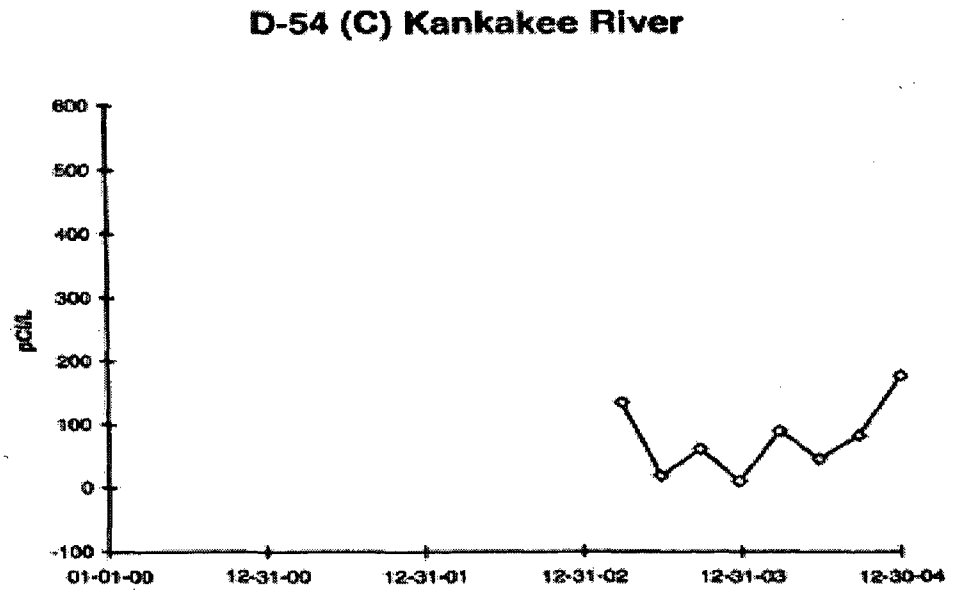
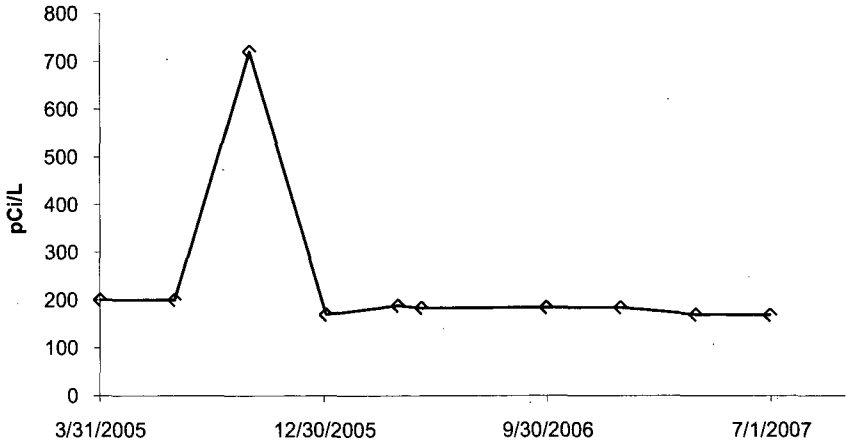


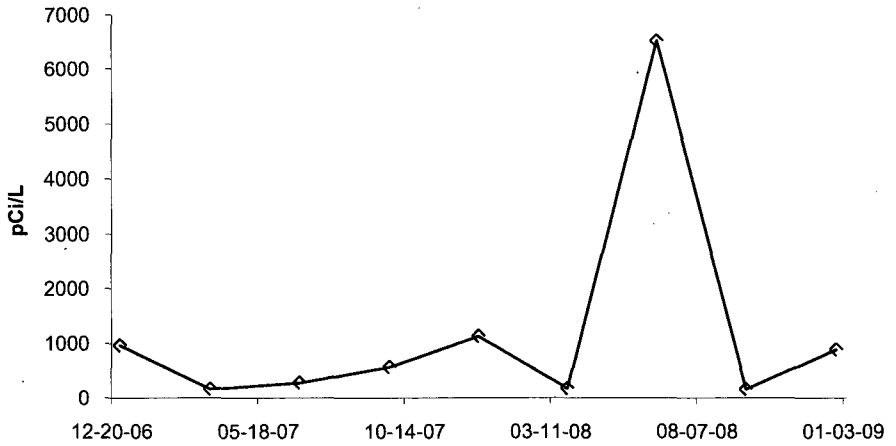
FIGURE C-5 (cont.)
SURFACE WATER - TRITIUM - STATION D-54 (C) AND D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-54 (C) Kankakee River



Location shared with Braidwood Station (BD-10).

D-57 (C) Kankakee River

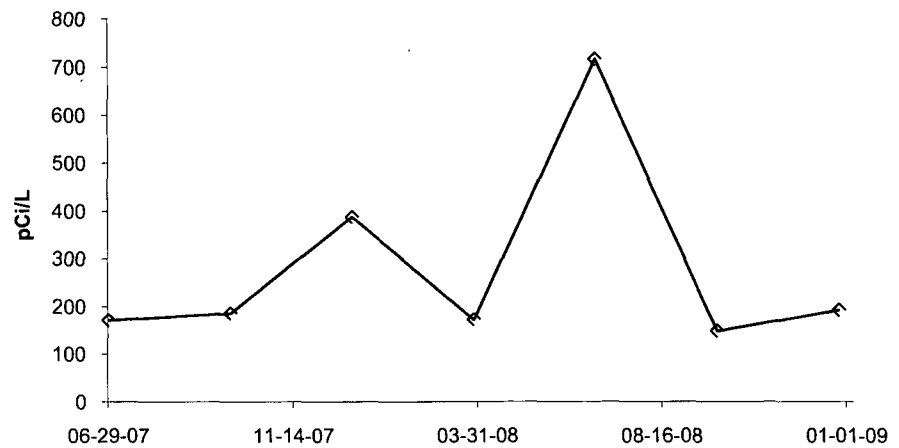


DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

D-57 NEW STATION JULY 24, 2006. REPLACED D-54 ON JUNE 28, 2007

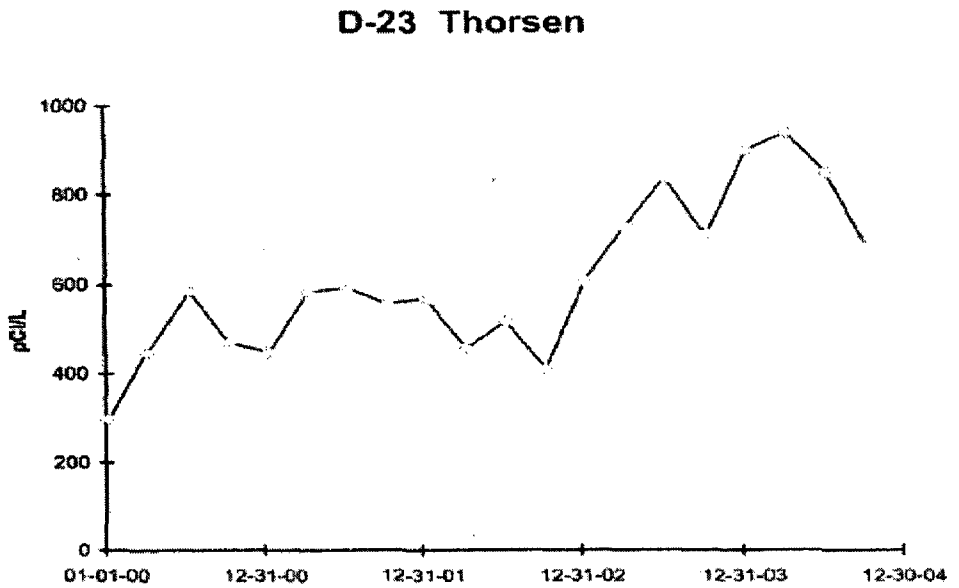
FIGURE C-6
SURFACE WATER - TRITIUM - STATION D-21
COLLECTED IN THE VICINITY OF DNPS, 2007 - 2008

D-21 Illinois River



D-21 REPLACED D-51JUNE 29, 2007

FIGURE C-7
GROUND WATER - TRITIUM - STATIONS D-23 and D-35 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004



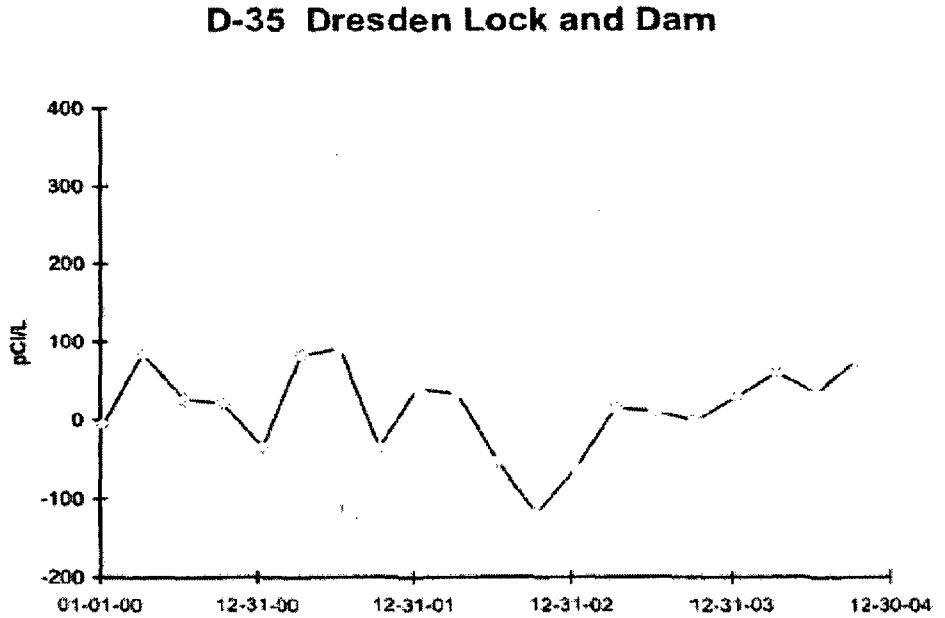
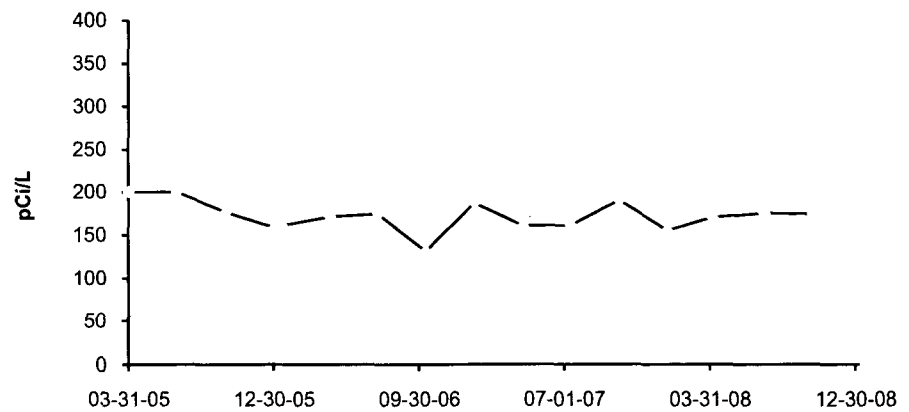


FIGURE C-7 (cont.)
GROUND WATER - TRITIUM - STATIONS D-23 and D-35 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-23 Thorsen

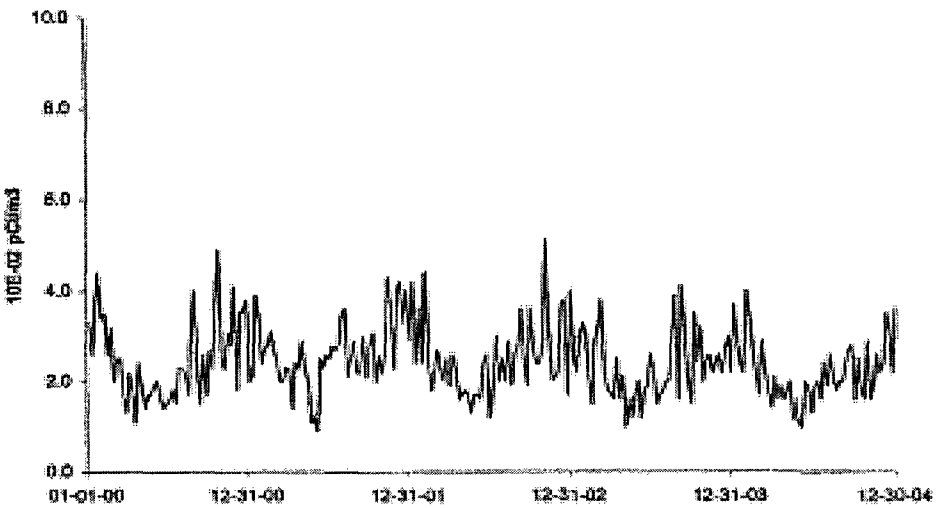
D-35 Dresden Lock and Dam



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

FIGURE C-8
AIR PARTICULATES - GROSS BETA - STATIONS D-01 and D-02 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-01 Onsite Station 1



D-02 Onsite Station 2

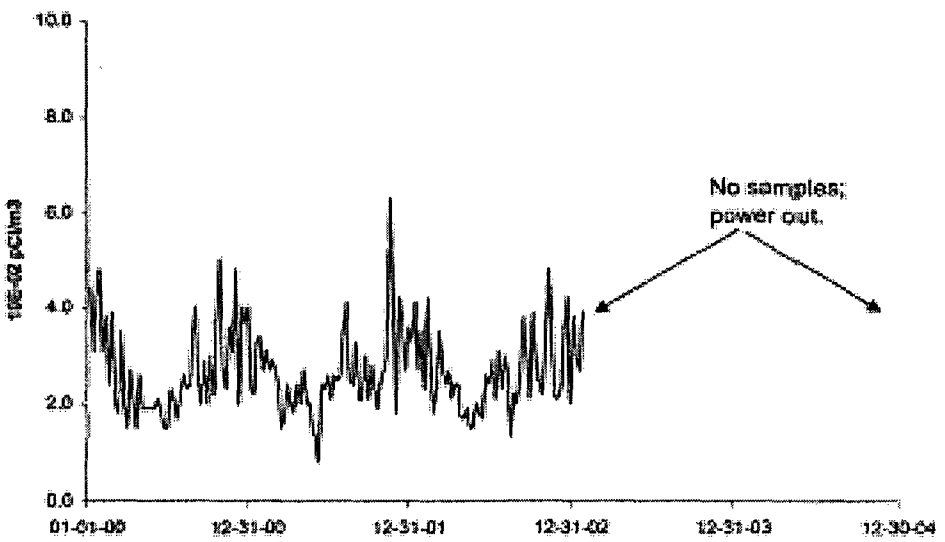
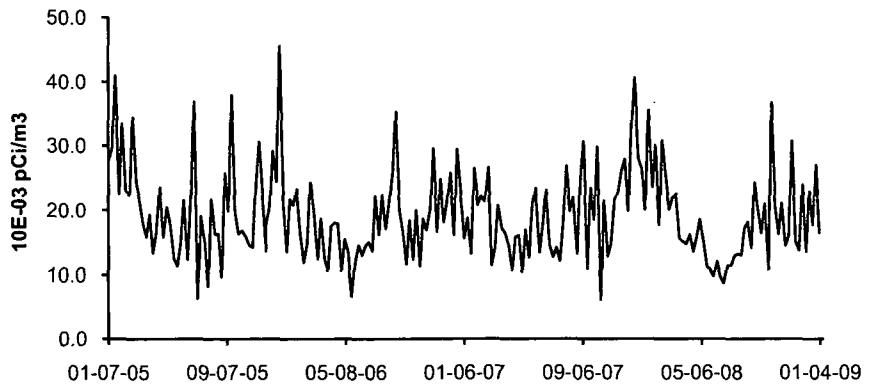
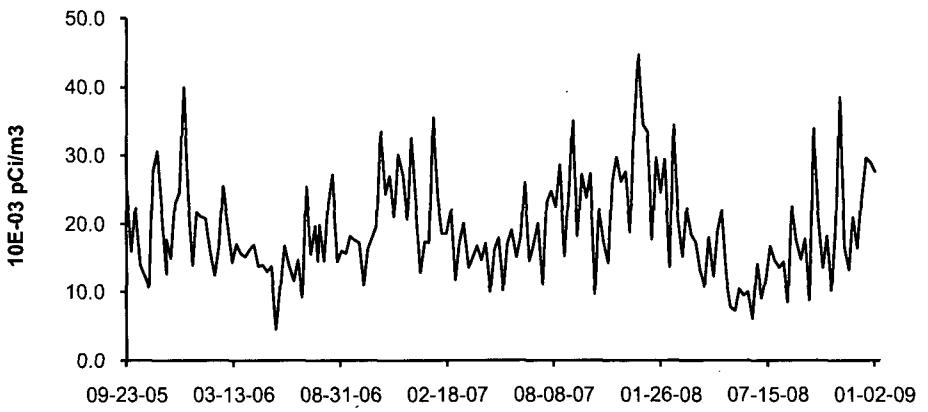


FIGURE C-8 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-01 and D-02 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-01 Onsite Station 1



D-02 Onsite Station 2

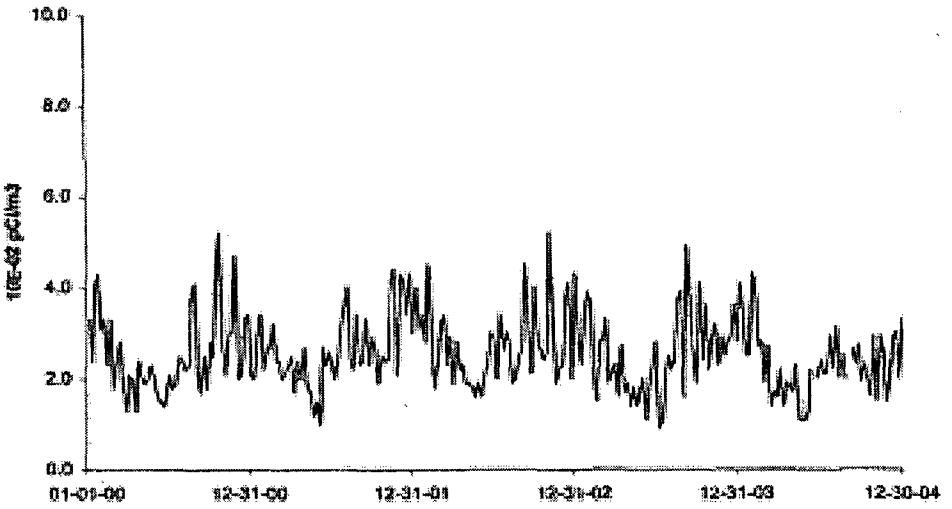


D-02 No samples; power was restored on 09-16-05.

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 - STATIONS D-03 and D-04 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-03 Onsite Station 3



D-04 Collins Road

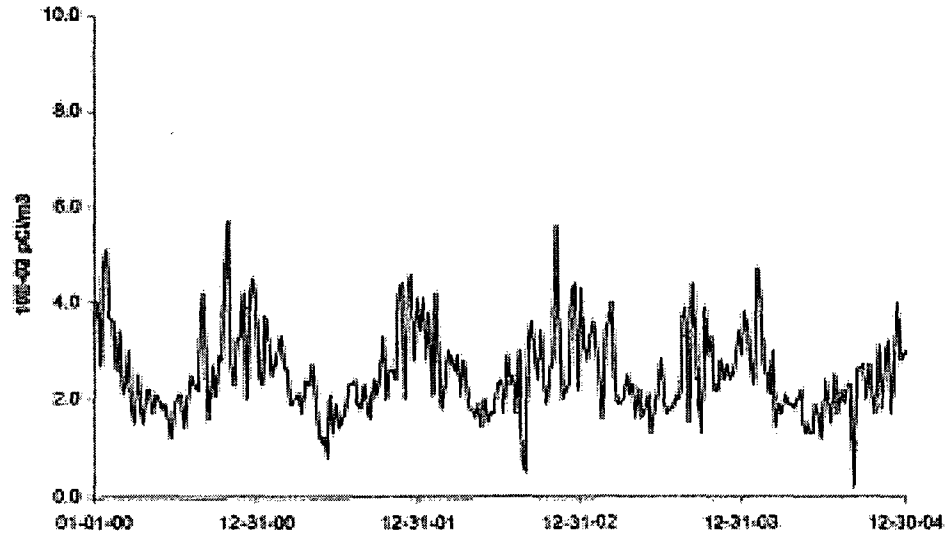
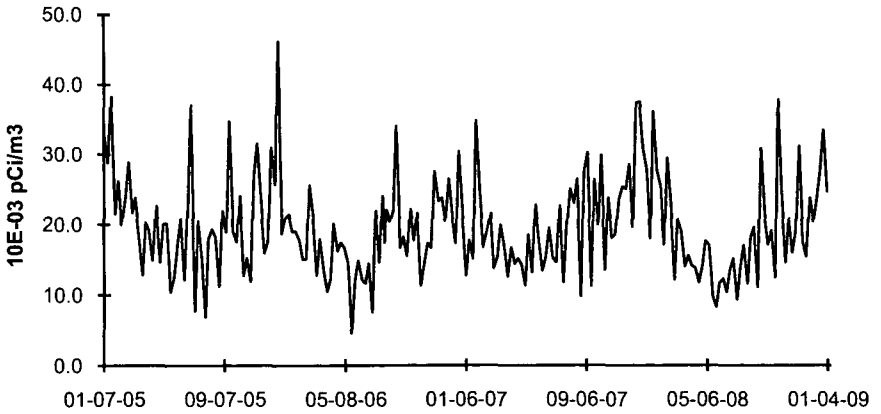
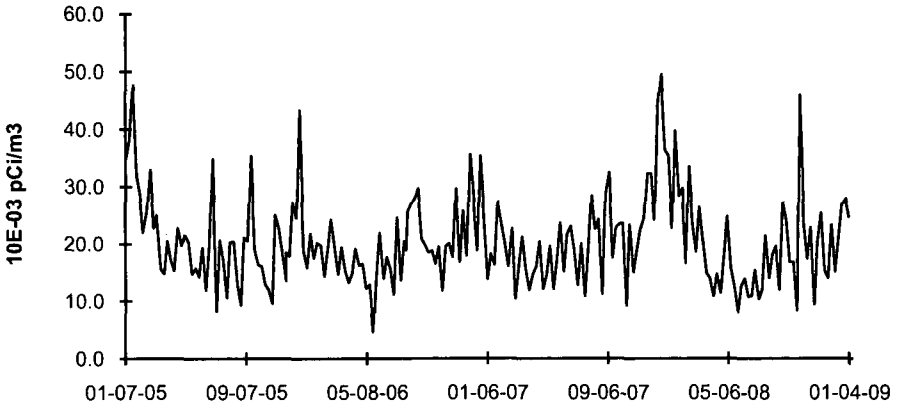


FIGURE C-9 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-03 and D-04 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-03 Onsite Station 3

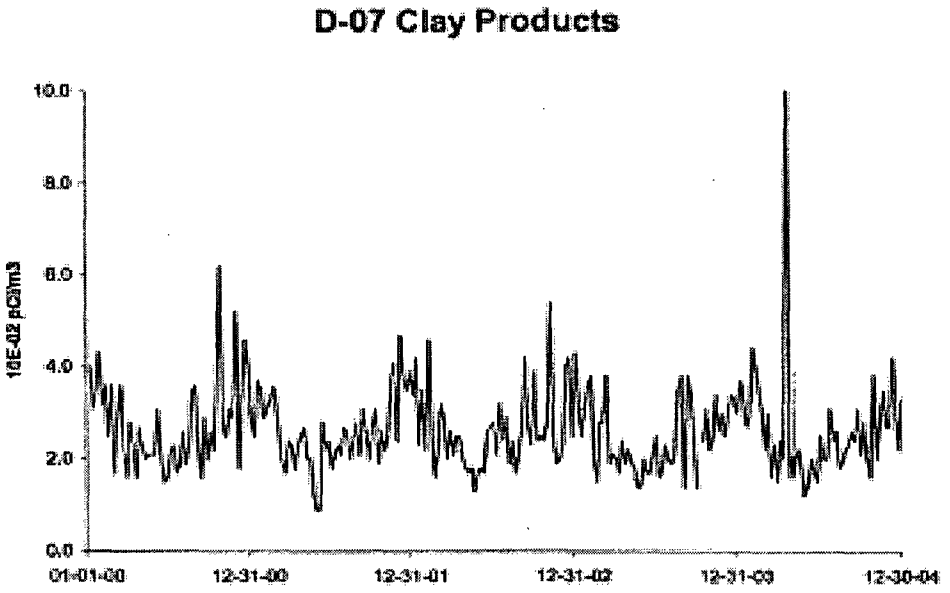


D-04 Collins Road



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 D-07 and D-12 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004



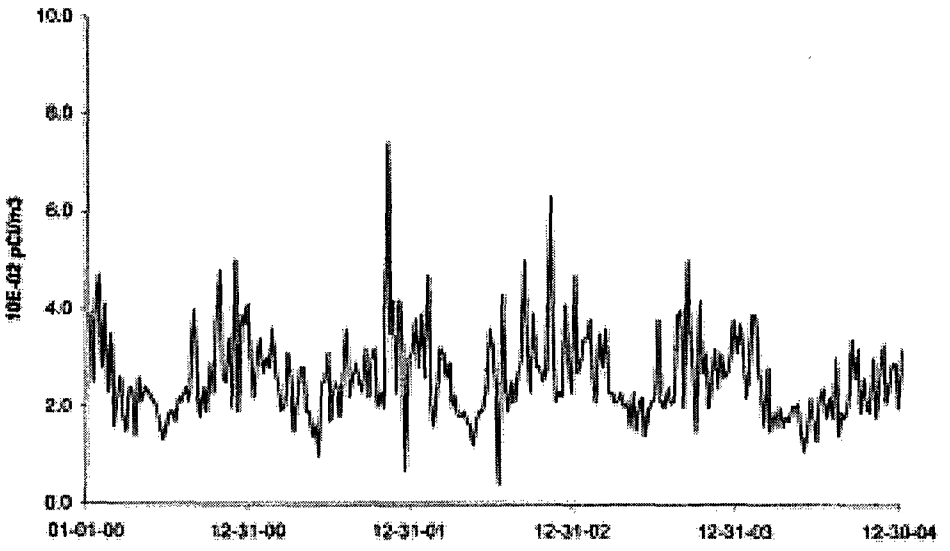
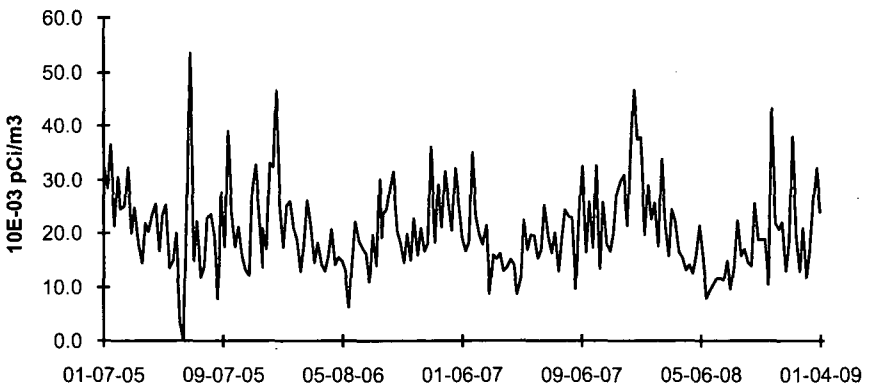


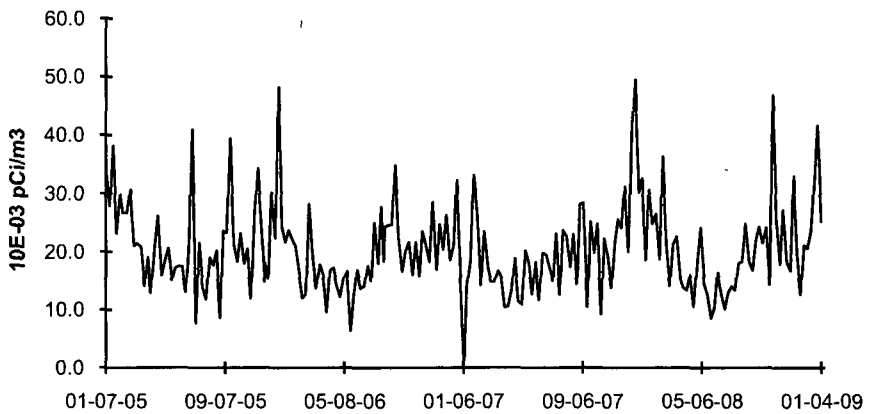
FIGURE C-10 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-07 and D-12 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-07 Clay Products



06/10/05 - 06/17/05 no sample due to pump malfunction

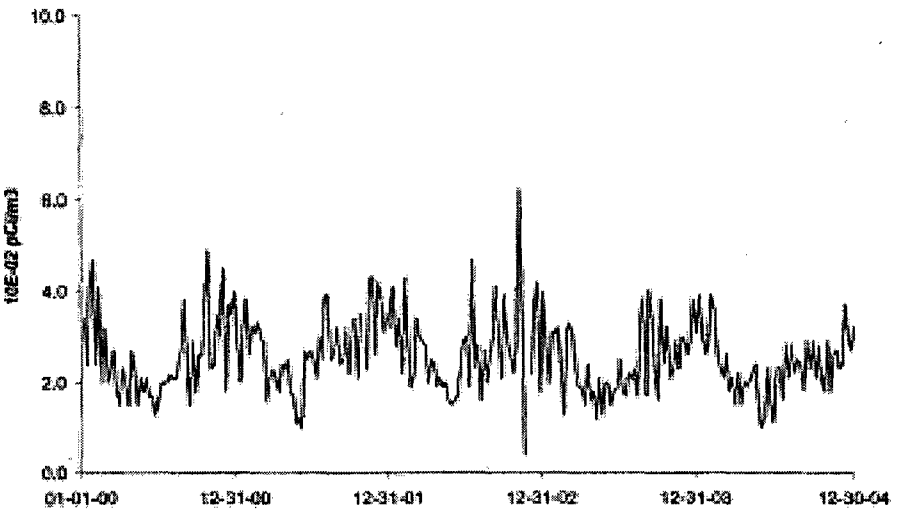
D-12 (C) Lisbon



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

FIGURE C-11
AIR PARTICULATES - GROSS BETA - STATIONS D-45 and D-53 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-45 McKinley Woods Road



D-53 Grundy County Road

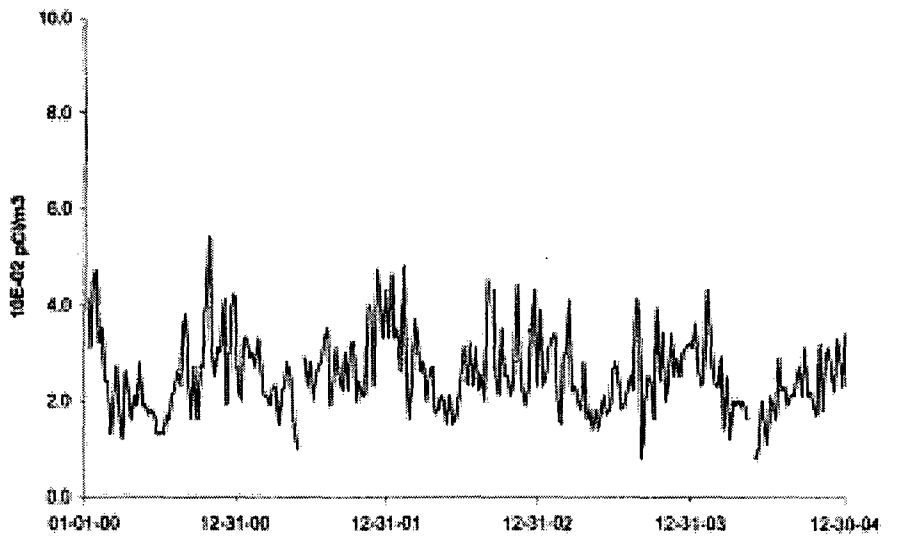
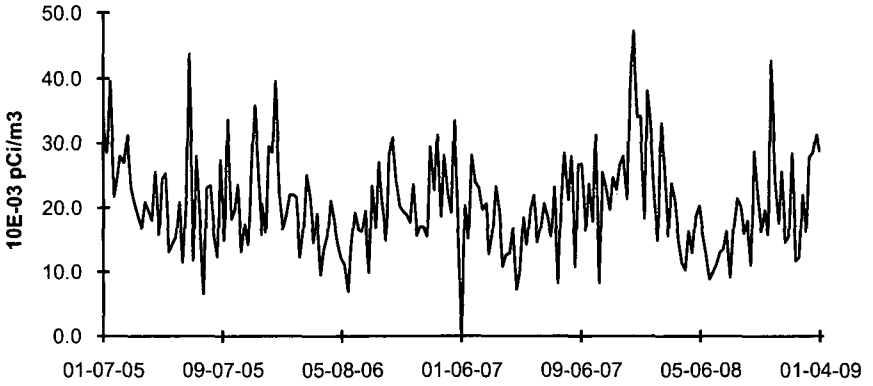
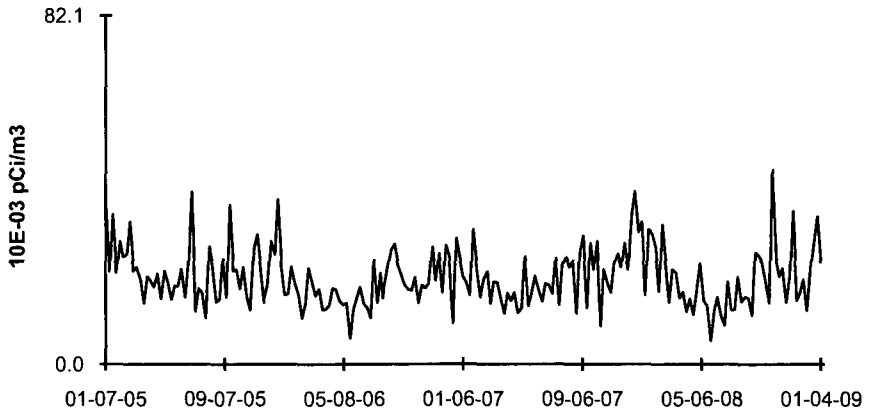


FIGURE C-11 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-45 and D-53 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-45 McKinley Woods Road



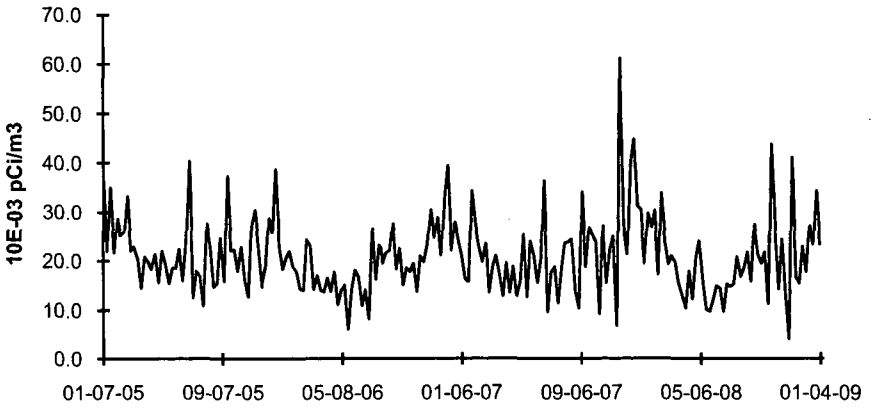
D-53 Grundy County Road



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

FIGURE C-12
AIR PARTICULATES - GROSS BETA - STATIONS D-08 and D-10 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-08 Prairie Park



D-10 Goose Lake Village

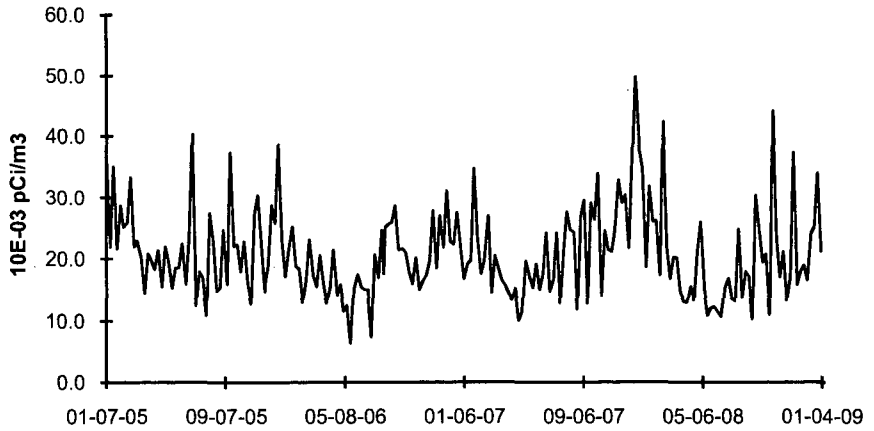
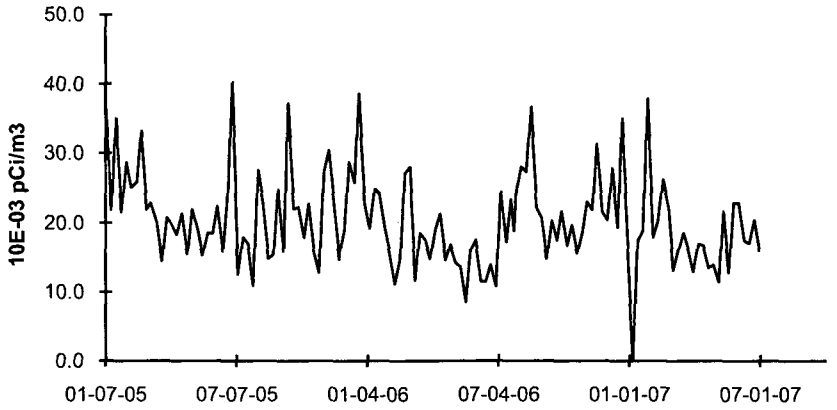
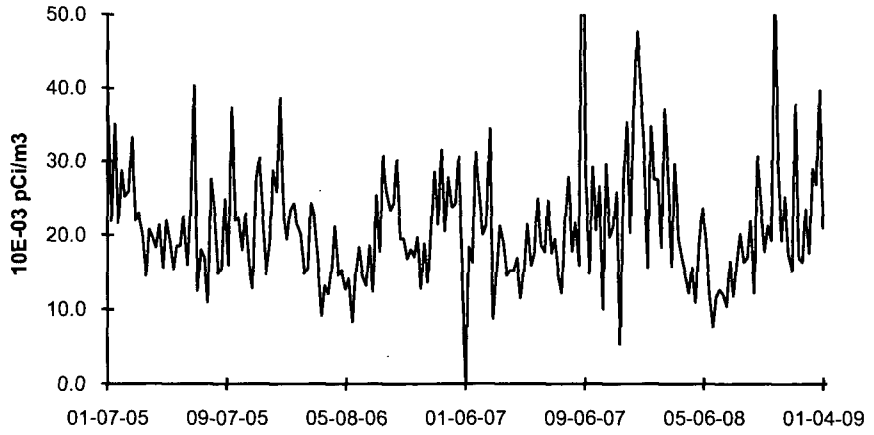


FIGURE C-13
AIR PARTICULATES - GROSS BETA - STATIONS D-13 and D-14 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2008

D-13 Minooka



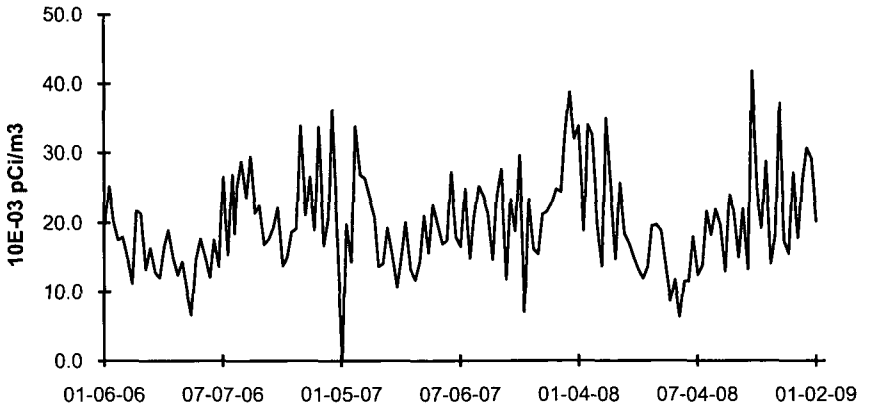
D-14 Channahon



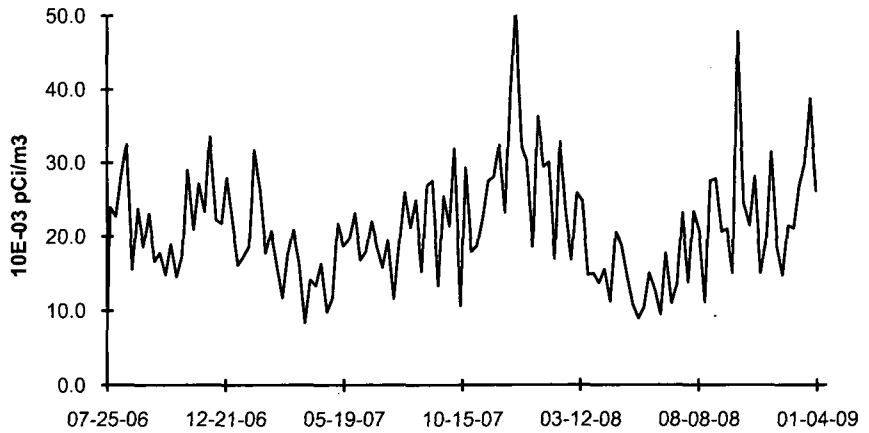
D-13 TAKEN OUT OF SERVICE JUNE 29, 2007 AND REPLACED WITH D-55

FIGURE C-14
AIR PARTICULATES - GROSS BETA - STATIONS D-55 and D-56 COLLECTED IN THE VICINITY OF DNPS, 2006-2008

D-55 Ridge Road



D-56 Wildfeather



D-55 NEW STATION DECEMBER 30, 2005 REPLACED D-13 JUNE 29, 2007
D-56 NEW STATION JULY 25, 2006

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APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2008	E5847-396	Milk	Sr-89	pCi/L	83.5	95.8	0.87	A
			Sr-90	pCi/L	13.9	12.9	1.08	A
	E5848-396	Milk	I-131	pCi/L	57.3	60.0	0.96	A
			Ce-141	pCi/L	229	249	0.92	A
			Cr-51	pCi/L	336	359	0.94	A
			Cs-134	pCi/L	106	125	0.85	A
			Cs-137	pCi/L	141	146	0.97	A
			Co-58	pCi/L	71.8	70.8	1.01	A
			Mn-54	pCi/L	98.1	94.2	1.04	A
			Fe-59	pCi/L	102	102	1.00	A
			Zn-65	pCi/L	135	137	0.99	A
			Co-60	pCi/L	230	236	0.97	A
	E5850A-396	AP	Ce-141	pCi	163	157	1.04	A
			Cr-51	pCi	233	227	1.03	A
			Cs-134	pCi	72.6	79.0	0.92	A
			Cs-137	pCi	98.3	92.0	1.07	A
			Co-58	pCi	46.7	44.7	1.04	A
			Mn-54	pCi	69.8	59.4	1.18	A
			Fe-59	pCi	72.2	64.5	1.12	A
			Zn-65	pCi	106	86.4	1.23	W
			Co-60	pCi	156	149	1.05	A
	E5849-396	Charcoal	I-131	pCi	65.5	60.1	1.09	A
June 2008	E5971-396	Milk	Sr-89	pCi/L	83.9	85.0	0.99	A
			Sr-90	pCi/L	14.4	15.8	0.91	A
	E5972-396	Milk	I-131	pCi/L	70.9	71.4	0.99	A
			Ce-141	pCi/L	157	174	0.90	A
			Cr-51	pCi/L	159	138	1.15	A
			Cs-134	pCi/L	69.7	76.7	0.91	A
			Cs-137	pCi/L	115	116	0.99	A
			Co-58	pCi/L	59.1	61.9	0.95	A
			Mn-54	pCi/L	139	135	1.03	A
			Fe-59	pCi/L	98.4	91.7	1.07	A
			Zn-65	pCi/L	129	127	1.02	A
			Co-60	pCi/L	101	104	0.97	A
	E5974-396	AP	Ce-141	pCi	206	207	1.00	A
			Cr-51	pCi	173	164	1.05	A
			Cs-134	pCi	95.9	91.0	1.05	A
			Cs-137	pCi	142.0	138.0	1.03	A
			Co-58	pCi	72.0	73.4	0.98	A
			Mn-54	pCi	180	160.0	1.13	A
			Fe-59	pCi	108.0	109.0	0.99	A
			Zn-65	pCi	159	150	1.06	A
			Co-60	pCi	129	124	1.04	A

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2008	E5973-396	Charcoal	I-131	pCi	73.8	84.1	0.88	A
September 2008	E6284-396	Milk	Sr-89	pCi/L	76.2	73.9	1.03	A
			Sr-90	pCi/L	12.3	11.0	1.12	A
	E6285-396	Milk	I-131	pCi/L	65.7	67.9	0.97	A
			Ce-141	pCi/L	145	161	0.90	A
			Cr-51	pCi/L	406	421	0.96	A
			Cs-134	pCi/L	196	232	0.84	A
			Cs-137	pCi/L	147	162	0.91	A
			Co-58	pCi/L	167	179	0.93	A
			Mn-54	pCi/L	165	166	0.99	A
			Fe-59	pCi/L	161	144	1.12	A
			Zn-65	pCi/L	305	319	0.96	A
			Co-60	pCi/L	218	234	0.93	A
	E6287-396	AP	Ce-141	pCi	79.5	76.3	1.04	A
			Cr-51	pCi	208	199	1.05	A
			Cs-134	pCi	106	110	0.96	A
			Cs-137	pCi	79.3	76.7	1.03	A
			Co-58	pCi	87.7	84.4	1.04	A
			Mn-54	pCi	90.3	78.6	1.15	A
			Fe-59	pCi	81.7	68.3	1.20	A
			Zn-65	pCi	144	151	0.95	A
			Co-60	pCi	111	111	1.00	A
	E6286-396	Charcoal	I-131	pCi	93.2	90.0	1.04	A
December 2008	E6415-396	Milk	Sr-89	pCi/L	98.4	91.9	1.07	A
			Sr-90	pCi/L	18.0	12.6	1.43	N (1)
	E6416-396	Milk	I-131	pCi/L	69.2	79.9	0.87	A
			Ce-141	pCi/L	177	191	0.93	A
			Cr-51	pCi/L	231	246	0.94	A
			Cs-134	pCi/L	117	134	0.87	A
			Cs-137	pCi/L	119	120	0.99	A
			Co-58	pCi/L	104	104	1.00	A
			Mn-54	pCi/L	153	152	1.01	A
			Fe-59	pCi/L	99.6	100	1.00	A
			Zn-65	pCi/L	177	183	0.97	A
			Co-60	pCi/L	133	133	1.00	A
	E6418-396	AP	Ce-141	pCi	148	146	1.01	A
			Cr-51	pCi	202	187	1.08	A
			Cs-134	pCi	103	102	1.01	A
			Cs-137	pCi	95.4	91.2	1.05	A
			Co-58	pCi	81.4	79.2	1.03	A
			Mn-54	pCi	113	116.0	0.97	A
			Fe-59	pCi	76.5	76.4	1.00	A
			Zn-65	pCi	122	139	0.88	A
			Co-60	pCi	108	101	1.07	A

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2008	E6417-396	Charcoal	I-131	pCi	65.8	74.1	0.89	A

(1) NCR 09-02 initiated to investigate the failure.

(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, 2008
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
January 2008	Quik^{tm} Response	Water	Sr-89	pCi/L	37.33	19.0	11.8 - 25.2	N (1)
			Sr-90	pCi/L	40.40	42.7	31.5 - 49.0	A
			Ba-133	pCi/L	87.8	90.5	76.2 - 99.6	A
			Cs-134	pCi/L	80.67	88.9	72.9 - 97.8	A
			Cs-137	pCi/L	222.33	231	208 - 256	A
			Co-60	pCi/L	98.9	101.0	90.9 - 113	A
			Zn-65	pCi/L	352	350	315 - 408	A
			Gr-A	pCi/L	13.0	12.7	6.02 - 18.7	A
			Gr-B	pCi/L	32.7	36.2	23.8 - 43.8	A
			H-3	pCi/L	11100	11300	9840 - 12400	A
January 2008	RAD 72	Water	Sr-89	pCi/L	69.0	65.3	53.0 - 73.4	A
			Sr-90	pCi/L	35.6	41.4	30.5 - 47.6	A
			Ba-133	pCi/L	25.9	25.7	20.0 - 29.5	A
			Cs-134	pCi/L	86.5	92.6	76.0 - 102	A
			Cs-137	pCi/L	155	158	142 - 176	A
			Co-60	pCi/L	16.0	14.4	11.4 - 18.7	A
			Zn-65	pCi/L	214	204	184 - 240	A
			Gr-A	pCi/L	13.3	14.8	7.15 - 21.2	A
			Gr-B	pCi/L	21.2	22.5	13.7 - 30.6	A
			I-131	pCi/L	22.8	23.6	19.6 - 28.0	A
			H-3	pCi/L	3390	3540	3000 - 3910	A
April 2008	Rad 73	Water	Sr-89	pCi/L	65.47	60.4	48.6 - 68.2	A
			Sr-90	pCi/L	39.80	39.2	28.8 - 45.1	A
			Ba-133	pCi/L	59.63	58.3	48.3 - 64.3	A
			Cs-134	pCi/L	45.00	46.6	37.4 - 51.3	A
			Cs-137	pCi/L	97.97	102	91.8 - 115	A
			Co-60	pCi/L	75.47	76.6	68.9 - 86.7	A
			Zn-65	pCi/L	109	106	95.4 - 126	A
			Gr-A	pCi/L	41.03	50.8	26.5 - 63.7	A
			Gr-B	pCi/L	50.20	51.4	35.0 - 58.4	A
			I-131	pCi/L	26.67	28.7	23.9 - 33.6	A
			H-3	pCi/L	11633	12000	10400 - 13200	A

(1) Could find no cause for Sr-89 failure. Sample sent to outside lab for verification, but the outside laboratory was unable to confirm our numbers or ERA numbers. Studies bracketing these results, RAD 71 and RAD 72, had acceptable Sr-89 results. NCR 08-03

(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, 2008
(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
January 2008	07-MaW18	Water	Cs-134	Bq/L	-0.26		(1)	A
			Cs-137	Bq/L	0.029		(1)	A
			Co-57	Bq/L	21	22.8	16.0 - 29.6	A
			Co-60	Bq/L	8.2	8.40	5.88 - 10.92	A
			H-3	Bq/L	473	472	330 - 614	A
			Mn-54	Bq/L	12	12.1	8.5 - 15.7	A
			Sr-90	Bq/L	10.70	11.4	7.98- 14.82	A
			Zn-65	Bq/L	15.6	16.3	11.4 - 21.2	A
	07-GrW18	Water	Gr-A	Bq/L	1.4	1.399	>0.0 - 2.798	A
			Gr-B	Bq/L	3.06	2.43	1.22 - 3.65	A
	07-MaS18	Soil	Cs-134	Bq/kg	790	854.0	598 - 1110	A
			Cs-137	Bq/kg	568	545	382 - 709	A
			Co-57	Bq/kg	424	421	295 - 547	A
			Co-60	Bq/kg	2.307	2.9	(2)	A
			Mn-54	Bq/kg	611	570	399 - 741	A
			K-40	Bq/kg	6.09	571	400 - 742	A
			Sr-90	Bq/kg	454	493.0	345 - 641	A
			Zn-65	Bq/kg	0.162		(1)	A
	07-RdF18	AP	Cs-134	Bq/sample	2.73	2.5200	1.76 - 3.28	A
			Cs-137	Bq/sample	2.88	2.7	1.89 - 3.51	A
			Co-57	Bq/sample	3.493	3.55	2.49 - 4.62	A
			Co-60	Bq/sample	1.357	1.31	0.92 - 1.70	A
			Mn-54	Bq/sample	0.006		(1)	A
			Sr-90	Bq/sample	1.61	1.548	1.084 - 2.012	A
			Zn-65	Bq/sample	2.59	2.04	1.43 - 2.65	A
	07-GrF18	AP	Gr-A	Bq/sample	0.131	0.348	>0.0 - 0.696	A
			Gr-B	Bq/sample	0.261	0.286	0.143 - 0.429	A
January 2008	07-RdV18	Vegetation	Cs-134	Bq/sample	5.25	6.28	4.40 - 8.16	A
			Cs-137	Bq/sample	3.13	3.41	2.39 - 4.43	A
			Co-57	Bq/sample	6.837	6.89	4.82 - 8.96	A
			Co-60	Bq/sample	2.44	2.77	1.94 - 3.60	A
			Mn-54	Bq/sample	4.45	4.74	3.32 - 6.16	A
			K-40	Bq/sample	61.3		(1)	
			Sr-90	Bq/sample	1.33	1.273	0.891 - 1.655	A
			Zn-65	Bq/sample	0.085		(1)	A
August 2008	08-MaW19	Water	Cs-134	Bq/L	17.1	19.5	13.7 - 25.4	A
			Cs-137	Bq/L	21.4	23.6	16.5 - 30.7	A
			Co-57	Bq/L	-0.044		(1)	A
			Co-60	Bq/L	10.8	11.6	8.1 - 15.1	A
			H-3	Bq/L	334	341	239 - 443	A
			Mn-54	Bq/L	13.0	13.7	9.6 - 17.8	A
			Sr-90	Bq/L	6.55	6.45	4.52- 8.39	A
			Zn-65	Bq/L	16.5	17.1	12.0 - 22.2	A

TABLE D-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
August 2008	08-GrW19	Water	Gr-A	Bq/L	0.0612	<0.56	(3)	A
			Gr-B	Bq/L	0.222	<1.85	(3)	A
	08-MaS19	Soil	Cs-134	Bq/kg	546	581	407 - 755	A
			Cs-137	Bq/kg	2.52	2.8	(2)	A
			Co-57	Bq/kg	340	333	233 - 433	A
			Co-60	Bq/kg	157	145.0	102 - 189	A
			Mn-54	Bq/kg	460	415	291 - 540	A
			K-40	Bq/kg	650	571	399 - 741	A
			Sr-90	Bq/kg	1.40		(1)	A
			Zn-65	Bq/kg	-1.53		(1)	A
	08-RdF19	AP	Cs-134	Bq/sample	2.46	2.6300	1.84 - 3.42	A
			Cs-137	Bq/sample	0.0063		(1)	A
			Co-57	Bq/sample	1.36	1.50	1.05 - 1.95	A
			Co-60	Bq/sample	0.0143		(1)	A
			Mn-54	Bq/sample	2.70	2.64	1.85 - 3.43	A
			Sr-90	Bq/sample	1.42	1.12	0.78 - 1.46	W
			Zn-65	Bq/sample	0.975	0.94	0.66 - 1.22	A
	08-GrF19	AP	Gr-A	Bq/sample	-0.0037		(4)	A
			Gr-B	Bq/sample	0.540	0.525	0.263 - 0.788	A
	08-RdV19	Vegetation	Cs-134	Bq/sample	4.36	5.5	3.9 - 7.2	W
			Cs-137	Bq/sample	-0.03		(1)	A
			Co-57	Bq/sample	6.72	7.1	5.0 - 9.2	A
			Co-60	Bq/sample	4.04	4.70	3.3 - 6.1	A
			Mn-54	Bq/sample	5.22	5.8	4.1 - 7.5	A
			K-40	Bq/sample	64.4		(1)	
			Sr-90	Bq/sample	1.62	1.9	1.3 - 2.5	A
			Zn-65	Bq/sample	6.160	6.9	4.8 - 9.0	A

(1) Not evaluated by MAPEP.

(2) Reported a statistically zero result.

(3) Designed to test the Safe Drinking Water screening levels. Labs reporting values less than ref values were found to be acceptable.

(4) False positive test.

(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.

APPENDIX E

ERRATA DATA

There is no errata data for 2008.

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APPENDIX F

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

Docket No: 50-010
50-237
50-249

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 and 3

Annual Radiological
Groundwater Protection Program Report

1 January Through 31 December 2008

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon SM
Nuclear

Dresden Nuclear Power Station
Norris, IL 60450

May 2009

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Appendices

I. Summary and Conclusions

Dresden Station is situated on approximately 600 acres of land that borders the Illinois River to the north and the Kankakee River to the east. This land is referred to as the owner-controlled area. The Dresden power plant itself takes up a small parcel of the owner-controlled area and is surrounded by a security fence. The security fence defines what is known as the Protected Area (P.A.).

The Dresden power plant has experienced a number of leaks from underground lines and spills from above ground systems containing radioactive water over its 40-year history. These incidents have created a number of areas of localized contamination within the P.A. Isotopic analyses of groundwater in many of these areas show measurable concentrations of tritium (H-3). In addition, Strontium (Sr-90) was detected just above the Lower Limit of Detectability (LLD) in one of the wells within the P.A.

Dresden participated in a fleetwide hydrogeologic investigation in during the summer of 2006 in an effort to characterized groundwater movement at each site. This investigation also compiled a list of the historic spills and leaks. Combining the tritium concentration in a locally contaminated area with the speed and direction of groundwater in the vicinity can produce a contaminated groundwater plume projection. If the plume of contaminated groundwater passes through the path of a groundwater monitoring well, it can be anticipated that the tritium concentration in this well will increase to some maximum concentration, then decrease over time.

The fleetwide Hydrogeologic Investigation Report (HIR) shows that groundwater movement on the Dresden site is very slow. In addition, there is a confining rock layer, the Maquoketa Shale layer, about 55 feet below the surface that impedes groundwater movement below this depth. The results of the HIR are available on: [http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm].

Dresden has a domestic water system that is supplied by two deep wells (1500 feet deep) that were installed about 50 years ago south of the P.A. Samples taken from domestic water supply and have never shown any detectable tritium concentration.

Tritium has a half-life of 12.3 years. This means that 40 years from now 90% of the tritium on site today will have decayed away to more stable elements.
Given the limited volume of contaminated groundwater on site, radioactive decay, slow groundwater movement, and dilution effects the conclusion of the HIR is that the operation of Dresden Nuclear Power Station had no adverse radiological impact on the environment. As a result there is little potential for contaminated groundwater on site to affect off-site drinking water.

II. Introduction

Radiological Groundwater Monitoring Program (RGPP):

Dresden has a Radiological Groundwater Monitoring Program (RGPP) that provides long-term monitoring intended to verify the fleet-wide hydrogeologic study conclusions. Dresden uses developed groundwater wells and surface water sample points in the RGPP.

The Dresden RGPP was established in 2006 and there have been no significant changes to this program. This program does not impact the operation of the plant and is independent of the REMP.

Developed groundwater wells are wells that were installed specifically for monitoring groundwater. These wells are equipped with screens and are properly sealed near the surface to avoid surface water intrusion. The wells were designed in accordance with appropriate codes and developed in accordance with appropriate standards and procedures. Dresden has groundwater monitoring wells identified as "shallow" (depths from 15 to 35 feet), "Intermediate" (depths from 35 to 55 feet) and "deep" (depths beyond 100 feet). All wells installed to a depth greater than 100 feet ("deep" wells) were found to be dry and removed from the RGPP. Surface water sample points are identified sample locations in the station's canals and cooling pond.

There are 71 sampling points in the RGPP:

*Dresden has 39 developed groundwater monitoring wells within the Protected Area. Some of these wells form a ring just inside the security fence and the remaining wells were installed near underground plant system piping that contains radioactive water.

*Dresden has 26 developed groundwater monitoring wells outside the P.A. the majority of which form a ring just within the perimeter of the property.

*Dresden has 6 surface water monitoring locations on the owner-controlled area sampled as part of the Dresden RGPP. These consist of one sample from each of the 5 different canals and one sample from the cooling pond.

The Dresden site-specific RGPP procedure identifies the historic 'events' that would affect the individual RGPP sample results. This procedure identifies threshold values for each sample point, which if exceeded, could be an indication of a new spill from an above ground system or a new leak in an underground pipe containing tritiated water.

The RGPP sample points are currently sampled on a frequency of twice per year. During 2008, there were 282 analyses that were performed on 140 samples from 71 sample points.

Supplemental Radiological Groundwater Monitoring Program (SRGPP):

Dresden also has a Supplemental Radiological Groundwater Monitoring Program (SRGPP) that provides short-term monitoring of a limited selection of monitoring points, mostly within the P.A., intended to identity relatively rapid changes in the groundwater tritium concentrations.

Sentinel Wells, sometimes referred to as "baby wells" are wells that were installed to monitor local shallow groundwater; typically in associated with a historic underground pipe leak. These wells are not constructed to code or developed to a standard. Most sentinel wells are from 6 to 12 feet deep and consist of 2" PVC pipe without screens. Many sentinel wells were installed near an underground HPCI suction line and were subsequently removed as part of the excavation and repair of that line.

Dresden has two basic storm water runoff sewer systems within the P.A: one sewer-system routes to the east, then north, and discharges into the Unit 1 intake canal, the second sewer-system routes to the west, then north, through a large Oil Separator, and discharges to the hot canal. Both the Unit 1 intake canal and the hot canal eventually route to the cooling pond.

A. Objectives of the RGPP

The Objective of the RGPP is to provide long-term monitoring intended to verify the fleet-wide hydrogeologic study conclusions. The objective of the SRGPP is to provide indication of short-term changes to groundwater tritium concentrations within the P.A.

If isotopic results of groundwater samples exceed the thresholds specified in this procedure it could be an indication of a new spill from an above ground system or a new leak in an underground pipe containing tritiated water.

Specific Objectives include:

1. Perform routine water sampling and radiological analysis of water from selected locations.

2. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.

3. Regularly assess analytical results to identify adverse trends.

4. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

1. Dresden Nuclear Power Station will continue to perform routine sampling and radiological analysis of water from selected locations.

2. Dresden Nuclear Power Station has implemented procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.

3. Dresden Nuclear Power Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

4. If an adverse trend in groundwater monitoring analytical results is identified, further investigation will be undertaken. If the investigation identifies a leak or unidentified spill, corrective actions will be implemented.

C. Program Description

Dresden has a Radiological Groundwater Monitoring Program (RGPP) that provides long-term monitoring intended to verify the fleet-wide hydrogeologic study conclusions. Dresden uses 71 developed groundwater wells and surface water sample points in the RGPP.

1. Sample Collection

   Sample locations can be found in Table A–1, Figures A–1 and A–2, and, Appendix A.

   Groundwater and Surface Water

   Water samples are collected in accordance with the schedule delineated in the Dresden site-specific RGPP procedures. Analytical laboratories are subject to internal quality assurance programs, industry crosscheck programs, as well as nuclear industry audits. Station personnel review and evaluate the analytical results.

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 Teledyne Brown Engineers (TBE) to analyze the environmental samples for radioactivity for the Dresden Nuclear Power Station RGPP in 2008.
In order to achieve the stated objectives, the current program includes the

following analyses:

1. Concentrations of gamma emitters in groundwater and surface water.

2. Concentrations of strontium in groundwater and surface water.

3. Concentrations of tritium in groundwater and surface water.

B. Data Interpretation

The radiological data collected prior to Dresden Nuclear Power Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Dresden Nuclear Power 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 ± the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

   Analytical uncertainties are reported at the 95% confidence level in

this report for reporting consistency with the AREOR. Gamma spectroscopy results for each type of sample were grouped as follows:

For groundwater 12 nuclides, K-40, 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.

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 Dresden Nuclear Power Nuclear Power Station, Commonwealth Edison Company, Annual Report 1986, May 1987.

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 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. These sample results cannot be distinguished as different from background at this concentration.

IV. Results and Discussion

Dresden Station initiated a Radiological Groundwater Protection Program (RGPP) in 2006.

A. Groundwater Results

Groundwater

Samples were collected from on and off-site wells throughout the year in accordance with Dresden's RGPP. Analytical results and anomalies are discussed below.

Tritium

Of the 39 developed groundwater-monitoring wells inside the Protected Area, 23 wells show some level of tritium contamination ranging from just above LLD to 106,000 pCi/L. Of the 26 developed groundwater-monitoring wells outside the Protected Area, 12 wells show tritium contamination ranging from just above LLD to 21,100 pCi/L. One of these wells is located near the radwaste discharge line (about 200 yards north of the plant) that ruptured in 1999. The other well is about 1500 feet south of the Security Check point adjacent to the hot canal that had measurable concentrations of tritium from an upstream source.

Gamma Emitters and Strontium

Potassium-40 was detected in four of 64 samples. The concentrations ranged from 29 pCi/liter to 57 pCi/liter. No other gamma emitting nuclides were detected. (Table B–I.2, Appendix B).

B. Surface Water Results

Surface Water

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

Tritium

Samples from all locations were analyzed for tritium activity (Table B-II.1, Appendix B). Tritium values ranged from the detection limit to 3,580 pCi/l. The measurable concentrations of tritium are from an upstream source.

Gamma Emitters and Strontium

Potassium-40 was detected in one of six samples, with a concentration of 46 pCi/liter. No other gamma emitting nuclides were detected. (Table B–II.2, Appendix B).

C. Drinking Water Well Survey

A drinking water well survey was conducted during the summer 2006 by CRA (CRA 2006) around the Dresden Nuclear Power Station. No tritium was detected in the drinking water source.

D. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE and Environmental Inc. (Midwest Labs) are presented in the AREOR.

E. Leaks, Spills, and Releases

In the summer of 2004 elevated tritium concentrations were identified in sentinel wells by the HPCI suction line near the HPCI room. This line was found leaking and about one-half of the line was excavated and replaced.

In January of 2006 there was an increase in tritium concentration in two sentinel wells near the HPCI suction line adjacent to the 2/3B Contaminated Storage Tank (2/3B CST). This suggested that the other half of the HPCI suction line was leaking. The line was excavated and pressure tested. It was determined that this line was not leaking. The line did show some indications

of degradation and as a result, this half of the line was replaced.

There have been no incidences of a leaks or spills at Dresden Station in 2008.

F. Trends

The tritium concentration in the water found near the 2004 HPCI leak is traveling to the west. Wells in the vicinity show that tritium levels have been trending down slightly.

G. Investigations

Following a heavy rain in August of 2007, water was flowing into the Cribhouse basement through an underground electrical penetration. The water contained tritium at a concentration above LLD. Samples taken the next day were showed higher concentrations of tritium suggesting an increasing trend.

Further monitoring showed the tritium concentration was steady for a few days then started decreasing. The flow decrease over the next several days then stopped completely. If this were a leak of an underground piping system we would expect that the flow would continue and the tritium concentration would continue to increase by several orders of magnitude.

There is currently no flow through any Cribhouse electrical penetrations and Dresden continues to monitor in the vicinity of the Cribhouse basement.

H. Actions Taken

1. Compensatory Actions

   No compensatory actions were taken as a result of the RGPP in 2008.

2. Actions to Recover/Reverse Plumes

   No actions were taken by Dresden Station if an effort to reverse plume movement.

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APPENDIX A

LOCATION DISTANCE

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2008

Site	Site Type	Location
DSP-105	Monitoring Well	30 feet east of the east wall of the EM Shop
DSP-106	Monitoring Well	65 feet east of east wall of EM Shop
DSP-107	Monitoring Well	9 feet east of the east Unit 1 Fuel Pool wall
DSP-108	Monitoring Well	40 ft east of the Unit 1 Sphere
DSP-117	Monitoring Well	Northeast of Unit 1 Sphere; 825 feet west of Ross Bridge
DSP-121	Monitoring Well	72 feet north of 2/3 Intake Canal fence
DSP-122	Monitoring Well	50 feet north of the Radwaste Tank Farm
DSP-123	Monitoring Well	Northeast corner of the Unit 1 Off-gas Building
DSP-124	Monitoring Well	9 feet south of Floor Drain Collector Tank
DSP-125	Monitoring Well	Northeast corner of the Unit 2/3A CST
DSP-126	Monitoring Well	21 feet northwest of the northwest bend in road behind Training Building
DSP-147	Monitoring Well	325 feet west of Telemetry Bridge
DSP-148	Monitoring Well	130 feet southeast of the Flow Regulating Station building
DSP-149R	Monitoring Well	35 feet south by southwest of the 138 KV yard fence
DSP-150	Monitoring Well	85 feet east of the northeast corner of the Unit 1 Spent Fuel Pool pad
DSP-151	Monitoring Well	65 feet north of the northeast corner of the Storeroom
DSP-152	Monitoring Well	210 feet south by southeast of the southeast corner of Maintenance Garage
DSP-153	Monitoring Well	150 feet east of the southeast corner of liquid hydrogen tank farm fence
DSP-154	Monitoring Well	33 feet west of the track; 165 feet east of the Security Checkpoint
DSP-156	Monitoring Well	70 feet east by northeast of the northwest corner of 138 KV yard fence
DSP-157-I (M)	Monitoring Well	25 feet south of the south edge of the Employee Parking lot
DSP-157-S	Monitoring Well	25 feet south of the south edge of the Employee Parking lot
DSP-158-I (M)	Monitoring Well	53 feet west of the Kankakee River; 33 feet west of the cinder track
DSP-158-S	Monitoring Well	50 feet west of the Kankakee River; 33 feet west of the cinder track
DSP-159-I (M)	Monitoring Well	250 feet west of the Thorsen house; 450 ft south of the plant access gate
DSP-159-S	Monitoring Well	251 feet west of the Thorsen house; 450 ft south of the plant access gate
MW-DN-101-I	Monitoring Well	60 feet north of the Unit 1 Diesel Fuel Storage
MW-DN-101-S	Monitoring Well	60 feet north of the Unit 1 Diesel Fuel Storage
MW-DN-102-I	Monitoring Well	12 feet south of the southeast corner of the MUDS Building
MW-DN-102-S	Monitoring Well	13 feet south of the southeast corner of the MUDS Building
MW-DN-103-I	Monitoring Well	280 feet west of the northwest corner of N-GET Building
MW-DN-103-S	Monitoring Well	281 feet west of the northwest corner of N-GET Building
MW-DN-104-S	Monitoring Well	50 feet north of Radwaste Tank Farm
MW-DN-105-S	Monitoring Well	65 feet north of the northeast corner of the Storeroom
MW-DN-106-S	Monitoring Well	75 feet north of the 2/3 Intake Canal fence; east of the Unit 1 Intake Canal
MW-DN-107-S	Monitoring Well	15 feet west by southwest of the Unit 1 CST
MW-DN-108-I	Monitoring Well	7 feet southwest of the southwest corner of the Unit 1 Cribhouse
MW-DN-109-I	Monitoring Well	8 feet north of Chemistry Building
MW-DN-109-S	Monitoring Well	8 feet north of Chemistry Building
MW-DN-110-I	Monitoring Well	25 feet west of the Waste Water Treatment (WWT) Building
MW-DN-110-S	Monitoring Well	25 feet west of the Waste Water Treatment (WWT) Building
MW-DN-111-S	Monitoring Well	9 feet east of the Floor Drain Collector Tank
MW-DN-112-I	Monitoring Well	100 feet south of the Chemistry Building

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2008

Site	Site Type	Location
MW-DN-112-S	Monitoring Well	100 feet south of the Chemistry Building
MW-DN-113-I	Monitoring Well	90 feet west of the southwest corner of the Administration Building
MW-DN-113-S	Monitoring Well	91 feet west of the southwest corner of the Administration Building
MW-DN-114-I	Monitoring Well	50 feet east of the Unit 1 Clean Demineralized Water Tank
MW-DN-114-S	Monitoring Well	8 feet southwest of the Radiation protection Dept west access doors
MW-DN-115-I	Monitoring Well	11 feet south of Instrument Maintenance Shop
MW-DN-115-S	Monitoring Well	12 feet south of Instrument Maintenance Shop
MW-DN-116-I	Monitoring Well	75 feet south of the Calgon Building roll-up door
MW-DN-116-S	Monitoring Well	75 feet south of the Calgon Building roll-up door
MW-DN-117-I	Monitoring Well	35 feet east by northeast of the Unit 1 Stack
MW-DN-118-S	Monitoring Well	Southeast corner of the Unit 1 Fuel Pool
MW-DN-119-I	Monitoring Well	20 feet east by northeast of the Unit 1 Sewage Ejector Building
MW-DN-119-S	Monitoring Well	21 feet east by northeast of the Unit 1 Sewage Ejector Building
MW-DN-120-I	Monitoring Well	45 feet north by northeast of the Ross Bridge railing
MW-DN-120-S	Monitoring Well	46 feet north by northeast of the Ross Bridge railing
MW-DN-121-S	Monitoring Well	7 feet west of the dirt road; 42 feet east of the 345KV yard fence
MW-DN-122-I	Monitoring Well	150 feet north of Heineke Road; northeast of the G.E. Fuel Storage Facility
MW-DN-122-S	Monitoring Well	150 feet north of Heineke Road; northeast of the G.E. Fuel Storage Facility
MW-DN-123-I	Monitoring Well	400 feet west of the Thorsen house; west of the Cold Canal
MW-DN-123-S	Monitoring Well	400 feet west of the Thorsen house; west of the Cold Canal
MW-DN-124-I	Monitoring Well	10 feet south of the liquid nitrogen inerting tanks
MW-DN-124-S	Monitoring Well	10 feet south of the liquid nitrogen inerting tanks
SW-DN-101	Surface Water	Unit 2/3 Intake (DSP50) at the Ross Bridge
SW-DN-102	Surface Water	Unit 2/3 Discharge (DSP20) at the Telemetry Bridge
SW-DN-103	Surface Water	Unit 2/3 Return Canal at the Discharge to the Intake Canal
SW-DN-104	Surface Water	Cold Canal (DSP34A) at the Cooling Tower walkway bridge
SW-DN-105	Surface Water	Hot Canal (DSP34B) at the Cooling Tower walkway bridge
SW-DN-106	Surface Water	Cooling Pond - Pool II at the east side of the Covered Bridge

APPENDIX B

DATA TABLES

TABLE B-I.1 CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
DSP-105	05/06/08	< 191	
DSP-105	10/09/08	300 ± 109	< 1
DSP-106	05/06/08	2780 ± 356	
DSP-106	10/09/08	3120 ± 371	< 1
DSP-107	10/09/08	7130 ± 769	< 1
DSP-108	10/09/08	1530 ± 218	< 1
DSP-117	05/12/08	< 177	
DSP-117	10/14/08	< 171	< 1
DSP-121	05/12/08	< 175	
DSP-121	10/14/08	< 171	< 1
DSP-122	05/08/08	3250 ± 402	
DSP-122	10/08/08	2890 ± 350	< 1
DSP-123	05/08/08	11900 ± 1260	
DSP-123	10/08/08	11900 ± 1250	< 1
DSP-124	05/09/08	9070 ± 981	
DSP-124	10/10/08	21100 ± 2160	< 1
DSP-125	05/07/08	207 ± 123	
DSP-125	10/10/08	441 ± 120	< 1
DSP-126	05/05/08	< 189	
DSP-126	10/13/08	< 158	< 1
DSP-147	05/07/08	< 190	
DSP-147	10/13/08	< 162	< 1
DSP-148	05/12/08	243 ± 117	
DSP-148	10/15/08	265 ± 120	< 1
DSP-149R	05/12/08	414 ± 126	
DSP-149R	10/15/08	366 ± 127	< 1
DSP-150	05/06/08	< 187	
DSP-150	10/09/08	< 162	< 1
DSP-151	05/06/08	< 191	
DSP-151	10/09/08	< 160	< 1
DSP-152	05/05/08	< 185	
DSP-152	10/13/08	< 172	< 1
DSP-153	05/05/08	< 187	
DSP-153	10/13/08	< 170	< 1
DSP-154	05/07/08	< 188	
DSP-154	10/14/08	< 179	< 2
DSP-156	05/12/08	252 ± 117	
DSP-156	10/15/08	190 ± 120	< 2
DSP-157M	05/05/08	< 190	
DSP-157M	10/13/08	< 165	< 2
DSP-157S	05/05/08	< 187	
DSP-157S	10/13/08	< 163	< 1
DSP-158M	05/05/08	< 190	
DSP-158M	10/14/08	< 163	< 2
DSP-158S	05/05/08	< 193	
DSP-158S	10/14/08	< 157	< 1
DSP-159M	05/12/08	356 ± 122	
DSP-159M	10/14/08	386 ± 120	< 1
DSP-159S	05/12/08	< 177	
DSP-159S	10/14/08	< 161	< 1
DSP-107	05/06/08	6140 ± 680	
DSP-108	05/06/08	1260 ± 199	
MW-DN-103I	05/05/08	< 194	

TABLE B-I.1 CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
MW-DN-103S	05/05/08	< 193	
MW-DN-101I	05/05/08	1780 ± 253	
MW-DN-101I	10/08/08	1660 ± 218	< 1
MW-DN-101S	05/05/08	< 191	
MW-DN-101S	10/08/08	< 146	< 1
MW-DN-102I	05/07/08	< 191	
MW-DN-102I	10/07/08	230 ± 110	< 1
MW-DN-102S	05/07/08	< 190	
MW-DN-102S	10/07/08	219 ± 109	< 1
MW-DN-103I	10/13/08	< 157	< 1
MW-DN-103S	10/13/08	< 153	< 1
MW-DN-104S	05/08/08	< 190	
MW-DN-104S	10/08/08	639 ± 134	< 1
MW-DN-105S	05/06/08	< 190	
MW-DN-105S	10/09/08	< 145	< 1
MW-DN-106S	05/12/08	< 176	
MW-DN-106S	10/14/08	< 161	< 1
MW-DN-107S	05/07/08	1070 ± 187	
MW-DN-107S	10/10/08	2980 ± 339	< 1
MW-DN-108I	05/06/08	< 177	
MW-DN-108I	10/08/08	326 ± 117	< 2
MW-DN-109I	05/08/08	< 182	
MW-DN-109I	10/07/08	313 ± 116	< 2
MW-DN-109S	05/08/08	320 ± 128	
MW-DN-109S	10/07/08	329 ± 116	< 1
MW-DN-110I	05/08/08	453 ± 132	
MW-DN-110I	10/07/08	421 ± 123	< 1
MW-DN-110S	05/08/08	< 180	
MW-DN-110S	10/07/08	181 ± 106	< 2
MW-DN-111S	05/09/08	259 ± 122	
MW-DN-111S	10/10/08	474 ± 124	< 1
MW-DN-112I	10/07/08	1550 ± 207	< 2
MW-DN-112S	10/07/08	< 157	< 1
MW-DN-113I	05/06/08	< 180	
MW-DN-113I	10/07/08	< 155	< 1
MW-DN-113S	05/07/08	238 ± 123	
MW-DN-113S	10/07/08	229 ± 108	< 2
MW-DN-114I	05/07/08	4530 ± 516	
MW-DN-114I	10/10/08	9200 ± 962	< 1
MW-DN-114S	05/07/08	1620 ± 234	
MW-DN-114S	10/10/08	1470 ± 199	< 1
MW-DN-115I	05/07/08	190 ± 119	
MW-DN-115I	10/09/08	194 ± 103	< 1
MW-DN-115S	05/07/08	< 183	
MW-DN-115S	10/09/08	< 168	< 1
MW-DN-116I	05/08/08	3890 ± 453	
MW-DN-116I	10/08/08	2870 ± 354	< 1
MW-DN-116S	05/08/08	407 ± 128	
MW-DN-116S	10/08/08	412 ± 125	< 1
MW-DN-120I	05/12/08	< 177	
MW-DN-120I	10/14/08	< 161	< 1
MW-DN-120S	05/12/08	< 176	

TABLE B-I.1 CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
MW-DN-120S	10/14/08	< 159	< 1
MW-DN-121S	10/13/08	< 161	< 2
MW-DN-122I	10/13/08	< 157	< 1
MW-DN-122S	10/13/08	< 155	< 1
MW-DN-123I	05/07/08	< 192	
MW-DN-123I	10/13/08	< 145	< 1
MW-DN-123S	05/07/08	< 191	
MW-DN-123S	10/13/08	< 153	< 1
MW-DN-124I	05/09/08	106000 ± 10600	
MW-DN-124I	10/10/08	94900 ± 9550	< 1
MW-DN-124S	05/09/08	92300 ± 9210	
MW-DN-124S	10/10/08	101000 ± 10100	< 2
MW-DN-117I	05/08/08	332 ± 128	
MW-DN-117I	10/08/08	< 169	< 2
MW-DN-118S	05/06/08	2420 ± 310	
MW-DN-118S	10/09/08	1360 ± 210	< 1
MW-DN-119I	05/05/08	1180 ± 192	
MW-DN-119I	10/08/08	1860 ± 256	< 1
MW-DN-119S	05/05/08	< 183	
MW-DN-119S	10/08/08	< 170	< 1
MW-DN-121S	05/07/08	< 188	
MW-DN-122I	05/07/08	< 188	
MW-DN-122S	05/07/08	< 189	

TABLE B-I.2 CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
DSP-105	10/09/08	< 15	< 11	< 1	< 1	< 4	< 2	< 3	< 2	< 3	< 35	< 1	< 1	< 32	< 11
DSP-106	10/09/08	< 20	< 14	< 2	< 2	< 5	< 1	< 4	< 2	< 4	< 44	< 1	< 1	< 42	< 12
DSP-107	10/09/08	< 19	< 14	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 38	< 1	< 2	< 41	< 14
DSP-108	10/09/08	< 17	< 11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 40	< 1	< 1	< 39	< 13
DSP-117	10/14/08	< 11	< 19	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 58	< 1	< 1	< 37	< 14
DSP-121	10/14/08	< 12	< 19	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 67	< 1	< 1	< 44	< 14
DSP-122	10/08/08	< 18	< 10	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 45	< 1	< 1	< 38	< 13
DSP-123	10/08/08	< 22	< 13	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 56	< 1	< 1	< 50	< 14
DSP-124	10/10/08	< 21	< 14	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 41	< 1	< 2	< 43	< 14
DSP-125	10/10/08	< 22	< 14	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 47	< 2	< 2	< 47	< 14
DSP-126	10/13/08	< 11	< 5	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 75	< 1	< 1	< 45	< 14
DSP-147	10/13/08	< 11	< 22	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 66	< 1	< 1	< 44	< 13
DSP-148	10/15/08	< 10	< 17	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 55	< 1	< 1	< 36	< 11
DSP-149R	10/15/08	< 11	< 20	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 62	< 1	< 1	< 37	< 13
DSP-150	10/09/08	< 17	< 11	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 40	< 1	< 1	< 35	< 11
DSP-151	10/09/08	< 17	< 32	< 1	< 2	< 5	< 1	< 2	< 2	< 3	< 65	< 1	< 1	< 50	< 15
DSP-152	10/13/08	< 11	< 16	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 64	< 1	< 1	< 38	< 11
DSP-153	10/13/08	< 10	< 5	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 58	< 1	< 1	< 38	< 11
DSP-154	10/14/08	< 9	29 ± 19	< 1	< 1	< 2	< 0	< 1	< 1	< 2	< 57	< 1	< 1	< 35	< 10
DSP-156	10/15/08	< 13	< 23	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 71	< 1	< 1	< 54	< 11
DSP-157M	10/13/08	< 11	< 21	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 68	< 1	< 1	< 43	< 14
DSP-157S	10/13/08	< 11	< 5	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 66	< 1	< 1	< 40	< 14
DSP-158M	10/14/08	< 14	< 25	< 1	< 1	< 4	< 1	< 2	< 2	< 2	< 87	< 1	< 1	< 56	< 14
DSP-158S	10/14/08	< 11	< 19	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 67	< 1	< 1	< 39	< 13
DSP-159M	10/14/08	< 12	< 6	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 74	< 1	< 1	< 43	< 11
DSP-159S	10/14/08	< 12	< 6	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 70	< 1	< 1	< 47	< 12
MW-DN-101I	10/08/08	< 20	< 39	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 30	< 2	< 2	< 36	< 13
MW-DN-101S	10/08/08	< 21	44 ± 28	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 34	< 2	< 2	< 39	< 11
MW-DN-102I	10/07/08	< 35	< 27	< 3	< 4	< 9	< 3	< 6	< 4	< 7	< 35	< 3	< 3	< 44	< 15
MW-DN-102S	10/07/08	< 20	< 13	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 34	< 1	< 2	< 36	< 11
MW-DN-103I	10/13/08	< 10	< 6	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 85	< 1	< 1	< 44	< 14
MW-DN-103S	10/13/08	< 10	< 19	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 73	< 1	< 1	< 44	< 15
MW-DN-104S	10/08/08	< 25	< 16	< 2	< 2	< 6	< 2	< 4	< 3	< 5	< 41	< 2	< 2	< 45	< 13

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-DN-105S	10/09/08	< 21	47 ± 25	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 35	< 2	< 2	< 37	< 12
MW-DN-106S	10/14/08	< 12	< 6	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 72	< 1	< 1	< 41	< 15
MW-DN-107S	10/10/08	< 22	< 18	< 2	< 2	< 6	< 2	< 4	< 3	< 5	< 32	< 2	< 2	< 39	< 14
MW-DN-108I	10/08/08	38 ± 22	< 16	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 39	< 2	< 2	< 43	< 13
MW-DN-109I	10/07/08	< 28	< 44	< 3	< 3	< 7	< 3	< 5	< 3	< 6	< 28	< 2	< 3	< 39	< 13
MW-DN-109S	10/07/08	< 24	57 ± 27	< 2	< 2	< 7	< 2	< 4	< 3	< 4	< 44	< 2	< 2	< 49	< 15
MW-DN-110I	10/07/08	< 20	< 14	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 35	< 1	< 2	< 38	< 12
MW-DN-110S	10/07/08	< 22	< 16	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 42	< 2	< 2	< 41	< 14
MW-DN-111S	10/10/08	< 21	< 14	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 32	< 2	< 2	< 33	< 11
MW-DN-112I	10/07/08	< 21	< 14	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 41	< 1	< 2	< 41	< 14
MW-DN-112S	10/07/08	< 20	< 30	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 42	< 1	< 2	< 41	< 13
MW-DN-113I	10/07/08	< 19	< 37	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 39	< 1	< 2	< 41	< 12
MW-DN-113S	10/07/08	< 20	< 32	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 39	< 1	< 2	< 40	< 13
MW-DN-114I	10/10/08	< 20	< 30	< 2	< 2	< 5	< 1	< 3	< 2	< 3	< 38	< 1	< 2	< 39	< 11
MW-DN-114S	10/10/08	< 19	< 13	< 1	< 2	< 4	< 2	< 3	< 2	< 4	< 36	< 1	< 2	< 38	< 12
MW-DN-115I	10/09/08	< 25	< 35	< 2	< 2	< 6	< 2	< 4	< 3	< 5	< 48	< 2	< 2	< 47	< 15
MW-DN-115S	10/09/08	< 21	< 15	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 41	< 2	< 2	< 41	< 14
MW-DN-116I	10/08/08	< 22	< 16	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 49	< 2	< 2	< 46	< 15
MW-DN-116S	10/08/08	< 22	< 35	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 53	< 1	< 2	< 49	< 13
MW-DN-117I	10/08/08	< 19	< 13	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 41	< 1	< 2	< 37	< 13
MW-DN-118S	10/09/08	< 21	< 44	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 44	< 1	< 2	< 47	< 15
MW-DN-119I	10/08/08	< 22	< 13	< 2	< 2	< 5	< 1	< 3	< 2	< 4	< 49	< 1	< 1	< 46	< 13
MW-DN-119S	10/08/08	< 21	< 14	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 46	< 1	< 2	< 46	< 14
MW-DN-120I	10/14/08	< 11	< 5	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 72	< 1	< 1	< 40	< 14
MW-DN-120S	10/14/08	< 11	< 20	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 73	< 1	< 1	< 45	< 15
MW-DN-121S	10/13/08	< 11	< 17	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 71	< 1	< 1	< 46	< 14
MW-DN-122I	10/13/08	< 13	< 7	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 101	< 1	< 1	< 55	< 15
MW-DN-122S	10/13/08	< 12	< 5	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 89	< 1	< 1	< 50	< 14
MW-DN-123I	10/13/08	< 11	< 6	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 87	< 1	< 1	< 44	< 14
MW-DN-123S	10/13/08	< 10	< 20	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 89	< 1	< 1	< 54	< 15
MW-DN-124I	10/10/08	< 23	< 37	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 45	< 2	< 2	< 46	< 13
MW-DN-124S	10/10/08	< 19	< 13	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 37	< 1	< 1	< 38	< 11

TABLE B-II.1 CONCENTRATIONS OF TRITIUM AND STRONIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
SW-DN-101	05/12/08	3580 ± 420	
SW-DN-101	10/15/08	< 145	< 1
SW-DN-102	05/12/08	1550 ± 223	
SW-DN-102	10/15/08	265 ± 105	< 1
SW-DN-103	05/12/08	1450 ± 213	
SW-DN-103	10/15/08	183 ± 102	< 1
SW-DN-104	05/12/08	1470 ± 215	
SW-DN-104	10/15/08	419 ± 118	< 1
SW-DN-105	05/12/08	1540 ± 222	
SW-DN-105	10/15/08	199 ± 108	< 1
SW-DN-106	05/12/08	1240 ± 195	
SW-DN-106	10/15/08	229 ± 110	< 1

TABLE B-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
SW-DN-101	10/15/08	< 10	< 18	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 73	< 1	< 1	< 39	< 11
SW-DN-102	10/15/08	< 10	< 4	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 66	< 1	< 1	< 39	< 15
SW-DN-103	10/15/08	< 14	46 ± 27	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 79	< 1	< 1	< 53	< 13
SW-DN-104	10/15/08	< 11	< 6	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 77	< 1	< 1	< 44	< 12
SW-DN-105	10/15/08	< 13	< 6	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 97	< 1	< 1	< 56	< 14
SW-DN-106	10/15/08	< 10	< 7	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 77	< 1	< 1	< 43	< 15