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DRESDEN NUCLEAR POWER STATION UNITS 1, 2 and 3

Annual Radiological
Environmental Operating Report

1 January through 31 December 2017

Prepared By
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Environmental Services



Exelon Generation®

Dresden Nuclear Power Station
Morris, IL 60450

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Dresden Nuclear Power Station (DNPS) of Exelon covers the period 1 January 2017 through 31 December 2017. During that time period 2,019 analyses were performed on 1,882 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.

In 2017, the Dresden Nuclear Power Station released to the environment through the radioactive effluent liquid and gaseous pathways approximately $4.89\text{E}+01$ curies of fission and activation gasses, $2.90\text{E}+01$ curies of Carbon-14 (C-14) and approximately $1.23\text{E}+01$ curies of tritium. The dose from both liquid and gaseous effluents was conservatively calculated for the Maximum Exposed Member of the Public. The results of those calculations and their comparison to the allowable limits are excerpted from the Dresden Generating Station 2017 Annual Radioactive Effluent Release Report (Radiological Impact on Man, starting at page 79):

1. Doses to a Member of the Public due to Liquid Releases in 2017 (from 01/01/2017 to 12/31/2017):

UNITS 1, 2, 3
Total Body: $6.42\text{E}-07$ mrem
Organ: $6.42\text{E}-07$ mrem

UNIT 1
Total Body: N/A
Organ: N/A

UNIT 2
Total Body: $3.21\text{E}-07$ mrem
Organ: $3.21\text{E}-07$ mrem

UNIT 3
Total Body: $3.21\text{E}-07$ mrem
Organ: $3.21\text{E}-07$ mrem

The above annual liquid dose values are reported per Dresden-site (UNITS 1,2,3) as well as per each individual reactor unit (UNIT 1, UNIT 2, UNIT 3). Regulatory annual liquid dose limits are listed on page 1 section 1.d.3) and section 1.d.4), of the 2017 Annual Radioactive Effluent Release Report as well as in Dresden ODCM. The above annual liquid dose values are well below any regulatory limits.

2. Doses to a Member of the Public due to Gaseous Releases in 2017 (from 01/01/2017 to 12/31/2017):

UNITS 1, 2, 3

Gamma air (fission and activation gases): 1.58E-03 mrad

Beta air (fission and activation gases): 8.32E-05 mrad

Total Body (noble gases): 1.05E-03 mrem

Skin (noble gases): 1.79E-03 mrem

Organ - bone (radioiodines/tritium/particulates): 8.89E-02 mrem

UNIT 1

Gamma air (fission and activation gases): N/A

Beta air (fission and activation gases): N/A

Total Body (noble gases): N/A

Skin (noble gases): N/A

Organ - bone (radioiodines/tritium/particulates): 2.71E-03 mrem

UNIT 2

Gamma air (fission and activation gases): 6.46E-04 mrad

Beta air (fission and activation gases): 3.46E-05 mrad

Total Body (noble gases): 4.29E-04 mrem

Skin (noble gases): 7.35E-04 mrem

Organ - bone (radioiodines/tritium/particulates): 4.24E-02 mrem

UNIT 3

Gamma air (fission and activation gases): 9.29E-04 mrad

Beta air (fission and activation gases): 4.86E-05 mrad

Total Body (noble gases): 6.17E-04 mrem

Skin (noble gases): 1.05E-03 mrem

Organ - bone (radioiodines/tritium/particulates): 4.53E-02 mrem

The above annual gaseous dose values are reported per Dresden-site (UNITS 1,2,3) as well as per each individual reactor unit (UNIT 1, UNIT 2, UNIT 3). Regulatory annual gaseous dose limits are listed on page 1 section 1.a. and section 1.b.c., of the 2017 Annual Radioactive Effluent Release Report as well as in Dresden ODCM. The above annual gaseous dose values are well below any regulatory limits.

3. Doses to a Member of the Public due to Direct Radiation in 2017 (from 01/01/2017 to 12/31/2017):

UNITS 1, 2, 3

Total Body (skyshine): 8.78E+00 mrem

UNIT 1

Total Body (skyshine): N/A

UNIT 2

Total Body (skyshine): 4.21E+00 mrem

UNIT 3

Total Body (skyshine): 4.57E+00 mrem

The above annual direct dose values are reported per Dresden-site (UNITS 1,2,3) as well as per each individual reactor unit (UNIT 1, UNIT 2, UNIT 3). These numbers are calculated per ODCM methodologies, and are used to demonstrate compliance with 40CFR190 total dose limit requirements listed on page 1 section 1.e, of the 2017 Annual Radioactive Effluent Release Report as well as in Dresden ODCM.

4. Total body doses to the population and average doses to individuals in the population from all receiving-water-related-pathways are not applicable to Dresden Station. No downstream drinking water pathway exist within the specified distance of 10 kilometers (6.2 miles).
5. Total body doses to the population and average doses to individuals in the population from gaseous effluents to a distance of 50 miles from the site are not applicable to Dresden Station.
6. Doses from liquid and gaseous effluent to members of the public due to their activities inside the site boundary for the report period are not applicable to Dresden Station. Any member of the public who is onsite for a significant period of time is issued an Optical Stimulated Luminescent Dosimeter (OSLD) to monitor direct radiation exposure.
7. Liquid and Gaseous Effluent Radiation Monitors and Instrumentation Unavailability for the Period Beyond the Requirements of the ODCM, Including Sampling Deviation: For the report period, there were no radiation monitors that exceeded the ODCM-allowed inoperability time.
8. 40 CFR 190 / 10 CFR 72 Compliance:

The General Electric Hitachi Nuclear Energy Morris Operation (GEH Morris Operation) facility is physically located near Dresden Station, hence it is considered in the evaluation of the uranium fuel cycle on members of the public in the general environment.

Dresden decommissioning activities (Unit 1) and operations (Units 2 and 3) resulted in a maximum 8.89E-02 mrem organ dose and 8.78E+00 mrem total body dose. The Radiological Environmental Monitoring Program (REMP) direct radiation monitoring at or near the site boundary demonstrates that total body dose calculations to account for skyshine as found in the ODCM are conservative. No effluents were released from the Dresden Independent Spent Fuel Storage Installations (ISFSIs) during 2017. REMP direct radiation monitoring at or near the site boundary demonstrates that

the ISFSIs do not result in measurable dose to the public.

According to the 2017 GEH Morris Operation 10 CFR 72.44(d)(3) report, dated 2/20/2018, for the 2017 calendar year, the maximum dose at their site boundary from direct radiation exposure was $3.83\text{E-}01$ mrem. The maximum organ dose from site activities was $3.10\text{E-}07$ mrem for 2017.

Maximum combined total body dose from Dresden Station and GEH Morris Operation activities was $9.16\text{E+}00$ mrem during 2017, which was 36.64 % of the 40 CFR 190 limit of 25 mrem.

Maximum combined organ dose from Dresden and GEH Morris Operation activities was $8.89\text{E-}02$ mrem during 2017. This was 0.36 % of the 40 CFR 190 limit of 25 mrem to any organ. The combined thyroid dose was $7.07\text{E-}02$ mrem. This was 0.09 % of the 40 CFR 190 limit of 75 mrem.

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. Cesium-137 was detected in both sediment samples in 2017 at levels slightly higher than the level of detection.

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 Iodine-131 (I-131) analyses were performed on weekly air samples. All results were less than the minimum detectable activity for I-131.

Cow milk samples were analyzed for concentrations of I-131 and gamma-emitting nuclides. All I-131 results were less than the minimum detectable activity. No fission or activation products were detected. 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 Optically Stimulated Luminescent Dosimetry (OSLD). The relative comparison to control locations remains valid.

II. Introduction

The Dresden Nuclear Power Station (DNPS), consisting of one retired reactor and two operating 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) and Landauer on samples collected during the period 1 January 2017 through 31 December 2017.

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 REMF 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 Environmental Incorporated Midwest Laboratory (EIML). This section describes the general collection methods used by EIML to obtain environmental samples for the DNPS REMP in 2017. Sample locations and descriptions can be found in Appendix B, Table B-1 and Figures B-1 and B-2. 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 (SW), ground water (GW), fish (FI) and sediment (SS). 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 freshwater drum, largemouth bass, and common carp 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 and airborne iodine (AP/AI). Airborne iodine and particulate samples were collected at fourteen 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, D-56 and D-58). 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.

Terrestrial Environment

Milk (M) samples are typically collected biweekly at one control location (D-25) from May through October and monthly from November through April. Other than D-25, there are no additional milking animals within 10 km (6.2 miles) of the site. All milk samples from D-25 were collected in

new unused two gallon plastic bottles from the bulk tank, preserved with sodium bisulfite and shipped promptly to the laboratory. Food products (FL) were collected annually in August 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

Each location consisted of two OSLD sets. The OSLD locations were placed on and around the DNPS site as follows:

An inner ring consisting of 17 locations (D-58, 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 (3.1 to 6.2 miles) from the site.

Other locations consisting of OSLD sets at the 13 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, D-56 and D-58).

The balance of one location (D-12) represents the control area OSLD set.

The OSLDs were exchanged quarterly and sent to Landauer for analysis.

B. Sample Analysis

This section describes the general analytical methodologies used by TBE to analyze the environmental samples for radioactivity for the DNPS REMP in 2017. The analytical procedures used by the laboratory are listed in Appendix B 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 groundwater, surface water, and vegetation twelve nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, I-131, Cs-134, Cs-137, Ba-140 and La-140 were reported.

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

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

D. Program Exceptions

For 2017 the DNPS REMP had a sample recovery rate greater than 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
SW	D-57	02/24/17	Compositor down; grab sample taken for 02/24/17
MI	D-25	04/06/17	Sample lost in transit, recollected 04/20/17
AP/AI	D-08	05/26/17	No apparent reason for low timer reading of 163.8 hours
AP/AI	D-10	06/23/17	Low reading of 164.9 hours possibly due to power outage from storms
AP/AI	D-01	07/07/17	Collector found power out at sampler; POC notified. Power restored on 07/07/17 at 16:24. Estimated flow rate = 60 CFH.
GW	D-23	07/14/17	No sample, homeowners absent. Collector will obtain next week. NOTE: Sample obtained 07/21/17.
AP/AI	D-14	09/08/17	Collector found power out at sampler due to broken line; POC notified. Power restored by 14:00 hours on 09/08/17.
AP/AI	D-53	09/29/17	Low reading of 141.0 hours due to work on line; station notified. Flow of 60 CFH based on 4 previous weeks.
SW	D-57	09/29/17	Compositor pipe broken by heavy equipment work in area; station notified.
AP/AI	D-53	10/06/17	Low reading of 149.0 hours due to power restoration
AP/AI	D-45	11/17/17	No apparent reason for low timer reading of 164.1 hours
AP/AI	D-45	12/29/17	No apparent reason for low timer reading of 116.9 hours; timer working properly.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
SW	D-52	01/06/17	No sample; water frozen
SW	D-52	01/13/17	No sample; water frozen
SW	D-52	02/03/17	No sample; water frozen
OSLD	D-111-1	03/31/17	OSLD found missing during quarterly exchange, collector placed new 2 nd quarter OSLD
AP/AIs	ALL	04/07/17	Samples lost in transit
OSLD	D-205-2, 207-2	09/29/17	OSLDs missing during quarterly exchange; collector placed new 4 th quarter OSLDs
OSLD	D-53-1	10/27/17	OSLD found missing during weekly visual check, collector placed Spare 1 EX000127215
GW	D-23	11/10/17	No sample, house vacant, outside faucet inoperable. Station notified by collector.
GW	D-23	12/08/17	No sample available
SW	D-57	12/15/17	Compositor down, collector unable to obtain grab sample, river frozen
SW	D-52	12/15/17	No sample; water frozen
SW	D-52	12/29/17	No sample; water frozen
SW	D-57	12/29/17	Compositor down, collector unable to obtain grab sample, river frozen
OSLD	D-214-2	12/29/17	OSLD found missing during quarterly exchange; collector placed a new 1 st quarter 2018 OSLD.

Each program exception was reviewed to understand the causes of the program exception. No sampling or maintenance errors were identified during the reporting period. 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

As a result of previous issues with milk sampling (no dairy available to provide samples), Dresden Station instituted a plan for backup vegetation sampling, when needed. Because normal vegetation samples were available in accordance with the ODCM, backup vegetation samples were not needed in 2017. Inclusion of this plan as part of the ODCM is pending with the next ODCM change.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were composited or 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-1.1, Appendix C). Gross Beta was detected in 36 of 36 samples. The values ranged from 2.7 to 10.1 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-1.2, Appendix C). One sample at indicator station D-21 was positive for tritium at a concentration of 265 pCi/L. Three samples at control station D-57 were positive for tritium. The values ranged from 448 to 1710 pCi/L. No samples from station D-52 were positive for tritium. 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-1.3, 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

Both locations were analyzed for tritium activity (Table C-II.1, Appendix C). Tritium was detected in 10 of 14 samples. The concentrations ranged from 303 to 504 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 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). Only naturally-occurring nuclides (not shown on the tables) were found at both locations. 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 (Cs-137) was found in both samples. The concentrations ranged from 134 pCi/kg dry to 144 pCi/kg dry.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from fourteen locations on a weekly basis. The fourteen locations were separated into four groups: On-site samplers (D-01, D-02 and D-03), Near-field samplers within 3.1 miles of the site (D-04, D-07, D-45, D-53, D-56 and D-58), Far-field samplers between 5 and 10 km (3.1 and 6.2 miles) from the site (D-08, D-10, D-14 and D-55) and the Control sampler between 10 and 30 km (6.2 and 18.6 miles) 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 29E-3 pCi/m³ with a mean of 16E-3 pCi/m³. The results from the Near-Field locations ranged from 5 to 29E-3 pCi/m³ with a mean of 16E-3 pCi/m³. The results from the Far-Field locations ranged from 5 to 29E-3 pCi/m³ with a mean of 16E-3 pCi/m³. The results from the Control location ranged from 9 to 26E-3 pCi/m³ with a mean of 16E-3 pCi/m³. Comparison of the 2017 air particulate data with previous year's data indicate no effects from the operation of DNPS. In addition a comparison of the weekly mean values for 2017 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). Only

naturally-occurring nuclides (not shown on the tables) were found in these composite samples. No anthropogenic nuclides were detected and all required LLDs were met. These samples were consistent with historical quarterly results. All other nuclides were less than the MDC.

b. Airborne Iodine

Continuous air samples were collected from fourteen 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, D-56 and D-58) and analyzed weekly for I-131 (Table C-VI.1, Appendix C). All results were less than the MDC for I-131.

2. Terrestrial

a. Milk

Milk (M) samples are typically collected biweekly at one control location (D-25) from May through October and monthly from November through April. Other than D-25, there are no additional milking animals within 10 kilometers (6.2 miles) of the site. The following analyses were performed:

Iodine-131

Milk samples from location D-25 were analyzed for concentrations of I-131. (Table C-VII.1, Appendix C) No I-131 was detected and the LLD was met.

Gamma Spectrometry

Milk samples from location D-25 were analyzed for concentrations of gamma-emitting nuclides. (Table C-VII.2, Appendix C) Only naturally-occurring nuclides (not shown on the tables) were found in all samples. No other gamma-emitting 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 five locations were analyzed for gamma-emitting nuclides. No nuclides were detected and all required LLDs were met. (Table C-VIII.1, Appendix C)

C. Ambient Gamma Radiation

Forty-six OSLD locations were established around the site. Results of OSLD measurements are listed in Tables C-IX.1 to C-IX.3, Appendix C.

Most OSLD measurements were below 30 mrem/quarter, with a range of 21.2 to 36.8 mrem/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 and D-12-02) were comparable.

D. Land Use Survey

A Land Use Survey conducted on August 22, 2017 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 (6.2 miles) around the site. The survey indicated changes in Sector B (NNE) which no longer has a livestock location, Sector P (WNW) with the nearest residence located at 3.2 miles instead of 3.7 miles, and at Sector Q (NW) with the nearest residence located at 2.2 miles instead of 2.6 miles. 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	-	-
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	3.2	0.5	-
Q NW	2.2	0.5	-
R NNW	0.8	1.0	-

E. Errata Data

Corrections for the 2016 AREOR appear in Appendix E.

F. Summary of Results – Inter-Laboratory Comparison Program

The TBE Laboratory analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation, and water matrices for various analytes. The PE samples supplied by Analytics Inc., Environmental Resource Associates (ERA) and Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

A. Analytics Evaluation Criteria

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

B. 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, National Environmental

Laboratory Accreditation Conference (NELAC), state-specific Performance Testing (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.

C. DOE Evaluation Criteria

MAPEP's evaluation report provides an acceptance range with associated flag values. MAPEP defines three levels of performance:

- Acceptable (flag = "A") - result within $\pm 20\%$ of the reference value
- Acceptable with Warning (flag = "W") - result falls in the $\pm 20\%$ to $\pm 30\%$ of the reference value
- Not Acceptable (flag = "N") – bias is greater than 30% of the reference value

Note: The Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP) samples are created to mimic conditions found at DOE sites which do not resemble typical environmental samples obtained at commercial nuclear power facilities.

For the TBE laboratory, 168 out of 173 analyses performed met the specified acceptance criteria. Five analyses did not meet the specified acceptance criteria for the following reasons and were addressed through the TBE Corrective Action Program.

1. The ERA April 2017 two nuclides in water were evaluated as *Not Acceptable*. (NCR 17-09)
 - a. The Zn-65 result of 39.3 pCi/L, exceeded the lower acceptance limit of 47.2. The known value was unusually low for this study. The sample was run in duplicate on two different detectors. The results of each were 39.3 ± 18.2 pCi/L (46% error and lower efficiency) and 59.3 ± 8.23 pCi/L (13.9% error and higher efficiency). The result from the 2nd detector would have been well within the acceptable range (47.2 – 65.9) and 110.2% of the known value of 53.8 pCi/L.
 - b. The Sr-89 result of 40.7 pCi/L exceeded the lower acceptance limit of 53.8. All associated QC and recoveries were reviewed and no apparent cause could be determined for the failure. The

prior three cross-check results were from 99 – 115% of the known values and the one that followed this sample (November, 2017) was 114% of the known value.

2. The DOE MAPEP August 2017 air particulate U-238 result of 0.115 ± 0.025 Bq/sample was higher than the known value of 0.087 ± 0.002 with a ratio of 1.32, therefore the upper ratio of 1.30 (acceptable with warning) was exceeded. TBE's result with error easily overlaps with the acceptable range. MAPEP does not evaluate results with any associated error. Also, the spike level for this sample was very low (2.35 pCi) compared to TBE's normal LCS of 6 pCi. TBE considers this result as passing. (NCR 17-15)
3. The Analytics September 2017 soil Cr-51 result was evaluated as *Not Acceptable* (Ratio of TBE to known result at 0.65). The reported value was 0.230 ± 0.144 pCi/g and the known value was 0.355 ± 0.00592 pCi/g. The sample was counted overnight for 14 hours, however the Cr-51 was spiked at a very low level and had a counting error of 65%. Cr-51 has a 27-day half-life, making low-level quantification even more difficult. The error does not appear to have been taken into consideration for this result. If it had been evaluated with the error, the highest result would have been 105% of the reference value, which is acceptable. Also, the known value is significantly lower than TBE's typical MDC for this nuclide in a soil matrix and would typically not be reported to clients (unless specified). The results of all of the previous cross-checks have been in the acceptable (80 – 120%) range. TBE will evaluate further upon completion of the next ICP sample. (NCR 17-16)
4. The ERA November 2017 water Sr-90 sample was evaluated as *Not Acceptable*. TBE's result of 27.1 pCi/L exceeded the lower acceptance range (30.8 – 48.0 pCi/L). After reviewing the associated QC data for this sample, it was determined that although the spike recovery for Sr-90 was within TBE laboratory guidelines (70% -130%), both the spike result and the ERA result were biased low. The original cross-check sample was completely consumed and TBE was unable to reanalyze before submitting the result. TBE has modified the preparation process to avoid this situation for future cross-check samples. TBE also has enhanced LIMS programming to force a LCSD when a workgroup includes cross-check samples (as opposed to running a DUP). (NCR 17-19)

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

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING

REPORT SUMMARY

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
DRESDEN NUCLEAR POWER STATION, 2017**

NAME OF FACILITY:		DRESDEN		DOCKET NUMBER:		50-010, 50-237 & 50-249			
LOCATION OF FACILITY:		MORRIS IL		REPORTING PERIOD:		2017			
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	6 (12/12) 3.6 - 9.1	5.9 (24/24) 2.7 - 10.1	7.4 (12/12) 3.4 - 10.1	D-52 CONTROL DESPLAINES RIVER - UPSTREAM 1.1 MILES ESE OF SITE	0	
	H-3	12	2000	265 (1/4)	902 (3/8) 448 - 1710	902 (3/4) 448 - 1710	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
		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	14	2000	415 (10/14) 303 - 504	NA (10/10) 303 - 504	415 (10/10) 303 - 504	D-23 INDICATOR THORSEN WELL 0.7 MILES S OF SITE	0	
	GAMMA	14							
		MN-54		15	<LLD	NA	-		0
		CO-58		15	<LLD	NA	-		0
		FE-59		30	<LLD	NA	-		0
		CO-60		15	<LLD	NA	-		0
		ZN-65		30	<LLD	NA	-		0
		NB-95		15	<LLD	NA	-		0
		ZR-95		30	<LLD	NA	-		0
		I-131		15	<LLD	NA	-		0
		CS-134		15	<LLD	NA	-		0
		CS-137		18	<LLD	NA	-		0
		BA-140		60	<LLD	NA	-		0
	LA-140		15	<LLD	NA	-		0	

(M) The Mean Values are calculated using the positive values. (F) Fraction of detectable measurement are indicated in parentheses

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DRESDEN NUCLEAR POWER STATION, 2017

NAME OF FACILITY:		DRESDEN		DOCKET NUMBER:		50-010, 50-237 & 50-249		
LOCATION OF FACILITY:		MORRIS IL		REPORTING PERIOD:		2017		
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
FISH (PCI/KG WET)	GAMMA	8						
	MN-54		130	<LLD	NA	-		0
	CO-58		130	<LLD	NA	-		0
	FE-59		260	<LLD	NA	-		0
	CO-60		130	<LLD	NA	-		0
	ZN-65		260	<LLD	NA	-		0
	NB-95		NA	<LLD	NA	-		0
	ZR-95		NA	<LLD	NA	-		0
	CS-134		130	<LLD	NA	-		0
	CS-137		150	<LLD	NA	-		0
	BA-140		NA	<LLD	NA	-		0
	LA-140		NA	<LLD	NA	-		0
SEDIMENT (PCI/KG DRY)	GAMMA	2						
	MN-54		NA	<LLD	NA	-		0
	CO-58		NA	<LLD	NA	-		0
	FE-59		NA	<LLD	NA	-		0
	CO-60		NA	<LLD	NA	-		0
	ZN-65		NA	<LLD	NA	-		0
	NB-95		NA	<LLD	NA	-		0
	ZR-95		NA	<LLD	NA	-		0
	CS-134		150	<LLD	NA	-		0
	CS-137		180	139 (2/2)	NA	139 (2/2)	D-27 INDICATOR DRESDEN LOCK AND DAM - DOWNSTREAM 0.8 MILES NW OF SITE	0
	BA-140		NA	<LLD	NA	-		0
	LA-140		NA	<LLD	NA	-		0
AIR PARTICULATE (PCI/TOTAL)	GR-B	714	10	16.2 (663/663) 5.2 - 29	16.1 (51/51) 9.3 - 26	16.9 (51/51) 8.8 - 28.9	D-53 INDICATOR GRUDY COUNTY ROAD 2.1 MILES SSE OF SITE	0

(M) The Mean Values are calculated using the positive values. (F) Fraction of detectable measurement are indicated in parentheses

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DRESDEN NUCLEAR POWER STATION, 2017

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LOCATION OF FACILITY:		MORRIS IL		REPORTING PERIOD:		2017			
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 (PCI/TOTAL)	GAMMA	56							
	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
	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 (PCI/TOTAL)	GAMMA	714							
	I-131		70	<LLD	<LLD	-			0
MILK (PCI/LITER)	I-131 (LOW LVL)	19	1	NA	<LLD	-			0
	GAMMA	19							
	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
	CS-137		18	NA	<LLD	-			0
	BA-140		60	NA	<LLD	-			0
	LA-140		15	NA	<LLD	-			0

(M) The Mean Values are calculated using the positive values. (F) Fraction of detectable measurement are indicated in parentheses

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
DRESDEN NUCLEAR POWER STATION, 2017**

NAME OF FACILITY:		DRESDEN		DOCKET NUMBER:		50-010, 50-237 & 50-249		
LOCATION OF FACILITY:		MORRIS IL		REPORTING PERIOD:		2017		
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) STATION # NAME DISTANCE AND DIRECTION		NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	GAMMA	12						
	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
	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.)	OSLD-QUARTERLY	364	NA	26.9 (356/356) 21.2 - 36.8	24.5 (8/8) 21.8 - 28.6	32.7 (4/4) 29.4 - 36.8	D-110-4 INDICATOR 0.9 MILES SSW	0

A-4

(M) The Mean Values are calculated using the positive values. (F) Fraction of detectable measurement are indicated in parentheses

APPENDIX B

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

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TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2017

Location	Location Description	Distance & Direction From Site
<u>A. Surface Water</u>		
D-21	Illinois River at EJ&E Bridge (indicator)	1.4 miles WNW
D-52	DesPlaines River at Will Road, Upstream (control)	1.1 miles ESE
D-57	Kankakee River at Will Road (control)	2.0 miles SE
<u>B. Ground/Well Water</u>		
D-23	Thorsen Well, Dresden Road (indicator)	0.7 miles S
D-35	Dresden Lock and Dam (indicator)	0.8 miles NW
<u>C. Milk - bi-weekly / monthly</u>		
D-25	Biros Farm (control)	11.4 miles SW
<u>D. Air Particulates / Air Iodine</u>		
D-01	Onsite Station 1 (indicator)	0.8 miles NW
D-02	Onsite Station 2 (indicator)	0.3 miles NNE
D-03	Onsite Station 3 (indicator)	0.4 miles S
D-04	Collins Road, on Station property(indicator)	0.8 miles W
D-07	Clay Products, Dresden Road (indicator)	2.6 miles S
D-08	Jugtown Road, Prairie Parks (indicator)	3.8 miles SW
D-10	Goose Lake Road, Goose Lake Village (indicator)	3.5 miles SSW
D-12	Quarry Road, Lisbon (control)	10.5 miles NW
D-14	Center Street, Channahon (indicator)	3.7 miles NE
D-45	McKinley Woods Road, Channahon (indicator)	1.7 miles ENE
D-53	Will Road, Hollyhock (indicator)	2.1 miles SSE
D-55	Ridge Road, Minooka (indicator)	4.3 miles N
D-56	Will Road, Wildfeather (indicator)	1.7 miles SE
D-58	Will Road, Marina (indicator)	1.1 miles ESE
<u>E. Fish</u>		
D-28	Dresden Pool of Illinois River, Downstream (indicator)	0.9 miles NNW
D-46	DesPlaines River, Upstream (control)	1.2 miles ESE
<u>F. Sediment</u>		
D-27	Illinois River at Dresden Lock and Dam, Downstream (indicator)	0.8 miles NW
<u>G. Vegetation</u>		
Quadrant 1	26726 & 26819 McKinley Woods Road	1.7 miles ENE
Quadrant 2	3985 N. Will Road	2.1 miles SSE
Quadrant 3	3250 Perch Court	2.5 miles SSW
Quadrant 4	4740 Cemetery Road	2.1 miles W
Control	2035 Old Mazon Road	11 miles SW

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2017

Location	Location Description	Distance & Direction From Site
<u>H. Environmental Dosimetry - OSLD</u>		
<u>Inner Ring</u>		
D-58-1 and -2		1.1 miles ESE
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
<u>Outer Ring</u>		
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
<u>Other Locations</u>		
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, on Station property	0.8 miles W
D-07-1 and -2	Clay Products, Dresden Road	2.6 miles S
D-08-1 and -2	Jugtown Road, Prairie Parks	3.8 miles SW
D-10-1 and -2	Goose Lake Road, Goose Lake Village	3.5 miles SSW
D-14-1 and -2	Center Street, Channahon	3.7 miles NE
D-45-1 and -2	McKinley Woods Road, Channahon	1.7 miles ENE
D-53-1 and -2	Will Road, Hollyhock	2.1 miles SSE
D-55-1 and -2	Ridge Road, Minooka	4.3 miles N
D-56-1 and -2	Will Road, Wildfeather	1.7 miles SE
D-58-1 and -2	Will Road, Marina	1.1 miles ESE
<u>Control</u>		
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, 2017

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, 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, 2017

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
OSLD	Optically Stimulated Luminescence Dosimetry	Quarterly OSLDs comprised of two Al ₂ O ₃ :C Landauer Incorporated elements.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 dosimeters at each location	Landauer Incorporated

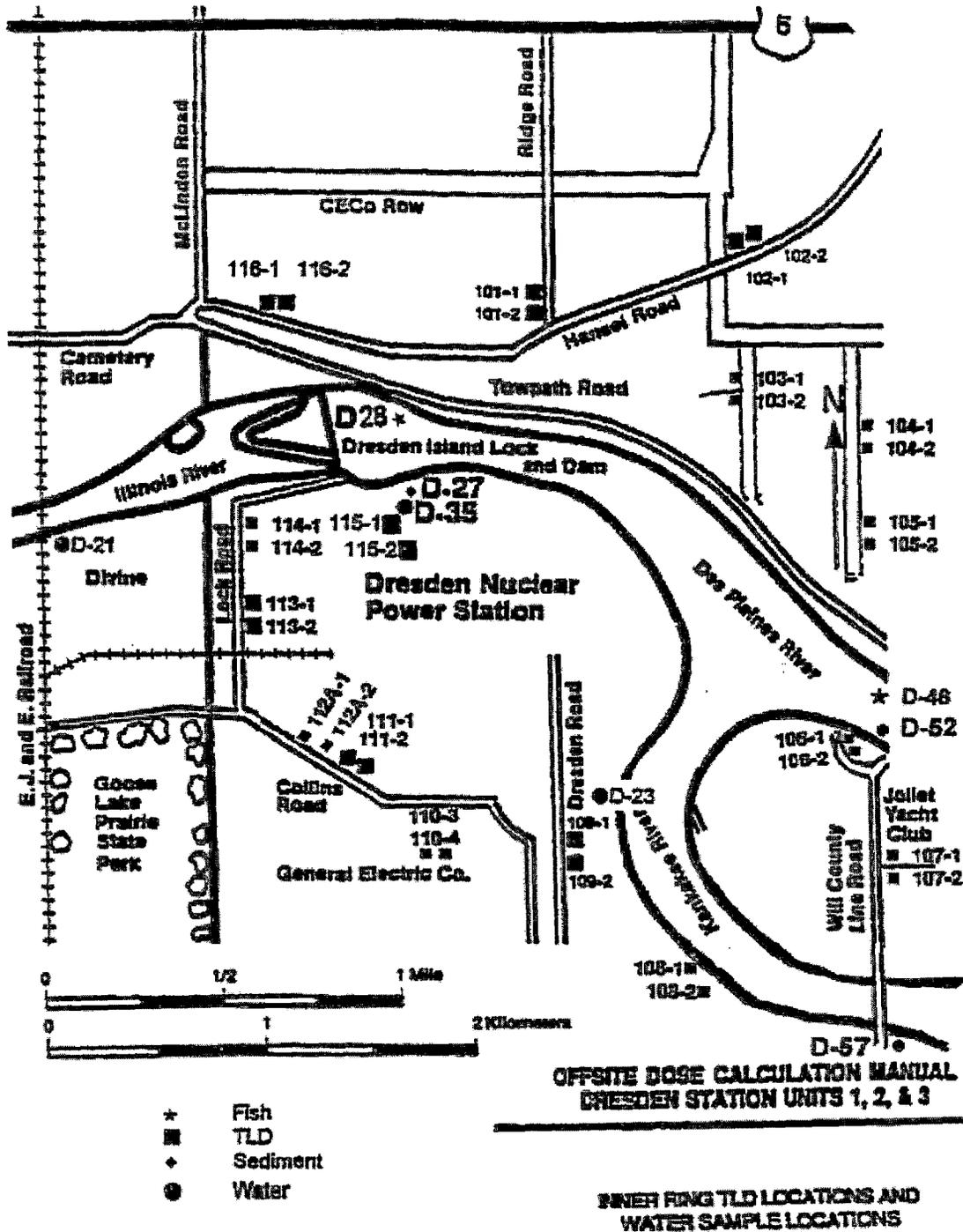
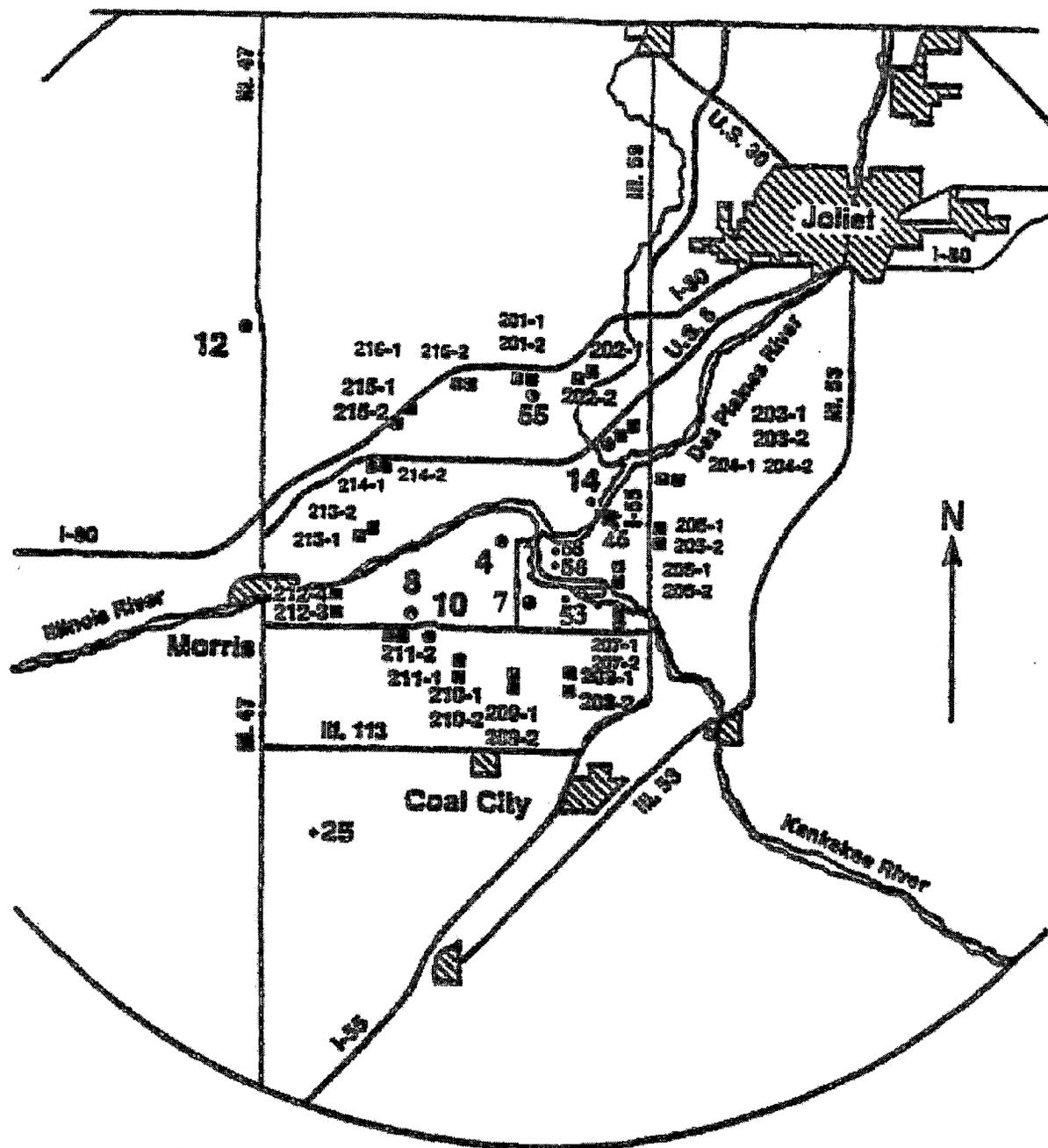


Figure B-1
Dresden Station Inner Ring OSRD Locations, Fish, Water, and Sediment Location, 2017



**OFFSITE DOSE CALCULATION MANUAL
DRESDEN STATION UNITS 1, 2, & 3**

- Air Sampling Location
- + Milk Location
- TLD Location

FIXED AIR SAMPLING AND TLD SITES, OUTER RING TLD LOCATIONS, AND MILK LOCATION

Figure B-2
Dresden Station Fixed Air Sampling and
OSLD Sites, Outer Ring OSLD Locations and Milk Location, 2017

APPENDIX C

DATA TABLES AND FIGURES

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Table C-I.1

**CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
12/30/16 - 01/27/17	6.4 \pm 2.3	10.1 \pm 2.8	4.5 \pm 1.9
01/27/17 - 02/24/17	3.6 \pm 1.9	3.4 \pm 2.2	3.6 \pm 1.9
02/24/17 - 03/31/17	5.4 \pm 1.9	6.7 \pm 2.2	2.7 \pm 1.7
03/31/17 - 04/28/17	7.5 \pm 2.5	5.9 \pm 2.3	7.6 \pm 2.5
04/28/17 - 05/26/17	6.1 \pm 2.3	5.8 \pm 2.3	5.0 \pm 2.1
05/26/17 - 06/30/17	6.3 \pm 2.0	9.7 \pm 2.3	4.7 \pm 1.8
06/30/17 - 07/28/17	3.7 \pm 1.9	7.2 \pm 2.2	3.1 \pm 1.9
07/28/17 - 08/25/17	6.2 \pm 2.0	7.9 \pm 2.2	6.1 \pm 1.9
08/25/17 - 09/29/17	7.6 \pm 2.1	9.6 \pm 2.2	4.8 \pm 1.8
09/29/17 - 10/27/17	6.4 \pm 2.1	6.3 \pm 2.1	3.1 \pm 1.9
10/27/17 - 11/24/17	6.8 \pm 2.0	6.7 \pm 2.2	2.8 \pm 1.8
11/24/17 - 12/22/17	9.1 \pm 2.3	9.8 \pm 2.4	5.5 \pm 1.9
MEAN \pm 2 STD DEV	6.3 \pm 3.0	7.4 \pm 4.1	4.5 \pm 3.0

Table C-I.2

**CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
01/20/17 - 03/31/17	< 194	< 189	< 192
04/07/17 - 06/30/17	< 194	< 192	448 \pm 141
07/07/17 - 09/29/17	265 \pm 126	< 183	548 \pm 136
09/29/17 - 12/29/17	< 193	< 196	1710 \pm 238
MEAN \pm 2 STD DEV	265 \pm 0	-	902 \pm 1403

THE MEAN AND 2 STANDARD DEVIATION 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, 2017**
RESULTS IN UNITS OF PCI/LITER + 2 SIGMA

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
	PERIOD													
D-21	12/30/16 - 01/27/17		< 6	< 5	< 14	< 7	< 12	< 7	< 10	< 10	< 6	< 6	< 25	< 9
	01/27/17 - 02/24/17		< 4	< 5	< 9	< 5	< 11	< 6	< 8	< 10	< 5	< 6	< 28	< 8
	02/24/17 - 03/31/17		< 8	< 8	< 14	< 9	< 16	< 7	< 12	< 12	< 6	< 8	< 35	< 11
	03/31/17 - 04/28/17		< 6	< 9	< 13	< 7	< 13	< 7	< 12	< 10	< 8	< 6	< 25	< 7
	04/28/17 - 05/26/17		< 5	< 7	< 10	< 9	< 16	< 9	< 10	< 13	< 6	< 7	< 34	< 12
	05/26/17 - 06/30/17		< 7	< 7	< 16	< 8	< 17	< 8	< 14	< 13	< 8	< 8	< 35	< 14
	06/30/17 - 07/28/17		< 5	< 6	< 13	< 6	< 14	< 6	< 11	< 8	< 7	< 6	< 30	< 10
	07/28/17 - 08/25/17		< 5	< 5	< 11	< 4	< 9	< 6	< 9	< 13	< 5	< 5	< 30	< 10
	08/25/17 - 09/29/17		< 6	< 7	< 13	< 6	< 16	< 7	< 12	< 12	< 8	< 8	< 32	< 11
	09/29/17 - 10/27/17		< 6	< 7	< 8	< 5	< 12	< 5	< 9	< 11	< 7	< 6	< 24	< 9
	10/27/17 - 11/24/17		< 6	< 6	< 13	< 7	< 10	< 8	< 11	< 10	< 6	< 8	< 30	< 10
	11/24/17 - 12/29/17		< 7	< 8	< 19	< 7	< 18	< 9	< 13	< 12	< 9	< 9	< 36	< 15
		<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-52	01/20/17 - 01/27/17		< 10	< 8	< 20	< 8	< 23	< 12	< 16	< 15	< 9	< 11	< 45	< 12
	02/10/17 - 02/24/17		< 7	< 8	< 16	< 10	< 12	< 9	< 12	< 13	< 9	< 9	< 34	< 12
	03/03/17 - 03/31/17		< 5	< 6	< 10	< 6	< 13	< 6	< 10	< 7	< 6	< 6	< 23	< 7
	04/07/17 - 04/28/17		< 7	< 12	< 16	< 10	< 16	< 10	< 17	< 14	< 9	< 11	< 42	< 12
	05/05/17 - 05/26/17		< 8	< 7	< 19	< 7	< 18	< 8	< 15	< 11	< 11	< 9	< 35	< 10
	06/02/17 - 06/30/17		< 6	< 7	< 14	< 7	< 13	< 7	< 13	< 11	< 7	< 7	< 32	< 13
	07/07/17 - 07/28/17		< 5	< 5	< 7	< 3	< 10	< 5	< 7	< 9	< 6	< 5	< 24	< 6
	08/04/17 - 08/25/17		< 6	< 6	< 11	< 6	< 10	< 6	< 12	< 15	< 8	< 5	< 32	< 10
	09/01/17 - 09/29/17		< 5	< 5	< 12	< 5	< 13	< 6	< 6	< 8	< 6	< 5	< 26	< 11
	10/06/17 - 10/27/17		< 10	< 11	< 16	< 10	< 21	< 8	< 16	< 13	< 9	< 10	< 41	< 15
	11/03/17 - 11/24/17		< 5	< 6	< 10	< 5	< 12	< 4	< 8	< 8	< 4	< 5	< 23	< 8
	12/01/17 - 12/22/17		< 5	< 6	< 13	< 5	< 12	< 6	< 10	< 14	< 5	< 6	< 34	< 14
		<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-57	12/30/16 - 01/27/17		< 6	< 9	< 15	< 7	< 18	< 8	< 16	< 11	< 9	< 9	< 34	< 11
	01/27/17 - 02/24/17		< 6	< 7	< 14	< 6	< 14	< 5	< 11	< 10	< 8	< 7	< 28	< 11
	03/03/17 - 03/31/17		< 6	< 6	< 11	< 6	< 13	< 6	< 11	< 10	< 7	< 7	< 29	< 7
	03/31/17 - 04/28/17		< 9	< 6	< 10	< 11	< 19	< 8	< 12	< 13	< 9	< 7	< 26	< 12
	04/28/17 - 05/26/17		< 8	< 7	< 15	< 8	< 19	< 8	< 12	< 14	< 8	< 9	< 37	< 12
	05/26/17 - 06/30/17		< 7	< 9	< 14	< 9	< 20	< 8	< 12	< 14	< 9	< 8	< 30	< 11
	06/30/17 - 07/28/17		< 7	< 5	< 15	< 8	< 13	< 6	< 13	< 12	< 9	< 7	< 29	< 8
	07/28/17 - 08/25/17		< 4	< 5	< 12	< 6	< 9	< 7	< 10	< 13	< 5	< 5	< 36	< 13
	08/25/17 - 09/29/17		< 6	< 6	< 11	< 8	< 12	< 8	< 12	< 11	< 8	< 8	< 38	< 10
	09/29/17 - 10/27/17		< 6	< 8	< 15	< 6	< 14	< 7	< 15	< 11	< 8	< 9	< 34	< 10
	10/27/17 - 11/24/17		< 5	< 6	< 10	< 8	< 15	< 6	< 10	< 10	< 6	< 8	< 24	< 14
	12/08/17 - 12/22/17		< 6	< 6	< 16	< 8	< 11	< 6	< 11	< 12	< 6	< 7	< 40	< 15
		<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-

Table C-II.1

**CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA**

COLLECTION PERIOD	D-23	D-35
01/13/17 - 01/13/17	362 \pm 137	< 187
02/10/17 - 02/10/17	504 \pm 144	
03/10/17 - 03/10/17	362 \pm 131	
04/14/17 - 04/14/17	303 \pm 134	< 194
05/11/17 - 05/11/17	463 \pm 138	
06/09/17 - 06/09/17	330 \pm 128	
07/21/17 - 07/21/17	495 \pm 145	< 185
08/11/17 - 08/11/17	488 \pm 134	
09/08/17 - 09/08/17	390 \pm 128	
10/13/17 - 10/13/17	449 \pm 132	< 182
11/10/17 - 11/10/17	(1)	
12/08/17 - 12/08/17	(1)	
<i>MEAN \pm 2 STD DEV</i>	415 \pm 148	-

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

Tables C-II.2

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUND WATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140	
	PERIOD														
D-23	01/13/17 - 01/13/17		< 8	< 9	< 17	< 8	< 11	< 9	< 13	< 13	< 9	< 8	< 41	< 11	
	02/10/17 - 02/10/17		< 3	< 3	< 8	< 4	< 7	< 3	< 6	< 9	< 3	< 4	< 23	< 7	
	03/10/17 - 03/10/17		< 5	< 6	< 13	< 7	< 10	< 6	< 12	< 11	< 7	< 7	< 26	< 9	
	04/14/17 - 04/14/17		< 7	< 7	< 11	< 6	< 16	< 7	< 11	< 11	< 7	< 8	< 33	< 7	
	05/11/17 - 05/11/17		< 5	< 5	< 10	< 6	< 10	< 6	< 10	< 11	< 5	< 7	< 27	< 9	
	06/09/17 - 06/09/17		< 7	< 9	< 13	< 7	< 13	< 8	< 11	< 10	< 8	< 7	< 31	< 9	
	07/21/17 - 07/21/17		< 4	< 4	< 9	< 5	< 10	< 5	< 9	< 6	< 5	< 4	< 21	< 6	
	08/11/17 - 08/11/17		< 5	< 5	< 13	< 7	< 12	< 7	< 10	< 8	< 6	< 6	< 26	< 9	
	09/08/17 - 09/08/17		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 18	< 6	
	10/06/17 - 10/06/17		< 6	< 7	< 12	< 7	< 13	< 7	< 13	< 12	< 6	< 8	< 34	< 8	
	11/10/17 - 11/10/17 (1)														
	12/08/17 - 12/08/17 (1)														
	MEAN		-	-	-	-	-	-	-	-	-	-	-	-	
D-35	01/13/17 - 01/13/17		< 8	< 8	< 16	< 9	< 10	< 9	< 13	< 11	< 7	< 10	< 44	< 11	
	04/14/17 - 04/14/17		< 5	< 4	< 8	< 3	< 9	< 4	< 7	< 6	< 5	< 4	< 19	< 7	
	07/14/17 - 07/14/17		< 8	< 7	< 17	< 7	< 15	< 8	< 12	< 12	< 7	< 7	< 34	< 10	
	10/13/17 - 10/13/17		< 6	< 7	< 8	< 5	< 10	< 6	< 11	< 10	< 8	< 7	< 32	< 12	
		MEAN		-	-	-	-	-	-	-	-	-	-	-	-

C-4

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-III.1

**CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/KG WET + 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
D-28	<i>PREDIAOR</i>												
<i>Largemouth Bass</i>	10/25/17		< 45	< 35	< 96	< 56	< 109	< 48	< 93	< 67	< 67	< 208	< 65
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-
D-28	<i>BOTTOM FEEDER</i>												
<i>Common Carp</i>	05/03/17		< 43	< 44	< 80	< 39	< 84	< 45	< 55	< 38	< 42	< 195	< 51
<i>Freshwater Drum</i>	05/03/17		< 41	< 44	< 81	< 56	< 113	< 51	< 67	< 57	< 46	< 176	< 70
<i>Common Carp</i>	10/25/17		< 50	< 53	< 129	< 52	< 106	< 55	< 78	< 67	< 53	< 225	< 75
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-
D-46	<i>PREDATOR</i>												
<i>Largemouth Bass</i>	10/25/17		< 59	< 39	< 112	< 56	< 97	< 38	< 75	< 52	< 58	< 251	< 68
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-
D-46	<i>BOTTOM FEEDER</i>												
<i>Common Carp</i>	05/03/17		< 52	< 50	< 109	< 52	< 119	< 59	< 94	< 61	< 58	< 277	< 71
<i>Freshwater Drum</i>	05/03/17		< 57	< 49	< 99	< 59	< 141	< 64	< 93	< 67	< 67	< 268	< 92
<i>Common Carp</i>	10/25/17		< 68	< 73	< 160	< 74	< 202	< 78	< 127	< 81	< 73	< 400	< 110
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-

Table C-IV.1

**CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**
RESULTS IN UNITS OF PCI/KG DRY \pm 2 SIGMA

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
D-27	05/27/17		< 60	< 66	< 138	< 71	< 135	< 71	< 125	< 75	134 \pm 64	< 324	< 82
	10/18/17		< 100	< 134	< 258	< 141	< 223	< 108	< 205	< 128	144 \pm 117	< 422	< 137
<i>MEAN \pm 2 STD DEV</i>			-	-	-	-	-	-	-	-	139 \pm 15	-	-

Table C-V.1

**CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF E-3 PCI/CU METER \pm 2 SIGMA**

COLLECTION PERIOD	GROUP I				GROUP II					
	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58	
12/30/16 - 01/06/17	18 \pm 4	17 \pm 4	17 \pm 4	21 \pm 4	16 \pm 4	24 \pm 4	19 \pm 4	20 \pm 4	21 \pm 4	
01/06/17 - 01/13/17	23 \pm 5	20 \pm 5	25 \pm 5	20 \pm 5	17 \pm 4	19 \pm 5	19 \pm 5	21 \pm 5	21 \pm 5	
01/13/17 - 01/20/17	17 \pm 4	13 \pm 4	15 \pm 4	14 \pm 4	16 \pm 4	13 \pm 4	16 \pm 4	17 \pm 4	16 \pm 4	
01/20/17 - 01/27/17	10 \pm 4	14 \pm 4	11 \pm 4	12 \pm 4	13 \pm 4	12 \pm 4	14 \pm 4	13 \pm 4	12 \pm 4	
01/27/17 - 02/03/17	16 \pm 4	11 \pm 4	19 \pm 4	15 \pm 4	16 \pm 4	14 \pm 4	18 \pm 4	16 \pm 4	15 \pm 4	
02/03/17 - 02/10/17	18 \pm 4	19 \pm 4	16 \pm 4	19 \pm 4	15 \pm 4	19 \pm 4	18 \pm 4	18 \pm 4	18 \pm 4	
02/10/17 - 02/17/17	16 \pm 5	19 \pm 5	19 \pm 5	18 \pm 4	15 \pm 4	15 \pm 4	17 \pm 5	20 \pm 5	20 \pm 5	
02/17/17 - 02/24/17	20 \pm 4	20 \pm 4	22 \pm 4	21 \pm 4	25 \pm 5	23 \pm 5	21 \pm 4	23 \pm 5	19 \pm 4	
02/24/17 - 03/03/17	16 \pm 4	18 \pm 4	17 \pm 4	16 \pm 4	14 \pm 4	15 \pm 4	15 \pm 4	17 \pm 4	15 \pm 4	
03/03/17 - 03/10/17	16 \pm 4	14 \pm 4	13 \pm 4	13 \pm 4	12 \pm 4	13 \pm 4	15 \pm 4	14 \pm 4	9 \pm 4	
03/10/17 - 03/17/17	17 \pm 4	17 \pm 4	17 \pm 4	19 \pm 4	17 \pm 4	11 \pm 4	15 \pm 4	17 \pm 4	17 \pm 4	
03/17/17 - 03/24/17	15 \pm 5	15 \pm 5	17 \pm 5	18 \pm 5	15 \pm 5	16 \pm 5	19 \pm 5	14 \pm 5	15 \pm 5	
03/24/17 - 03/31/17	13 \pm 4	15 \pm 4	12 \pm 3	14 \pm 4	10 \pm 3	13 \pm 4	15 \pm 4	12 \pm 3	14 \pm 4	
03/31/17 - 04/07/17	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
04/07/17 - 04/14/17	10 \pm 4	14 \pm 4	13 \pm 4	9 \pm 4	12 \pm 4	12 \pm 4	12 \pm 4	6 \pm 4	13 \pm 4	
04/14/17 - 04/21/17	10 \pm 4	11 \pm 4	14 \pm 4	10 \pm 3	11 \pm 4	12 \pm 4	14 \pm 4	9 \pm 4	10 \pm 3	
04/21/17 - 04/28/17	6 \pm 3	9 \pm 4	10 \pm 4	12 \pm 4	9 \pm 4	8 \pm 4	11 \pm 4	8 \pm 4	8 \pm 4	
04/28/17 - 05/05/17	12 \pm 4	11 \pm 4	12 \pm 4	11 \pm 3	10 \pm 3	8 \pm 3	13 \pm 4	10 \pm 3	12 \pm 4	
05/05/17 - 05/11/17	14 \pm 4	11 \pm 4	14 \pm 4	15 \pm 4	16 \pm 5	12 \pm 4	13 \pm 4	10 \pm 4	11 \pm 4	
05/11/17 - 05/19/17	17 \pm 4	14 \pm 4	17 \pm 4	16 \pm 4	16 \pm 4	14 \pm 4	14 \pm 4	15 \pm 4	17 \pm 4	
05/19/17 - 05/26/17	10 \pm 3	11 \pm 4	12 \pm 4	8 \pm 3	10 \pm 3	11 \pm 3	10 \pm 3	10 \pm 3	9 \pm 3	
05/26/17 - 06/02/17	13 \pm 4	16 \pm 4	19 \pm 4	10 \pm 3	12 \pm 4	15 \pm 4	15 \pm 4	17 \pm 4	15 \pm 4	
06/02/17 - 06/09/17	14 \pm 4	14 \pm 4	15 \pm 4	15 \pm 4	14 \pm 4	14 \pm 4	17 \pm 4	14 \pm 4	15 \pm 4	
06/09/17 - 06/16/17	17 \pm 4	17 \pm 4	19 \pm 4	17 \pm 4	19 \pm 4	16 \pm 4	20 \pm 4	18 \pm 4	18 \pm 4	
06/16/17 - 06/23/17	11 \pm 4	12 \pm 4	10 \pm 4	11 \pm 4	13 \pm 4	9 \pm 4	10 \pm 4	10 \pm 4	10 \pm 4	
06/23/17 - 06/30/17	12 \pm 4	7 \pm 3	10 \pm 3	8 \pm 3	9 \pm 4	8 \pm 3	9 \pm 4	9 \pm 4	11 \pm 4	
06/30/17 - 07/07/17	18 \pm 7	21 \pm 5	22 \pm 5	15 \pm 4	22 \pm 5	20 \pm 4	23 \pm 5	17 \pm 4	18 \pm 4	
07/07/17 - 07/14/17	16 \pm 4	18 \pm 4	17 \pm 4	14 \pm 4	17 \pm 4	14 \pm 4	18 \pm 4	15 \pm 4	15 \pm 4	
07/14/17 - 07/21/17	14 \pm 4	14 \pm 4	12 \pm 4	16 \pm 4	17 \pm 4	17 \pm 4	17 \pm 4	18 \pm 4	18 \pm 4	
07/21/17 - 07/28/17	13 \pm 4	11 \pm 3	14 \pm 4	14 \pm 4	17 \pm 4	13 \pm 3	16 \pm 4	15 \pm 4	14 \pm 4	
07/28/17 - 08/04/17	16 \pm 4	17 \pm 4	17 \pm 4	13 \pm 4	15 \pm 4	15 \pm 4	16 \pm 4	17 \pm 4	19 \pm 4	
08/04/17 - 08/11/17	13 \pm 4	16 \pm 4	17 \pm 4	17 \pm 4	17 \pm 4	16 \pm 4	17 \pm 4	15 \pm 4	19 \pm 4	
08/11/17 - 08/18/17	18 \pm 4	16 \pm 4	16 \pm 4	15 \pm 4	18 \pm 4	16 \pm 4	17 \pm 4	15 \pm 4	16 \pm 4	
08/18/17 - 08/25/17	17 \pm 4	18 \pm 4	17 \pm 4	17 \pm 4	16 \pm 4	17 \pm 4	20 \pm 4	17 \pm 4	18 \pm 4	
08/25/17 - 09/01/17	17 \pm 4	13 \pm 4	19 \pm 4	19 \pm 4	18 \pm 4	18 \pm 4	20 \pm 4	18 \pm 4	17 \pm 4	
09/01/17 - 09/08/17	17 \pm 4	13 \pm 4	14 \pm 4	15 \pm 4	18 \pm 4	17 \pm 4	16 \pm 4	17 \pm 4	18 \pm 4	
09/08/17 - 09/15/17	14 \pm 4	10 \pm 4	11 \pm 4	15 \pm 4	12 \pm 4	14 \pm 4	11 \pm 4	15 \pm 4	11 \pm 4	
09/15/17 - 09/22/17	25 \pm 5	25 \pm 5	22 \pm 4	20 \pm 4	26 \pm 5	28 \pm 5	29 \pm 5	20 \pm 4	27 \pm 5	
09/22/17 - 09/29/17	25 \pm 4	29 \pm 5	26 \pm 4	26 \pm 5	25 \pm 4	27 \pm 5	29 \pm 5	26 \pm 5	26 \pm 5	
09/29/17 - 10/06/17	13 \pm 4	16 \pm 4	12 \pm 4	12 \pm 4	15 \pm 4	18 \pm 4	20 \pm 5	17 \pm 4	14 \pm 4	
10/06/17 - 10/13/17	20 \pm 4	19 \pm 4	19 \pm 4	20 \pm 4	18 \pm 4	19 \pm 4	19 \pm 4	18 \pm 4	21 \pm 4	
10/13/17 - 10/20/17	17 \pm 4	15 \pm 4	16 \pm 4	14 \pm 4	15 \pm 4	14 \pm 4	14 \pm 4	19 \pm 4	16 \pm 4	
10/20/17 - 10/27/17	12 \pm 4	11 \pm 4	15 \pm 4	11 \pm 4	14 \pm 4	12 \pm 4	14 \pm 4	11 \pm 4	13 \pm 4	
10/27/17 - 11/03/17	10 \pm 4	11 \pm 4	11 \pm 4	6 \pm 3	11 \pm 4	5 \pm 3	9 \pm 4	10 \pm 4	9 \pm 4	
11/03/17 - 11/10/17	23 \pm 4	23 \pm 4	22 \pm 4	17 \pm 4	23 \pm 4	23 \pm 4	24 \pm 4	23 \pm 4	23 \pm 4	
11/10/17 - 11/17/17	17 \pm 4	15 \pm 4	15 \pm 4	18 \pm 4	17 \pm 4	17 \pm 5	16 \pm 4	17 \pm 4	22 \pm 5	
11/17/17 - 11/24/17	23 \pm 5	20 \pm 4	18 \pm 4	21 \pm 4	20 \pm 4	22 \pm 4	21 \pm 4	20 \pm 4	23 \pm 4	
11/24/17 - 12/01/17	19 \pm 4	22 \pm 4	19 \pm 4	19 \pm 4	16 \pm 4	18 \pm 4	18 \pm 4	19 \pm 4	19 \pm 4	
12/01/17 - 12/08/17	21 \pm 4	18 \pm 4	23 \pm 5	24 \pm 5	22 \pm 4	22 \pm 4	24 \pm 5	23 \pm 4	22 \pm 4	
12/08/17 - 12/15/17	18 \pm 4	20 \pm 4	18 \pm 4	20 \pm 4	15 \pm 4	20 \pm 5	14 \pm 4	21 \pm 4	14 \pm 4	
12/15/17 - 12/22/17	21 \pm 4	23 \pm 4	24 \pm 4	22 \pm 4	23 \pm 4	15 \pm 4	25 \pm 4	24 \pm 4	24 \pm 4	
12/22/17 - 12/30/17	23 \pm 4	23 \pm 4	22 \pm 4	22 \pm 4	22 \pm 4	27 \pm 6	23 \pm 4	20 \pm 4	24 \pm 4	
MEAN	16 \pm 8	16 \pm 9	16 \pm 8	16 \pm 9	16 \pm 8	16 \pm 10	17 \pm 9	16 \pm 9	16 \pm 9	

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

Table C-V.1

**CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF E-3 PCI/CU METER \pm 2 SIGMA**

COLLECTION PERIOD	GROUP III				GROUP IV
	D-08	D-10	D-14	D-55	D-12
12/30/16 - 01/06/17	19 \pm 4	17 \pm 4	19 \pm 4	21 \pm 4	18 \pm 4
01/06/17 - 01/13/17	21 \pm 5	22 \pm 5	22 \pm 5	24 \pm 5	20 \pm 4
01/13/17 - 01/20/17	15 \pm 4	15 \pm 4	17 \pm 4	13 \pm 4	17 \pm 4
01/20/17 - 01/27/17	12 \pm 4	11 \pm 4	12 \pm 4	15 \pm 4	12 \pm 4
01/27/17 - 02/03/17	19 \pm 5	15 \pm 4	15 \pm 4	15 \pm 4	14 \pm 4
02/03/17 - 02/10/17	21 \pm 5	15 \pm 4	19 \pm 4	17 \pm 4	13 \pm 4
02/10/17 - 02/17/17	19 \pm 5	16 \pm 5	15 \pm 5	15 \pm 4	17 \pm 5
02/17/17 - 02/24/17	19 \pm 4	22 \pm 4	18 \pm 4	19 \pm 4	20 \pm 4
02/24/17 - 03/03/17	15 \pm 4	13 \pm 4	16 \pm 4	14 \pm 4	15 \pm 4
03/03/17 - 03/10/17	16 \pm 4	13 \pm 4	13 \pm 4	14 \pm 4	13 \pm 4
03/10/17 - 03/17/17	18 \pm 4	14 \pm 4	14 \pm 4	15 \pm 4	15 \pm 4
03/17/17 - 03/24/17	20 \pm 5	19 \pm 5	10 \pm 4	20 \pm 5	15 \pm 5
03/24/17 - 03/31/17	15 \pm 4	15 \pm 4	14 \pm 4	12 \pm 3	13 \pm 4
03/31/17 - 04/07/17	(1)	(1)	(1)	(1)	(1)
04/07/17 - 04/14/17	12 \pm 4	11 \pm 4	12 \pm 4	12 \pm 4	11 \pm 4
04/14/17 - 04/21/17	12 \pm 4	14 \pm 4	12 \pm 4	11 \pm 4	12 \pm 4
04/21/17 - 04/28/17	13 \pm 4	6 \pm 3	10 \pm 4	11 \pm 4	12 \pm 4
04/28/17 - 05/05/17	13 \pm 4	9 \pm 3	11 \pm 4	9 \pm 3	10 \pm 3
05/05/17 - 05/11/17	14 \pm 5	16 \pm 5	14 \pm 4	12 \pm 4	13 \pm 4
05/11/17 - 05/19/17	15 \pm 4	15 \pm 4	16 \pm 4	18 \pm 4	15 \pm 4
05/19/17 - 05/26/17	11 \pm 4	10 \pm 3	9 \pm 3	11 \pm 4	9 \pm 3
05/26/17 - 06/02/17	13 \pm 4	18 \pm 4	11 \pm 4	12 \pm 4	14 \pm 4
06/02/17 - 06/09/17	15 \pm 4	14 \pm 4	17 \pm 4	20 \pm 4	20 \pm 4
06/09/17 - 06/16/17	18 \pm 4	16 \pm 4	16 \pm 4	20 \pm 4	12 \pm 4
06/16/17 - 06/23/17	14 \pm 4	10 \pm 4	10 \pm 4	13 \pm 4	10 \pm 4
06/23/17 - 06/30/17	8 \pm 3	10 \pm 4	12 \pm 4	10 \pm 4	10 \pm 4
06/30/17 - 07/07/17	21 \pm 4	22 \pm 5	17 \pm 4	19 \pm 4	19 \pm 4
07/07/17 - 07/14/17	15 \pm 4	11 \pm 4	12 \pm 4	16 \pm 4	18 \pm 4
07/14/17 - 07/21/17	19 \pm 4	21 \pm 4	15 \pm 4	18 \pm 4	20 \pm 4
07/21/17 - 07/28/17	15 \pm 4	12 \pm 3	17 \pm 4	17 \pm 4	15 \pm 4
07/28/17 - 08/04/17	14 \pm 4	17 \pm 4	17 \pm 4	14 \pm 4	17 \pm 4
08/04/17 - 08/11/17	15 \pm 4	20 \pm 4	17 \pm 4	22 \pm 4	17 \pm 4
08/11/17 - 08/18/17	18 \pm 4	16 \pm 4	18 \pm 5	19 \pm 4	20 \pm 4
08/18/17 - 08/25/17	21 \pm 4	18 \pm 4	15 \pm 4	18 \pm 4	18 \pm 4
08/25/17 - 09/01/17	15 \pm 4	19 \pm 4	18 \pm 4	20 \pm 4	16 \pm 4
09/01/17 - 09/08/17	18 \pm 5	14 \pm 4	12 \pm 5	16 \pm 4	15 \pm 4
09/08/17 - 09/15/17	10 \pm 4	11 \pm 4	14 \pm 4	11 \pm 4	11 \pm 4
09/15/17 - 09/22/17	25 \pm 5	24 \pm 4	25 \pm 5	25 \pm 5	24 \pm 5
09/22/17 - 09/29/17	25 \pm 4	26 \pm 5	29 \pm 5	22 \pm 4	26 \pm 5
09/29/17 - 10/06/17	14 \pm 4	15 \pm 4	14 \pm 4	16 \pm 4	17 \pm 4
10/06/17 - 10/13/17	21 \pm 4	18 \pm 4	21 \pm 4	15 \pm 4	22 \pm 4
10/13/17 - 10/20/17	13 \pm 4	19 \pm 4	16 \pm 4	19 \pm 4	18 \pm 4
10/20/17 - 10/27/17	12 \pm 4	10 \pm 4	11 \pm 4	13 \pm 4	14 \pm 4
10/27/17 - 11/03/17	8 \pm 3	7 \pm 3	5 \pm 3	10 \pm 4	11 \pm 4
11/03/17 - 11/10/17	20 \pm 4	25 \pm 4	25 \pm 5	24 \pm 4	21 \pm 4
11/10/17 - 11/17/17	13 \pm 4	16 \pm 4	14 \pm 4	14 \pm 4	16 \pm 4
11/17/17 - 11/24/17	19 \pm 4	20 \pm 4	23 \pm 5	22 \pm 5	20 \pm 4
11/24/17 - 12/01/17	19 \pm 4	16 \pm 4	19 \pm 4	19 \pm 4	20 \pm 4
12/01/17 - 12/08/17	23 \pm 5	20 \pm 4	21 \pm 5	20 \pm 4	22 \pm 4
12/08/17 - 12/15/17	15 \pm 4	16 \pm 4	20 \pm 5	18 \pm 4	15 \pm 4
12/15/17 - 12/22/17	24 \pm 4	19 \pm 4	22 \pm 4	21 \pm 4	23 \pm 4
12/22/17 - 12/30/17	21 \pm 4	20 \pm 4	21 \pm 4	20 \pm 4	19 \pm 4
MEAN \pm 2 STD DEV	16 \pm 8	16 \pm 9	16 \pm 9	16 \pm 8	16 \pm 8

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

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, 2017
RESULTS IN UNITS OF E-3 PCI/CU METER \pm 2 SIGMA**

GROUP I - ON-SITE LOCATIONS				GROUP II - NEAR-FIELD LOCATIONS				GROUP III - FAR-FIELD LOCATIONS				GROUP IV - CONTROL LOCATION			
COLLECTION PERIOD	MIN	MAX	MEAN \pm 2SD	COLLECTION PERIOD	MIN	MAX	MEAN \pm 2SD	COLLECTION PERIOD	MIN	MAX	MEAN \pm 2SD	COLLECTION PERIOD	MIN	MAX	MEAN \pm 2SD
12/30/16 - 02/03/17	10	25	16 \pm 9	12/30/16 - 02/03/17	12	24	17 \pm 6	12/30/16 - 02/03/17	11	24	17 \pm 8	12/30/16 - 02/03/17	12	20	16 \pm 6
02/03/17 - 03/03/17	16	22	18 \pm 4	02/03/17 - 03/03/17	14	25	18 \pm 6	02/03/17 - 03/03/17	13	22	17 \pm 5	02/03/17 - 03/03/17	13	20	16 \pm 6
03/03/17 - 03/31/17	12	17	15 \pm 4	03/03/17 - 03/31/17	9	19	14 \pm 5	03/03/17 - 03/31/17	10	20	15 \pm 6	03/03/17 - 03/31/17	13	15	14 \pm 2
04/07/17 - 04/28/17	6	14	11 \pm 5	04/07/17 - 04/28/17	6	14	10 \pm 4	04/07/17 - 04/28/17	6	14	11 \pm 4	04/07/17 - 04/28/17	11	12	11 \pm 1
04/28/17 - 06/02/17	10	19	14 \pm 5	04/28/17 - 06/02/17	8	17	12 \pm 5	04/28/17 - 06/02/17	9	18	13 \pm 6	04/28/17 - 06/02/17	9	15	12 \pm 5
06/02/17 - 06/30/17	7	19	13 \pm 7	06/02/17 - 06/30/17	8	20	13 \pm 7	06/02/17 - 06/30/17	8	20	14 \pm 8	06/02/17 - 06/30/17	10	20	13 \pm 10
06/30/17 - 08/04/17	11	22	16 \pm 6	06/30/17 - 08/04/17	13	23	16 \pm 5	06/30/17 - 08/04/17	11	22	16 \pm 6	06/30/17 - 08/04/17	15	20	18 \pm 3
08/04/17 - 09/01/17	13	19	16 \pm 4	08/04/17 - 09/01/17	15	20	17 \pm 3	08/04/17 - 09/01/17	15	22	18 \pm 4	08/04/17 - 09/01/17	16	20	18 \pm 3
09/01/17 - 09/29/17	10	29	19 \pm 13	09/01/17 - 09/29/17	11	29	20 \pm 12	09/01/17 - 09/29/17	10	29	19 \pm 13	09/01/17 - 09/29/17	11	26	19 \pm 15
09/29/17 - 11/03/17	10	20	14 \pm 7	09/29/17 - 11/03/17	5	21	14 \pm 8	09/29/17 - 11/03/17	5	21	14 \pm 9	09/29/17 - 11/03/17	11	22	16 \pm 8
11/03/17 - 12/01/17	15	23	20 \pm 6	11/03/17 - 12/01/17	16	24	20 \pm 5	11/03/17 - 12/01/17	13	25	19 \pm 8	11/03/17 - 12/01/17	16	21	19 \pm 5
12/01/17 - 12/30/17	18	24	21 \pm 4	12/01/17 - 12/29/17	14	27	21 \pm 7	12/01/17 - 12/29/17	15	24	20 \pm 4	12/01/17 - 12/29/17	15	23	20 \pm 7
12/30/16 - 12/30/17	6	29	16 \pm 8	12/30/16 - 12/29/17	5	29	16 \pm 9	12/30/16 - 12/29/17	5	29	16 \pm 9	12/30/16 - 12/29/17	9	26	16 \pm 8

Table C-V.3

**CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
D-01	12/30/16 - 03/31/17		< 2	< 2	< 4	< 1	< 3	< 2	< 4	< 2	< 2	< 10	< 3
	04/07/17 - 06/30/17		< 3	< 2	< 7	< 3	< 4	< 3	< 4	< 2	< 2	< 15	< 5
	06/30/17 - 09/29/17		< 4	< 4	< 14	< 4	< 15	< 4	< 9	< 5	< 4	< 37	< 17
	09/29/17 - 12/29/17		< 2	< 3	< 7	< 3	< 6	< 3	< 5	< 3	< 3	< 23	< 8
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-02	12/30/16 - 03/31/17		< 3	< 2	< 6	< 3	< 6	< 2	< 4	< 3	< 2	< 10	< 6
	04/07/17 - 06/30/17		< 4	< 5	< 9	< 4	< 10	< 5	< 7	< 5	< 3	< 22	< 6
	06/30/17 - 09/29/17		< 2	< 2	< 4	< 2	< 5	< 3	< 4	< 2	< 2	< 15	< 9
	09/29/17 - 12/30/17		< 3	< 3	< 8	< 2	< 10	< 5	< 7	< 3	< 3	< 30	< 8
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-03	12/30/16 - 03/31/17		< 3	< 4	< 7	< 3	< 8	< 4	< 7	< 4	< 4	< 20	< 7
	04/07/17 - 06/30/17		< 2	< 3	< 4	< 4	< 7	< 3	< 5	< 2	< 2	< 12	< 4
	06/30/17 - 09/29/17		< 2	< 3	< 7	< 3	< 6	< 3	< 5	< 2	< 2	< 18	< 7
	09/29/17 - 12/30/17		< 2	< 2	< 4	< 1	< 5	< 2	< 3	< 1	< 2	< 14	< 5
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-04	12/30/16 - 03/31/17		< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 2	< 2	< 12	< 3
	04/07/17 - 06/30/17		< 4	< 4	< 8	< 4	< 6	< 3	< 6	< 3	< 3	< 24	< 5
	06/30/17 - 09/29/17		< 3	< 3	< 7	< 4	< 8	< 3	< 7	< 3	< 3	< 30	< 11
	09/29/17 - 12/29/17		< 2	< 2	< 4	< 4	< 6	< 3	< 4	< 3	< 1	< 18	< 3
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-07	12/30/16 - 03/31/17		< 2	< 2	< 7	< 2	< 6	< 3	< 3	< 3	< 2	< 14	< 4
	04/07/17 - 06/30/17		< 3	< 3	< 4	< 2	< 4	< 3	< 4	< 3	< 3	< 16	< 6
	06/30/17 - 09/29/17		< 2	< 2	< 5	< 3	< 5	< 2	< 5	< 3	< 3	< 17	< 7
	09/29/17 - 12/29/17		< 2	< 3	< 7	< 3	< 4	< 3	< 6	< 2	< 2	< 18	< 7
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-08	12/30/16 - 03/31/17		< 3	< 4	< 6	< 4	< 7	< 3	< 6	< 4	< 3	< 21	< 7
	04/07/17 - 06/30/17		< 3	< 3	< 7	< 2	< 7	< 4	< 5	< 4	< 3	< 18	< 5
	06/30/17 - 09/29/17		< 3	< 3	< 6	< 2	< 6	< 4	< 6	< 2	< 3	< 27	< 13
	09/29/17 - 12/29/17		< 2	< 2	< 4	< 3	< 5	< 2	< 4	< 2	< 2	< 18	< 4
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-10	12/30/16 - 03/31/17		< 2	< 2	< 5	< 3	< 6	< 2	< 4	< 2	< 2	< 13	< 5
	04/07/17 - 06/30/17		< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 4	< 3	< 18	< 5
	06/30/17 - 09/29/17		< 3	< 4	< 9	< 4	< 7	< 4	< 6	< 4	< 3	< 29	< 11
	09/29/17 - 12/29/17		< 2	< 2	< 6	< 2	< 5	< 2	< 4	< 3	< 3	< 20	< 10
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-

Table C-V.3

**CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
D-12	12/30/16 - 03/31/17		< 3	< 2	< 4	< 3	< 4	< 2	< 4	< 3	< 3	< 16	< 3
	04/07/17 - 06/30/17		< 2	< 3	< 5	< 2	< 6	< 2	< 4	< 3	< 2	< 15	< 3
	06/30/17 - 09/29/17		< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 2	< 2	< 17	< 6
	09/29/17 - 12/29/17		< 3	< 4	< 8	< 4	< 8	< 3	< 6	< 3	< 3	< 27	< 6
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-14	12/30/16 - 03/31/17		< 2	< 2	< 1	< 1	< 5	< 1	< 3	< 2	< 1	< 9	< 2
	04/07/17 - 06/30/17		< 2	< 2	< 4	< 4	< 6	< 2	< 4	< 2	< 2	< 15	< 7
	06/30/17 - 09/29/17		< 2	< 2	< 6	< 2	< 7	< 3	< 5	< 2	< 2	< 21	< 11
	09/29/17 - 12/29/17		< 2	< 2	< 6	< 3	< 6	< 2	< 4	< 3	< 2	< 17	< 6
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-45	12/30/16 - 03/31/17		< 2	< 3	< 5	< 3	< 6	< 2	< 4	< 3	< 2	< 13	< 4
	04/07/17 - 06/30/17		< 4	< 4	< 5	< 4	< 10	< 4	< 6	< 4	< 4	< 24	< 8
	06/30/17 - 09/29/17		< 4	< 4	< 8	< 4	< 10	< 4	< 7	< 4	< 4	< 34	< 14
	09/29/17 - 12/29/17		< 3	< 2	< 6	< 4	< 6	< 4	< 5	< 3	< 3	< 19	< 10
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-53	12/30/16 - 03/31/17		< 4	< 4	< 9	< 4	< 8	< 4	< 7	< 5	< 3	< 23	< 7
	04/07/17 - 06/30/17		< 2	< 2	< 7	< 3	< 6	< 2	< 5	< 2	< 2	< 13	< 6
	06/30/17 - 09/29/17		< 2	< 2	< 5	< 2	< 3	< 3	< 3	< 2	< 2	< 18	< 6
	09/29/17 - 12/29/17		< 3	< 3	< 6	< 3	< 7	< 3	< 4	< 3	< 3	< 21	< 8
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-55	12/30/16 - 03/31/17		< 2	< 2	< 4	< 3	< 5	< 2	< 4	< 3	< 2	< 12	< 2
	04/07/17 - 06/30/17		< 3	< 2	< 9	< 3	< 8	< 3	< 6	< 3	< 3	< 16	< 4
	06/30/17 - 09/29/17		< 2	< 2	< 7	< 3	< 7	< 3	< 4	< 2	< 3	< 24	< 11
	09/29/17 - 12/29/17		< 2	< 2	< 5	< 3	< 5	< 2	< 3	< 2	< 2	< 13	< 5
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-56	12/30/16 - 03/31/17		< 3	< 3	< 4	< 1	< 6	< 3	< 4	< 2	< 2	< 13	< 6
	04/07/17 - 06/30/17		< 3	< 3	< 6	< 3	< 7	< 4	< 7	< 4	< 3	< 20	< 5
	06/30/17 - 09/29/17		< 3	< 3	< 8	< 4	< 7	< 5	< 7	< 4	< 3	< 32	< 11
	09/29/17 - 12/29/17		< 2	< 2	< 6	< 2	< 8	< 2	< 4	< 3	< 2	< 17	< 7
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
D-58	12/30/16 - 03/31/17		< 3	< 4	< 7	< 4	< 8	< 3	< 6	< 4	< 3	< 16	< 5
	04/07/17 - 06/30/17		< 3	< 2	< 4	< 3	< 6	< 3	< 4	< 2	< 2	< 15	< 5
	06/30/17 - 09/29/17		< 2	< 2	< 8	< 2	< 5	< 2	< 4	< 3	< 2	< 18	< 6
	09/29/17 - 12/29/17		< 3	< 2	< 5	< 2	< 6	< 2	< 5	< 2	< 2	< 18	< 6
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-

Table C-VI.1

**CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
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	D-58
12/30/16 - 01/06/17	< 38	< 38	< 38	< 16	< 37	< 24	< 39	< 39	< 37
01/06/17 - 01/13/17	< 32	< 31	< 30	< 32	< 22	< 45	< 45	< 46	< 17
01/13/17 - 01/20/17	< 16	< 39	< 37	< 38	< 39	< 39	< 41	< 42	< 39
01/20/17 - 01/27/17	< 10	< 23	< 24	< 23	< 23	< 23	< 20	< 20	< 20
01/27/17 - 02/03/17	< 14	< 32	< 30	< 32	< 31	< 35	< 36	< 35	< 14
02/03/17 - 02/10/17	< 23	< 64	< 65	< 65	< 66	< 48	< 55	< 54	< 54
02/10/17 - 02/17/17	< 21	< 50	< 50	< 48	< 51	< 27	< 55	< 54	< 52
02/17/17 - 02/24/17	< 23	< 56	< 54	< 54	< 56	< 44	< 34	< 34	< 33
02/24/17 - 03/03/17	< 22	< 52	< 52	< 54	< 51	< 44	< 44	< 45	< 46
03/03/17 - 03/10/17	< 12	< 28	< 27	< 27	< 27	< 48	< 45	< 44	< 44
03/10/17 - 03/17/17	< 17	< 48	< 47	< 46	< 47	< 49	< 53	< 51	< 51
03/17/17 - 03/24/17	< 14	< 33	< 32	< 33	< 32	< 15	< 32	< 32	< 31
03/24/17 - 03/31/17	< 16	< 38	< 37	< 39	< 38	< 20	< 35	< 35	< 36
03/31/17 - 04/07/17	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
04/07/17 - 04/14/17	< 13	< 31	< 30	< 31	< 30	< 24	< 31	< 29	< 30
04/14/17 - 04/21/17	< 21	< 49	< 49	< 48	< 49	< 43	< 58	< 60	< 58
04/21/17 - 04/28/17	< 17	< 40	< 40	< 40	< 40	< 18	< 40	< 41	< 42
04/28/17 - 05/05/17	< 19	< 48	< 45	< 45	< 45	< 35	< 44	< 44	< 42
05/05/17 - 05/11/17	< 21	< 51	< 50	< 49	< 50	< 21	< 45	< 45	< 45
05/11/17 - 05/19/17	< 34	< 34	< 32	< 13	< 33	< 31	< 12	< 31	< 31
05/19/17 - 05/26/17	< 43	< 18	< 43	< 40	< 42	< 22	< 47	< 47	< 47
05/26/17 - 06/02/17	< 20	< 47	< 47	< 44	< 46	< 28	< 28	< 29	< 11
06/02/17 - 06/09/17	< 19	< 46	< 46	< 44	< 45	< 27	< 45	< 44	< 44
06/09/17 - 06/16/17	< 18	< 43	< 44	< 44	< 43	< 49	< 48	< 48	< 48
06/16/17 - 06/23/17	< 17	< 40	< 39	< 39	< 40	< 15	< 40	< 41	< 41
06/23/17 - 06/30/17	< 39	< 37	< 38	< 37	< 44	< 51	< 52	< 52	< 26
06/30/17 - 07/07/17	< 31	< 40	< 40	< 39	< 39	< 42	< 43	< 43	< 19
07/07/17 - 07/14/17	< 20	< 45	< 45	< 46	< 45	< 43	< 44	< 44	< 18
07/14/17 - 07/21/17	< 15	< 36	< 35	< 34	< 35	< 16	< 57	< 57	< 57
07/21/17 - 07/28/17	< 23	< 53	< 53	< 53	< 53	< 41	< 51	< 51	< 52
07/28/17 - 08/04/17	< 17	< 39	< 40	< 42	< 40	< 15	< 44	< 45	< 45
08/04/17 - 08/11/17	< 15	< 41	< 40	< 39	< 41	< 44	< 24	< 44	< 44
08/11/17 - 08/18/17	< 21	< 37	< 37	< 36	< 38	< 41	< 46	< 47	< 47
08/18/17 - 08/25/17	< 14	< 39	< 39	< 40	< 40	< 21	< 54	< 55	< 53
08/25/17 - 09/01/17	< 53	< 52	< 52	< 22	< 55	< 50	< 46	< 47	< 20
09/01/17 - 09/08/17	< 19	< 43	< 43	< 44	< 44	< 39	< 44	< 44	< 44
09/08/17 - 09/15/17	< 17	< 39	< 38	< 39	< 39	< 18	< 41	< 41	< 41
09/15/17 - 09/22/17	< 31	< 36	< 36	< 37	< 36	< 55	< 38	< 38	< 32
09/22/17 - 09/29/17	< 13	< 30	< 28	< 31	< 30	< 28	< 52	< 43	< 42
09/29/17 - 10/06/17	< 14	< 34	< 34	< 33	< 33	< 51	< 55	< 49	< 26
10/06/17 - 10/13/17	< 19	< 45	< 46	< 45	< 45	< 36	< 44	< 45	< 43
10/13/17 - 10/20/17	< 15	< 35	< 35	< 35	< 35	< 31	< 37	< 38	< 38
10/20/17 - 10/27/17	< 22	< 51	< 52	< 50	< 51	< 60	< 48	< 25	< 48
10/27/17 - 11/03/17	< 17	< 38	< 39	< 40	< 40	< 32	< 52	< 53	< 52
11/03/17 - 11/10/17	< 16	< 40	< 41	< 39	< 40	< 35	< 36	< 37	< 35
11/10/17 - 11/17/17	< 18	< 43	< 45	< 43	< 43	< 41	< 52	< 52	< 54
11/17/17 - 11/24/17	< 22	< 52	< 53	< 54	< 52	< 54	< 53	< 22	< 53
11/24/17 - 12/01/17	< 17	< 41	< 41	< 41	< 41	< 47	< 46	< 46	< 24
12/01/17 - 12/08/17	< 17	< 40	< 42	< 41	< 41	< 38	< 54	< 54	< 55
12/08/17 - 12/15/17	< 16	< 39	< 40	< 38	< 39	< 46	< 37	< 37	< 15
12/15/17 - 12/22/17	< 63	< 63	< 26	< 65	< 64	< 40	< 58	< 58	< 58
12/22/17 - 12/29/17	< 41	< 35	< 37	< 17	< 42	< 68	< 55	< 57	< 56
MEAN	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-VI.1

**CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
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
12/30/16 - 01/06/17	< 25	< 24	< 25	< 39	< 9
01/06/17 - 01/13/17	< 54	< 52	< 53	< 45	< 50
01/13/17 - 01/20/17	< 16	< 40	< 39	< 41	< 36
01/20/17 - 01/27/17	< 9	< 22	< 23	< 20	< 22
01/27/17 - 02/03/17	< 31	< 30	< 32	< 35	< 29
02/03/17 - 02/10/17	< 22	< 49	< 50	< 55	< 47
02/10/17 - 02/17/17	< 51	< 50	< 51	< 55	< 49
02/17/17 - 02/24/17	< 44	< 44	< 44	< 33	< 16
02/24/17 - 03/03/17	< 43	< 44	< 44	< 45	< 24
03/03/17 - 03/10/17	< 51	< 50	< 48	< 44	< 19
03/10/17 - 03/17/17	< 22	< 51	< 50	< 51	< 48
03/17/17 - 03/24/17	< 39	< 39	< 39	< 32	< 38
03/24/17 - 03/31/17	< 47	< 46	< 47	< 36	< 46
03/31/17 - 04/07/17	(1)	(1)	(1)	(1)	(1)
04/07/17 - 04/14/17	< 25	< 25	< 24	< 30	< 9
04/14/17 - 04/21/17	< 44	< 43	< 43	< 59	< 25
04/21/17 - 04/28/17	< 33	< 32	< 33	< 41	< 31
04/28/17 - 05/05/17	< 36	< 36	< 35	< 43	< 19
05/05/17 - 05/11/17	< 53	< 54	< 54	< 47	< 54
05/11/17 - 05/19/17	< 50	< 46	< 48	< 31	< 50
05/19/17 - 05/26/17	< 57	< 55	< 56	< 47	< 55
05/26/17 - 06/02/17	< 49	< 47	< 48	< 29	< 48
06/02/17 - 06/09/17	< 11	< 26	< 27	< 45	< 28
06/09/17 - 06/16/17	< 41	< 41	< 43	< 50	< 44
06/16/17 - 06/23/17	< 41	< 40	< 42	< 42	< 43
06/23/17 - 06/30/17	< 47	< 44	< 21	< 53	< 45
06/30/17 - 07/07/17	< 33	< 34	< 34	< 44	< 34
07/07/17 - 07/14/17	< 34	< 33	< 34	< 44	< 35
07/14/17 - 07/21/17	< 41	< 42	< 41	< 58	< 41
07/21/17 - 07/28/17	< 23	< 42	< 42	< 53	< 46
07/28/17 - 08/04/17	< 37	< 39	< 38	< 46	< 41
08/04/17 - 08/11/17	< 43	< 43	< 41	< 44	< 44
08/11/17 - 08/18/17	< 15	< 41	< 44	< 48	< 42
08/18/17 - 08/25/17	< 49	< 48	< 49	< 55	< 48
08/25/17 - 09/01/17	< 36	< 36	< 38	< 48	< 36
09/01/17 - 09/08/17	< 14	< 38	< 53	< 46	< 40
09/08/17 - 09/15/17	< 30	< 28	< 30	< 44	< 31
09/15/17 - 09/22/17	< 24	< 52	< 56	< 40	< 65
09/22/17 - 09/29/17	< 27	< 22	< 28	< 44	< 30
09/29/17 - 10/06/17	< 31	< 29	< 31	< 54	< 32
10/06/17 - 10/13/17	< 30	< 34	< 36	< 47	< 36
10/13/17 - 10/20/17	< 28	< 32	< 34	< 40	< 36
10/20/17 - 10/27/17	< 30	< 57	< 60	< 51	< 59
10/27/17 - 11/03/17	< 26	< 31	< 33	< 55	< 31
11/03/17 - 11/10/17	< 36	< 28	< 37	< 38	< 35
11/10/17 - 11/17/17	< 34	< 39	< 40	< 56	< 39
11/17/17 - 11/24/17	< 36	< 35	< 37	< 56	< 36
11/24/17 - 12/01/17	< 23	< 22	< 23	< 48	< 23
12/01/17 - 12/08/17	< 21	< 35	< 39	< 58	< 37
12/08/17 - 12/15/17	< 28	< 27	< 30	< 39	< 28
12/15/17 - 12/22/17	< 32	< 38	< 41	< 62	< 38
12/22/17 - 12/29/17	< 20	< 46	< 50	< 59	< 47
MEAN	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**Table C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN
THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/LITER + 2 SIGMA**

COLLECTION PERIOD	<u>CONTROL FARM</u> D-25
01/04/17	< 0.6
02/01/17	< 0.8
03/01/17	< 0.5
04/20/17	< 0.7
05/04/17	< 0.8
05/18/17	< 0.7
05/31/17	< 0.8
06/15/17	< 1.0
06/28/17	< 0.7
07/12/17	< 0.4
07/27/17	< 0.8
08/10/17	< 0.6
08/24/17	< 0.6
09/06/17	< 0.4
09/21/17	< 0.4
10/05/17	< 0.8
10/19/17	< 0.4
11/01/17	< 0.8
12/06/17	< 0.7
<i>MEAN</i>	-

Table C-VII.2

**CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA**

COLLECTION												
SITE	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	01/04/17	< 7	< 8	< 15	< 8	< 17	< 8	< 13	< 6	< 7	< 33	< 6
	02/01/17	< 8	< 7	< 11	< 8	< 15	< 8	< 11	< 6	< 7	< 29	< 11
	3/1/2017	< 6	< 7	< 15	< 7	< 13	< 7	< 14	< 7	< 8	< 41	< 10
	04/20/17	< 5	< 7	< 12	< 6	< 13	< 6	< 10	< 5	< 6	< 25	< 7
	05/04/17	< 6	< 7	< 17	< 7	< 15	< 8	< 10	< 8	< 7	< 33	< 8
	05/18/17	< 9	< 7	< 16	< 9	< 18	< 7	< 14	< 8	< 8	< 31	< 10
	05/31/17	< 5	< 5	< 10	< 4	< 11	< 5	< 8	< 6	< 5	< 25	< 5
	06/15/17	< 6	< 7	< 12	< 7	< 15	< 7	< 12	< 7	< 7	< 25	< 8
	07/12/17	< 10	< 11	< 23	< 10	< 21	< 10	< 18	< 11	< 9	< 47	< 14
	06/28/17	< 9	< 11	< 25	< 12	< 21	< 9	< 17	< 12	< 9	< 46	< 13
	07/27/17	< 10	< 11	< 26	< 13	< 21	< 9	< 17	< 9	< 9	< 38	< 13
	08/10/17	< 6	< 6	< 15	< 7	< 15	< 5	< 10	< 6	< 6	< 29	< 9
	08/24/17	< 8	< 7	< 16	< 7	< 23	< 9	< 12	< 11	< 8	< 33	< 12
	09/06/17	< 5	< 6	< 11	< 6	< 12	< 6	< 10	< 5	< 5	< 43	< 13
	09/21/17	< 7	< 9	< 20	< 8	< 20	< 8	< 14	< 8	< 9	< 41	< 15
	10/05/17	< 8	< 8	< 19	< 8	< 20	< 9	< 15	< 9	< 8	< 38	< 13
	10/19/17	< 10	< 10	< 22	< 9	< 20	< 9	< 16	< 11	< 10	< 47	< 12
11/01/17	< 5	< 6	< 14	< 6	< 14	< 5	< 9	< 6	< 6	< 26	< 9	
12/06/17	< 9	< 9	< 20	< 9	< 22	< 9	< 16	< 10	< 8	< 39	< 10	
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-VIII.1

**CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
	PERIOD													
D-CONTROL														
<i>Cucumbers</i>	08/10/17	< 23	< 19	< 48	< 21	< 51	< 22	< 42	< 37	< 25	< 23	< 107	< 23	
<i>Green cabbage</i>	08/10/17	< 31	< 24	< 66	< 30	< 66	< 33	< 47	< 46	< 32	< 30	< 130	< 44	
<i>Potatoes</i>	08/10/17	< 26	< 26	< 51	< 21	< 47	< 25	< 46	< 40	< 28	< 29	< 108	< 28	
	<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-	
D-QUAD 1														
<i>Potato leaves</i>	08/18/17	< 38	< 36	< 74	< 38	< 84	< 40	< 62	< 56	< 40	< 41	< 164	< 45	
<i>Potatoes</i>	08/18/17	< 45	< 50	< 97	< 54	< 89	< 53	< 89	< 59	< 57	< 55	< 199	< 58	
	<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-	
D-QUAD 2														
<i>Cabbage</i>	07/07/17	< 26	< 24	< 52	< 29	< 68	< 27	< 36	< 31	< 22	< 27	< 84	< 13	
<i>Green Onions</i>	07/07/17	< 45	< 48	< 87	< 52	< 99	< 51	< 83	< 58	< 51	< 46	< 150	< 55	
<i>Kohlrabi greens</i>	07/07/17	< 24	< 21	< 50	< 24	< 55	< 24	< 32	< 27	< 22	< 21	< 91	< 24	
	<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-	
D-QUAD 3														
<i>Beet greens</i>	07/28/17	< 34	< 41	< 85	< 31	< 87	< 39	< 64	< 52	< 37	< 39	< 155	< 43	
<i>Red Beets</i>	07/28/17	< 30	< 31	< 44	< 27	< 52	< 24	< 47	< 41	< 29	< 30	< 133	< 36	
	<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-	
D-QUAD 4														
<i>Radish greens</i>	07/21/17	< 29	< 31	< 52	< 37	< 71	< 29	< 46	< 42	< 33	< 33	< 127	< 36	
<i>Radishes</i>	07/21/17	< 37	< 31	< 69	< 40	< 69	< 38	< 57	< 46	< 44	< 42	< 154	< 34	
	<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-	

Table C-IX.1

QUARTERLY OSLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2017

RESULTS IN UNITS OF MREM/QUARTER \pm 2 STANDARD DEVIATIONS

STATION CODE	MEAN \pm 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-01-1	27.8 \pm 4.5	26.5	26.9	31.2	26.7
D-01-2	28.4 \pm 5.1	26.9	26.9	32.2	27.7
D-02-1	28.4 \pm 5.0	26.2	28.1	31.9	27.2
D-02-2	29.4 \pm 3.1	27.5	29.4	31.3	29.2
D-03-1	24.7 \pm 5.6	23.5	23.3	28.9	23.1
D-03-2	24.7 \pm 4.9	24.4	22.6	28.2	23.7
D-04-1	28.2 \pm 6.2	25.8	26.7	32.7	27.5
D-04-2	27.8 \pm 4.2	25.9	26.7	30.7	27.7
D-07-1	27.2 \pm 4.7	25.5	25.8	30.6	26.7
D-07-2	27.2 \pm 5.3	25.1	26.2	31.1	26.4
D-08-1	28.3 \pm 4.9	26.0	27.7	31.8	27.7
D-08-2	28.0 \pm 5.1	25.3	27.1	31.4	28.3
D-10-1	27.6 \pm 7.5	25.1	27.1	33.0	25.0
D-10-2	28.0 \pm 5.2	25.4	26.9	31.5	28.0
D-12-1	24.9 \pm 5.3	24.5	22.3	28.6	24.3
D-12-2	24.0 \pm 4.6	23.0	21.8	27.2	23.9
D-14-1	25.4 \pm 5.2	23.4	23.1	28.6	26.3
D-14-2	26.3 \pm 4.0	24.9	25.0	29.2	26.2
D-45-1	27.4 \pm 5.8	25.8	25.8	31.7	26.1
D-45-2	27.5 \pm 5.8	26.3	26.0	31.9	25.9
D-53-1	24.9 \pm 8.6	21.7	23.2	29.8	23.5 (1)
D-53-2	23.9 \pm 6.5	22.2	22.0	28.7	22.6
D-55-1	26.6 \pm 4.3	24.9	26.1	29.7	25.6
D-55-2	25.2 \pm 3.8	23.6	24.2	27.9	25.0
D-56-1	25.2 \pm 5.7	22.9	23.3	29.1	25.3
D-56-2	25.4 \pm 4.3	23.2	23.9	27.7	26.6
D-58-1	24.0 \pm 4.1	21.6	24.5	26.5	23.2
D-58-2	23.9 \pm 4.5	21.8	23.6	27.1	23.2
D-101-1	27.8 \pm 7.4	25.2	24.4	32.3	29.3
D-101-2	25.5 \pm 5.3	24.4	26.0	28.9	22.7
D-102-1	29.6 \pm 3.6	28.7	27.9	32.0	29.7
D-102-2	28.8 \pm 3.7	26.3	29.0	30.8	29.2
D-103-1	27.1 \pm 5.0	25.9	26.9	30.6	24.9
D-103-2	27.6 \pm 6.1	25.4	25.8	32.0	27.2
D-104-1	29.1 \pm 7.5	27.2	26.8	34.7	27.8
D-104-2	29.9 \pm 4.8	28.2	29.1	33.4	28.7
D-105-1	26.9 \pm 6.7	24.3	25.3	31.8	26.1
D-105-2	28.5 \pm 5.4	25.8	28.2	32.2	27.6
D-106-1	24.0 \pm 6.5	21.3	24.5	28.4	21.8
D-106-2	23.4 \pm 4.5	21.7	22.3	26.7	22.8
D-107-1	23.8 \pm 2.8	22.3	23.2	25.6	24.1
D-107-2	24.9 \pm 6.9	23.8	22.8	30.0	23.0
D-108-1	28.6 \pm 5.5	26.0	27.9	32.5	28.1
D-108-2	26.1 \pm 7.2	23.3	25.6	31.3	24.3
D-109-1	27.5 \pm 6.7	26.0	25.2	32.5	26.3
D-109-2	28.0 \pm 7.1	25.4	27.2	33.2	26.1
D-110-3	32.2 \pm 3.9	30.8	30.2	34.2	33.5
D-110-4	32.7 \pm 7.0	34.4	30.3	36.8	29.4
D-111-1	29.5 \pm 8.0	(1)	27.5	34.1	26.9
D-111-2	29.7 \pm 5.7	27.9	28.7	33.9	28.1
D-112A-1	25.9 \pm 6.7	23.7	22.9	30.3	26.7
D-112A-2	25.5 \pm 4.2	23.7	24.2	28.4	25.8
D-113-1	24.9 \pm 5.2	23.3	24.8	28.6	22.9
D-113-2	26.5 \pm 6.6	24.8	24.7	31.4	25.0

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-IX.1

QUARTERLY OSLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2017

RESULTS IN UNITS OF MREM/QUARTER \pm 2 STANDARD DEVIATIONS

STATION CODE	MEAN \pm 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-114-1	24.5 \pm 6.3	22.3	24.2	29.0	22.4
D-114-2	25.1 \pm 5.5	24.1	23.4	29.2	23.8
D-115-1	27.8 \pm 4.6	25.8	27.6	31.0	26.6
D-115-2	28.4 \pm 5.1	26.3	27.2	32.1	27.9
D-116-1	30.0 \pm 4.3	27.9	30.0	33.0	29.2
D-116-2	28.9 \pm 6.9	26.5	27.4	34.0	27.8
D-201-1	29.7 \pm 5.8	29.4	28.5	33.8	27.1
D-201-2	32.1 \pm 5.6	29.5	31.1	36.0	31.6
D-202-1	29.0 \pm 5.8	25.7	28.5	32.8	28.9
D-202-2	28.0 \pm 5.9	26.6	26.5	32.4	26.5
D-203-1	27.6 \pm 5.4	25.9	25.7	31.5	27.3
D-203-2	25.5 \pm 1.6	24.8	25.3	26.7	25.3
D-204-1	26.0 \pm 3.1	24.3	27.2	27.3	25.0
D-204-2	24.6 \pm 4.7	23.5	23.5	28.1	23.1
D-205-1	25.5 \pm 3.7	23.8	25.1	28.1	24.9
D-205-2	25.3 \pm 4.0	23.9	27.6	(1)	24.4
D-206-1	26.9 \pm 4.8	25.6	25.5	30.5	25.9
D-206-2	26.9 \pm 4.0	25.6	27.1	29.6	25.1
D-207-1	25.0 \pm 5.1	23.4	24.0	28.8	23.9
D-207-2	23.9 \pm 1.9	24.9	23.1	(1)	23.6
D-208-1	23.7 \pm 3.1	22.3	22.7	25.7	24.2
D-208-2	23.2 \pm 4.5	21.5	22.3	26.5	22.4
D-209-1	23.0 \pm 5.2	21.9	21.2	26.9	22.1
D-209-2	24.5 \pm 5.7	23.6	21.8	28.5	23.9
D-210-1	26.4 \pm 5.8	24.2	25.6	30.7	25.2
D-210-2	26.6 \pm 7.1	24.3	24.8	31.9	25.4
D-211-1	29.3 \pm 8.3	28.2	28.2	35.3	25.6
D-211-2	29.3 \pm 5.9	26.2	27.4	32.4	31.2
D-212-3	25.1 \pm 5.3	23.5	24.0	29.1	23.9
D-212-4	25.1 \pm 4.5	23.3	24.0	28.3	24.6
D-213-1	23.0 \pm 2.6	21.7	22.8	24.8	22.5
D-213-2	23.8 \pm 4.7	22.3	22.9	27.3	22.8
D-214-1	30.7 \pm 7.1	30.4	28.0	35.8	28.6
D-214-2	30.5 \pm 7.9	29.4	27.2	34.9	(1)
D-215-1	31.0 \pm 6.1	28.9	29.8	35.5	29.7
D-215-2	29.7 \pm 5.8	27.8	27.1	33.5	30.2
D-216-1	27.5 \pm 4.6	24.9	27.1	30.5	27.4
D-216-2	28.5 \pm 5.1	26.2	28.9	31.9	26.8

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.2 MEAN QUARTERLY OSLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF MREM/QUARTER \pm 2 STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	INNER RING \pm 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	25.3 \pm 5.6	25.2 \pm 5.0	24.9 \pm 3.0	23.8 \pm 2.1
APR-JUN	26.2 \pm 4.6	25.8 \pm 5.0	25.6 \pm 3.9	22.1 \pm 0.7
JUL-SEP	31.1 \pm 5.2	30.5 \pm 6.5	30.5 \pm 3.2	27.9 \pm 2.0
OCT-DEC	26.2 \pm 5.4	25.8 \pm 5.2	26.2 \pm 3.4	24.1 \pm 0.6

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF MREM/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN \pm 2 S.D.
INNER RING	135	21.3	36.8	27.2 \pm 6.9
OUTER RING	125	21.2	36.0	26.8 \pm 6.8
OTHER	96	21.7	33.0	26.8 \pm 5.5
CONTROL	8	21.8	28.6	24.5 \pm 4.7

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, D-58-1, D-58-2,

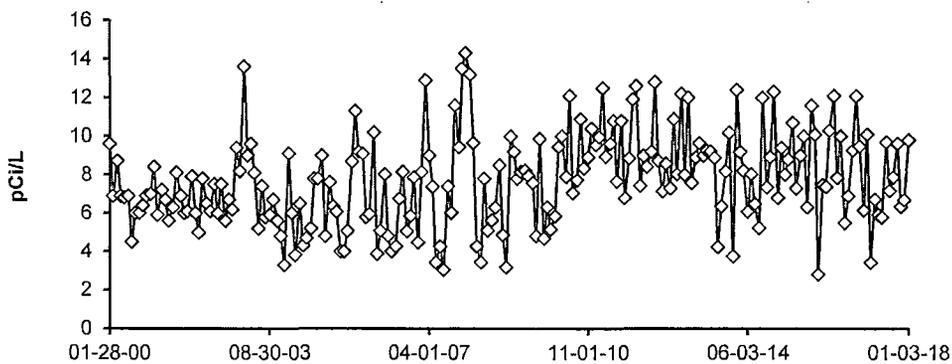
OUTER RING STATIONS - D-201-1, D-201-2, D-202-1, D-202-2, D-203-1, D-203-2, D-204-1, D-204-2, D-205-1, D-205-2, D-206-1, D-206-2, D-207-1, D-207-2, D-208-1, D-208-2, D-209-1, D-209-2, D-210-1, D-210-2, D-211-1, D-211-2, D-212-3, D-212-4, D-213-1, D-213-2, D-214-1, D-214-2, D-215-1, D-215-2, D-216-1,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

FIGURE C-1
SURFACE WATER - GROSS BETA - STATION
D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-52 (C) DesPlaines River at Will Road



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

FIGURE C-2
SURFACE WATER - GROSS BETA - STATION D-54 (C) and D-57 (C)
COLLECTED IN THE VICINITY OF DNPS, 2003 - 2017

D-54 (C) Kankakee River

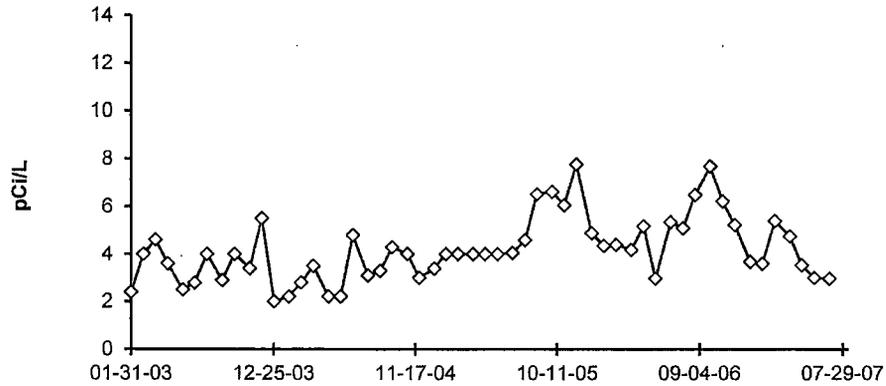
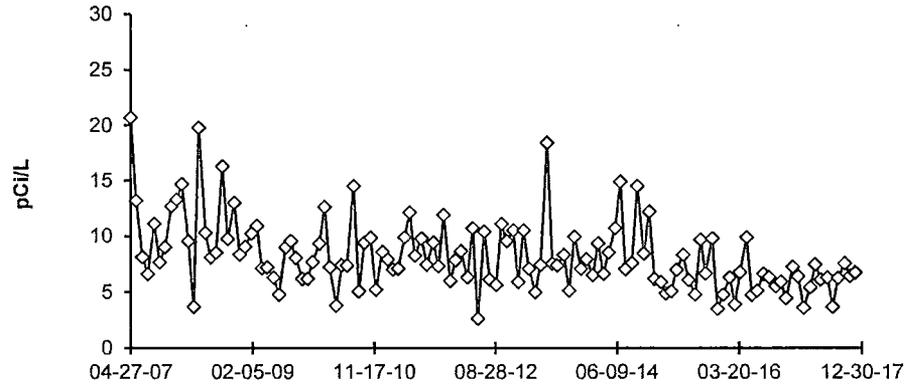
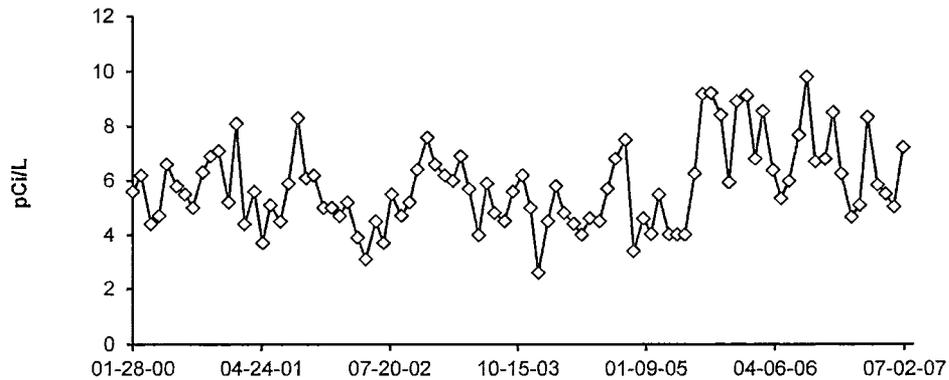


FIGURE C-3
SURFACE WATER - GROSS BETA - STATIONS D-21 and D-51
COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-21 Illinois River at EJ&E Bridge



D-51 Dresden Lock & Dam

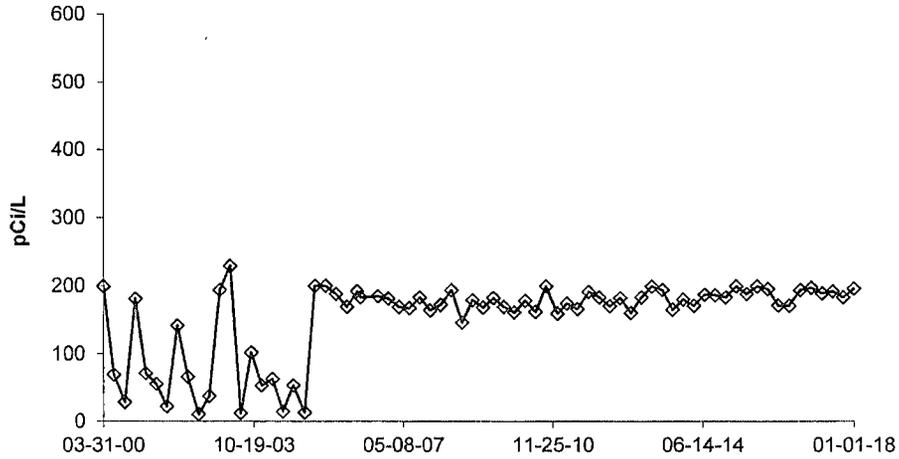


D-21 PLACED INTO SERVICE ON MARCH 30, 2007, REPLACED D-51

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

FIGURE C-4
SURFACE WATER - TRITIUM - STATION
D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

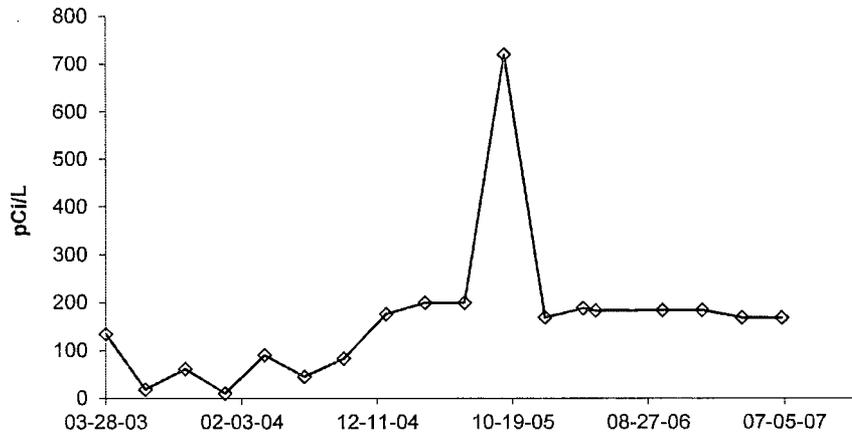
D-52 (C) Des Plaines River at Will Road



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

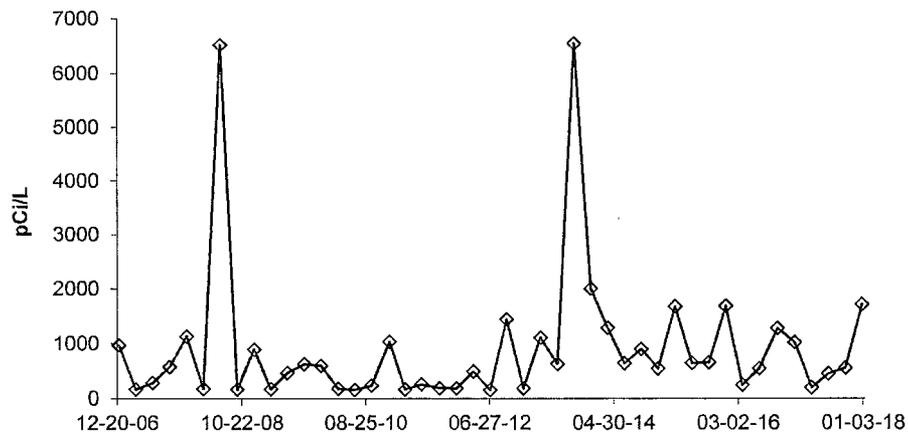
**FIGURE C-5
SURFACE WATER - TRITIUM - STATION D-54 (C) AND
D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2003 - 2017**

D-54 (C) Kankakee River



Location shared with Braidwood Station (BD-10).

D-57 (C) Kankakee River at Will Road



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 - STATIONS D-21 and D-51
COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-21 Illinois River at EJ&E Bridge

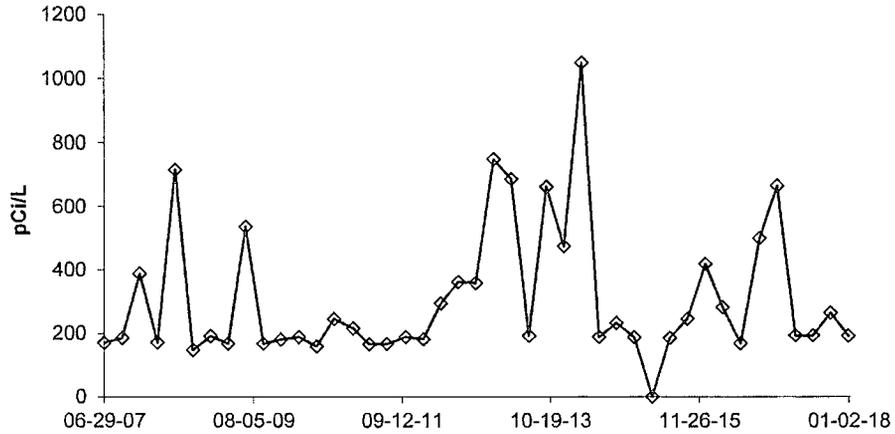
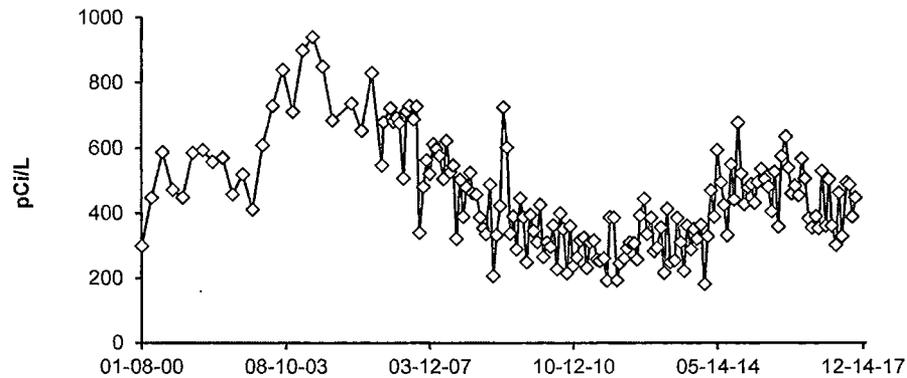
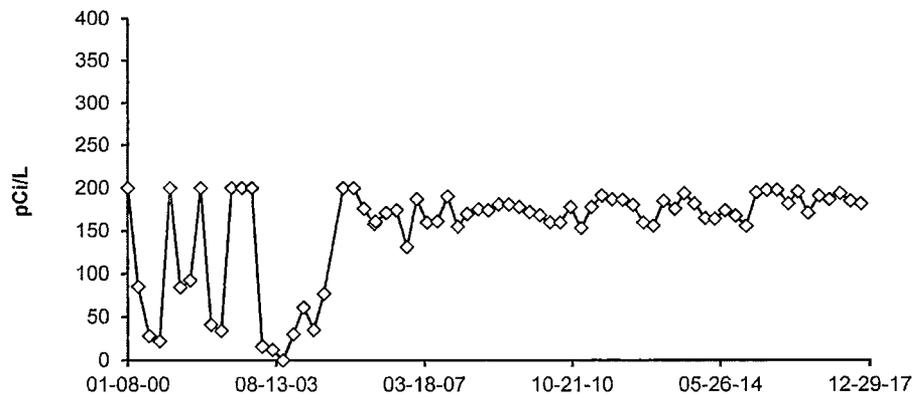


FIGURE C-7
GROUND WATER - TRITIUM - STATIONS D-23 and
D-35 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-23 Thorsen Well



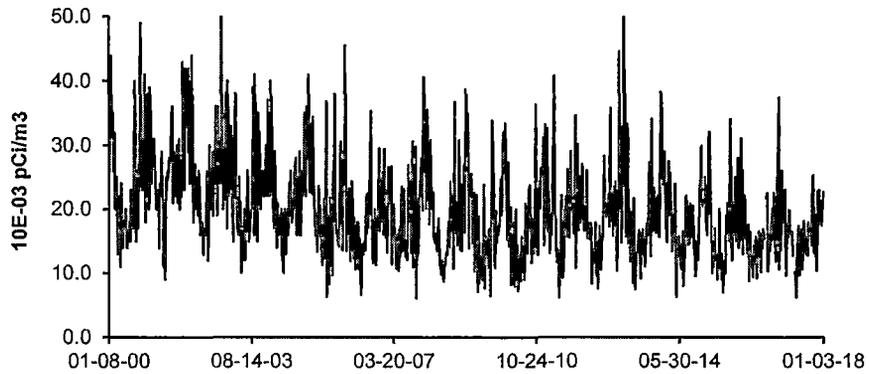
D-35 Dresden Lock and Dam



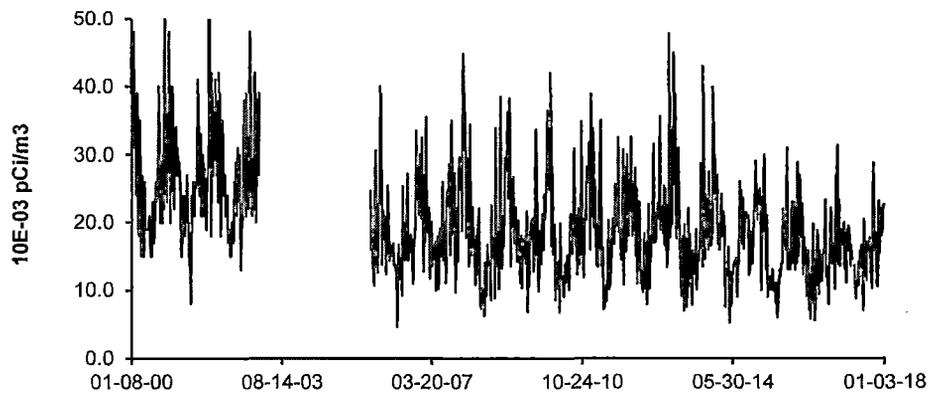
*DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005
AND MCD VALUES AFTER JULY 2005*

FIGURE C-8
AIR PARTICULATES - GROSS BETA - STATIONS D-01 and
D-02 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-01 Onsite Station 1



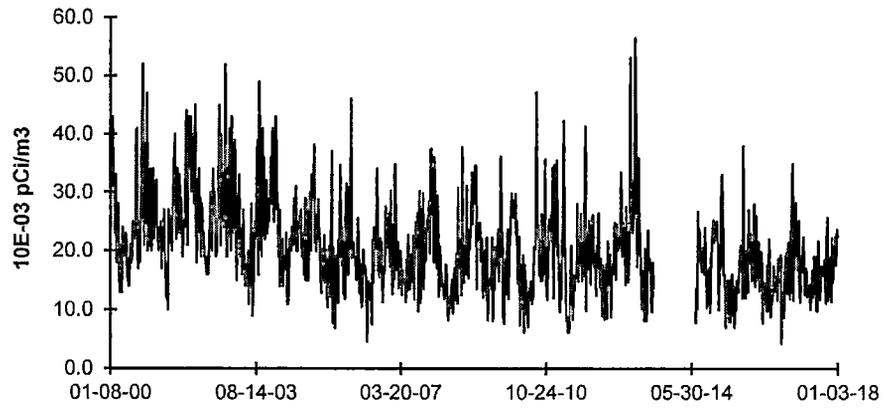
D-02 Onsite Station 2



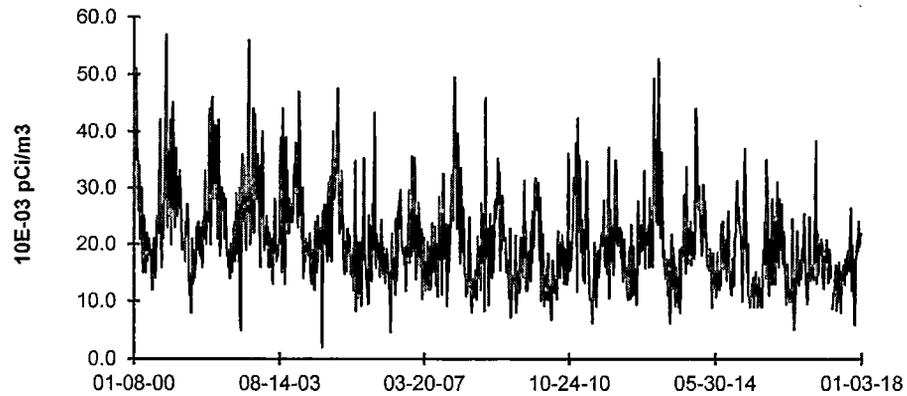
D-02 No samples; power was restored on 09-16-05.

FIGURE C-9
AIR PARTICULATES - GROSS BETA - STATIONS D-03 and
D-04 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-03 Onsite Station 3



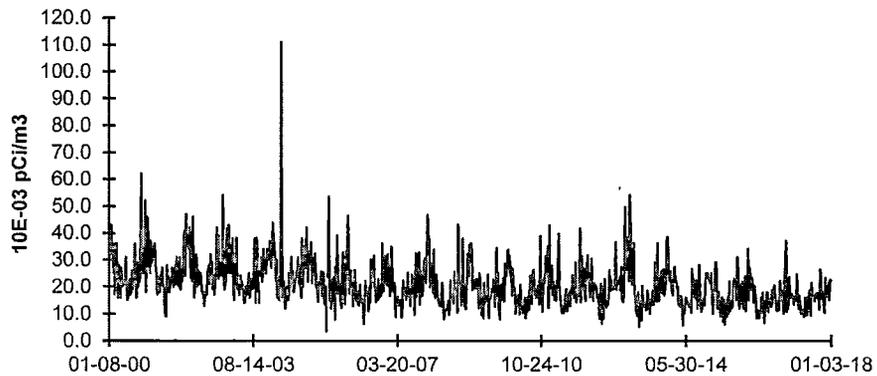
D-04 Collins Road on Station Property



D-03 No samples; power was restored on 07-04-14.

FIGURE C-10
AIR PARTICULATES - GROSS BETA - STATIONS D-07 and
D-12 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-07 Clay Products, Dresden Road



D-12 (C), Quarry Road, Lisbon

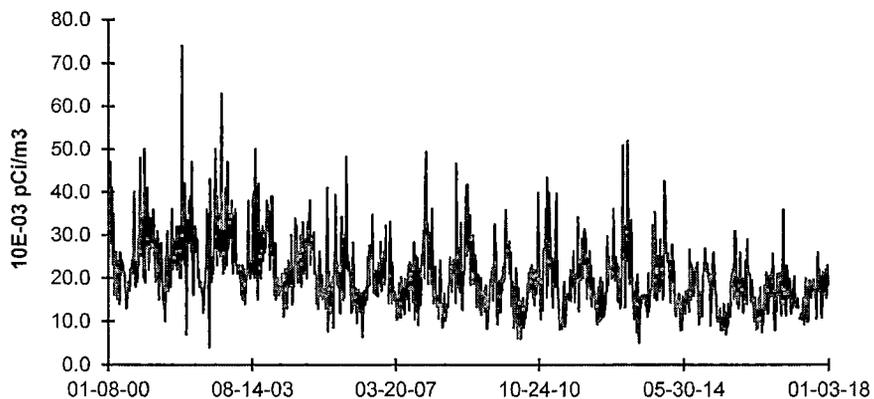
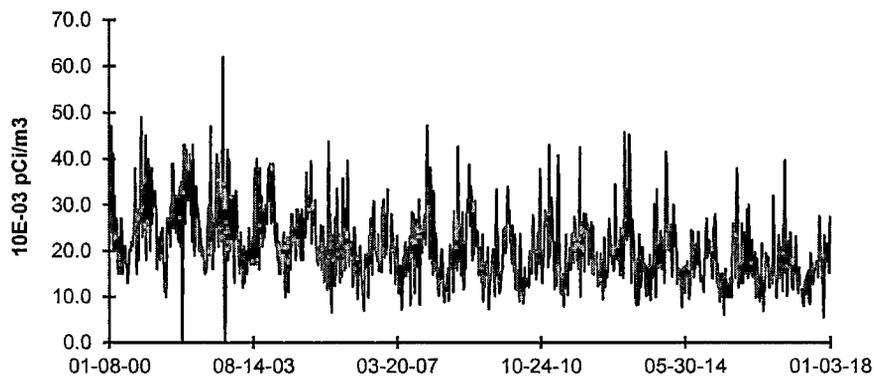


FIGURE C-11
AIR PARTICULATES - GROSS BETA - STATIONS D-45 and
D-53 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2017

D-45 McKinley Woods Road, Channahon



D-53 Will Road, Hollyhock

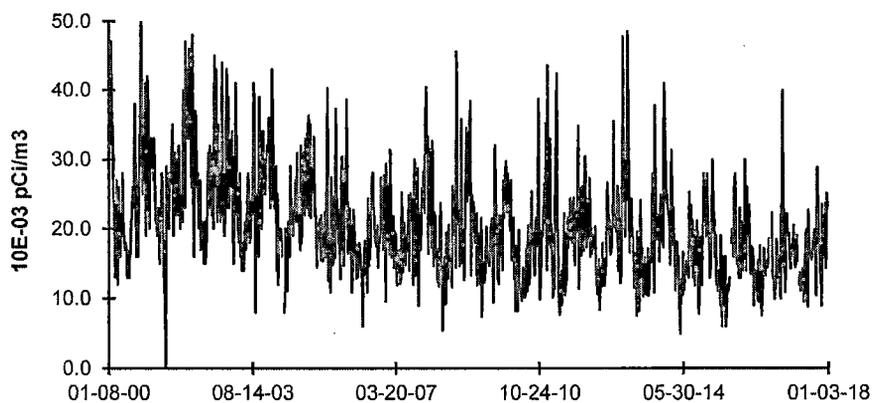
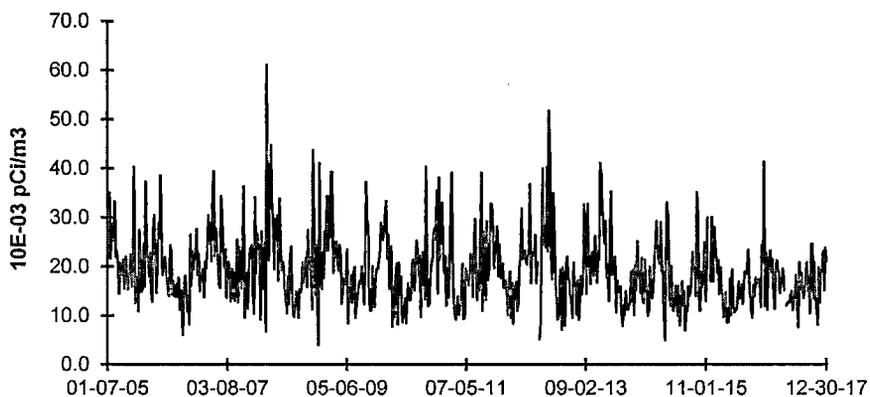


FIGURE C-12
AIR PARTICULATES - GROSS BETA - STATIONS D-08 and
D-10 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2017

D-08 Jugtown Road, Prairie Parks



D-10 Goose Lake Road, Goose Lake Village

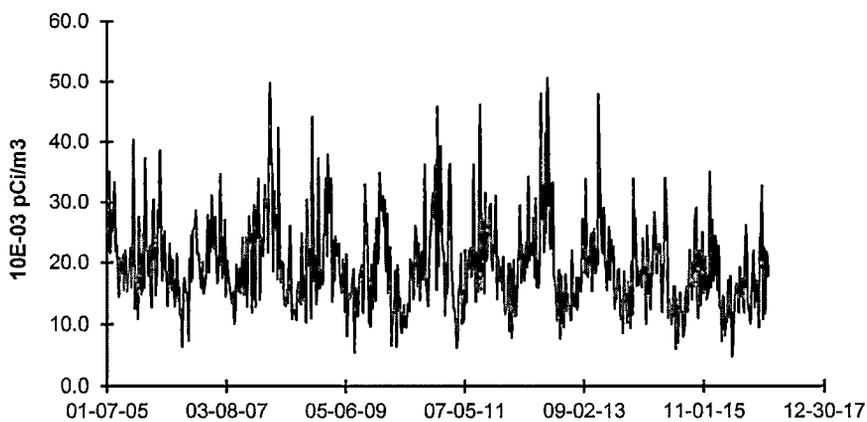
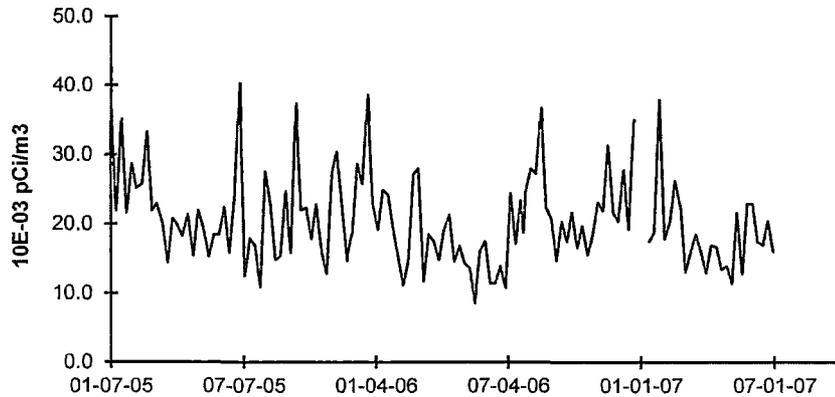
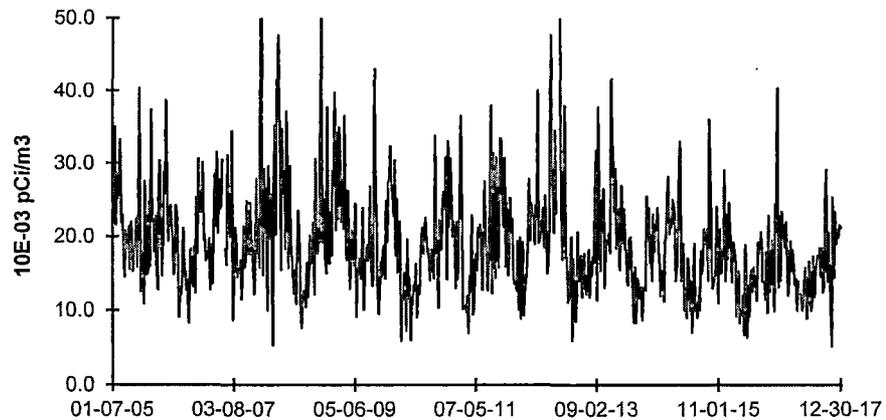


FIGURE C-13
AIR PARTICULATES - GROSS BETA - STATIONS D-13 and
D-14 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2017

D-13 Minooka



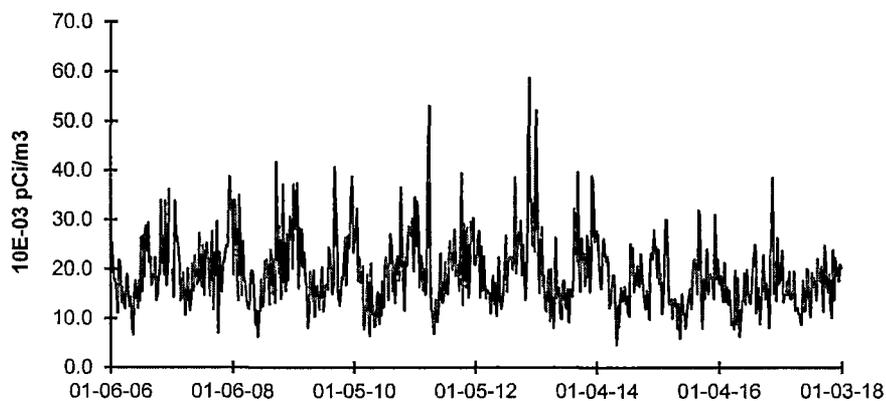
D-14 Center Street, Channahon



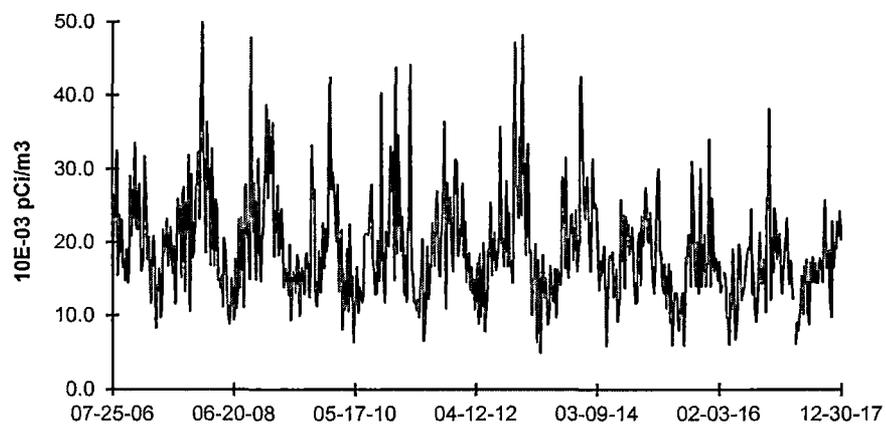
D-13 TAKEN OUT OF SERVICE JUNE 29, 2007 AND REPLACED WITH D-55

FIGURE C-14
AIR PARTICULATES - GROSS BETA - STATIONS D-55 and
D-56 COLLECTED IN THE VICINITY OF DNPS, 2006-2017

D-55 Ridge Road, Minooka



D-56 Will Road, Wildfeather

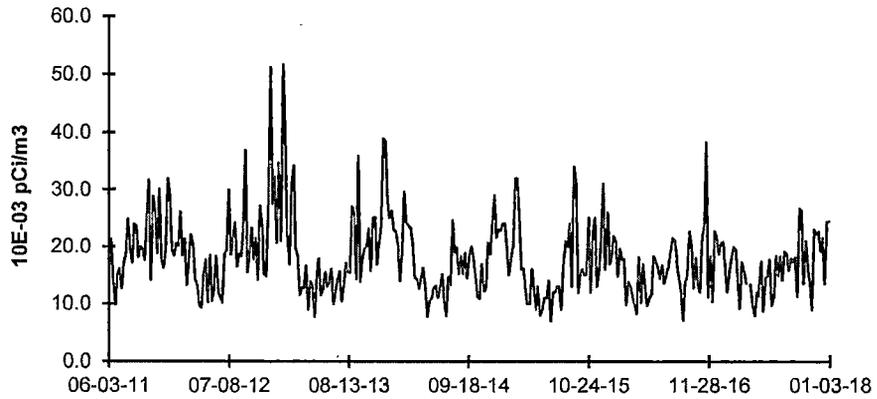


D-55 NEW STATION DECEMBER 30, 2005 REPLACED D-13 JUNE 29, 2007

D-56 NEW STATION JULY 25, 2006

FIGURE C-15
AIR PARTICULATES - GROSS BETA - STATION D-58
COLLECTED IN THE VICINITY OF DNPS, 2011-2017

D-58 Will Road Marina



D-58 NEW STATION IN MAY OF 2011

APPENDIX D

INTER-LABORATORY COMPARISON

PROGRAM

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TABLE D.1

**Analytics Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value ^(a)	Ratio of TBE to Analytics Result	Evaluation ^(b)		
March 2017	E11811	Milk	Sr-89	pCi/L	87	97.7	0.89	A		
			Sr-90	pCi/L	12.4	16.2	0.77	A		
March 2017	E11812	Milk	Ce-141	pCi/L	135	145	0.93	A		
			Co-58	pCi/L	153	150	1.02	A		
			Co-60	pCi/L	182	183	1.00	A		
			Cr-51	pCi/L	258	290	0.89	A		
			Cs-134	pCi/L	104	120	0.87	A		
			Cs-137	pCi/L	142	140	1.02	A		
			Fe-59	pCi/L	135	129	1.05	A		
			I-131	pCi/L	92.6	97.9	0.95	A		
			Mn-54	pCi/L	173	164	1.05	A		
			Zn-65	pCi/L	208	199	1.04	A		
			E11813	Charcoal	I-131	pCi	92	93.9	0.98	A
			E11814	AP	Ce-141	pCi	99.9	101	0.99	A
					Co-58	pCi	95.4	104	0.92	A
					Co-60	pCi	140	127	1.10	A
Cr-51	pCi	211			201	1.05	A			
Cs-134	pCi	82.1			83.2	0.99	A			
Cs-137	pCi	92.8			97.0	0.96	A			
Fe-59	pCi	107			89.3	1.20	A			
Mn-54	pCi	106			114	0.93	A			
Zn-65	pCi	137	138	0.99	A					
E11816	Soil	Ce-141	pCi/g	0.258	0.250	1.03	A			
		Co-58	pCi/g	0.241	0.258	0.93	A			
		Co-60	pCi/g	0.312	0.315	0.99	A			
		Cr-51	pCi/g	0.439	0.500	0.88	A			
		Cs-134	pCi/g	0.176	0.207	0.85	A			
		Cs-137	pCi/g	0.304	0.317	0.96	A			
		Fe-59	pCi/g	0.210	0.222	0.95	A			
		Mn-54	pCi/g	0.292	0.283	1.03	A			
Zn-65	pCi/g	0.353	0.344	1.03	A					
E11815	Water	Fe-55	pCi/L	1600	1890	0.85	A			

(a) 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

(b) 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.1

**Analytics Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value ^(a)	Ratio of TBE to Analytics Result	Evaluation ^(b)		
June 2017	E11844	Milk	Sr-89	pCi/L	81.3	92.6	0.88	A		
			Sr-90	pCi/L	12.1	13.5	0.90	A		
June 2017	E11846	Milk	Ce-141	pCi/L	142	151	0.94	A		
			Co-58	pCi/L	147	155	0.95	A		
			Co-60	pCi/L	185	191	0.97	A		
			Cr-51	pCi/L	321	315	1.02	A		
			Cs-134	pCi/L	168	188	0.89	A		
			Cs-137	pCi/L	148	150	0.99	A		
			Fe-59	pCi/L	116	115	1.01	A		
			I-131	pCi/L	102	93.6	1.09	A		
			Mn-54	pCi/L	168	172	0.98	A		
			Zn-65	pCi/L	195	204	0.96	A		
			E11847	Charcoal	I-131	pCi	87.9	84.8	1.04	A
			E11845	AP	Sr-89	pCi	70.8	79.1	0.90	A
					Sr-90	pCi	9.10	11.5	0.79	W
E11848	AP	Ce-141	pCi	112	116	0.96	A			
		Co-58	pCi	119	119	1.00	A			
		Co-60	pCi	171	146	1.17	A			
		Cr-51	pCi	270	241	1.12	A			
		Cs-134	pCi	152	144	1.05	A			
		Cs-137	pCi	114	115	0.99	A			
		Fe-59	pCi	94.1	88.3	1.07	A			
		Mn-54	pCi	139	132	1.06	A			
Zn-65	pCi	141	156	0.90	A					
E11849	Water	Fe-55	pCi/L	1840	1890	0.97	A			
July 2017	E11901	AP	GR-A	pCi	50.1	44.2	1.13	A		
			GR-B	pCi	218	233	0.93	A		

(a) 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

(b) 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.1

**Analytics Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value ^(a)	Ratio of TBE to Analytics Result	Evaluation ^(b)		
September 2017	E11914	Milk	Sr-89	pCi/L	84.3	82.7	1.02	A		
			Sr-90	pCi/L	12.6	12.1	1.04	A		
	E11915	Milk	Ce-141	pCi/L	93.9	87.0	1.08	A		
			Co-58	pCi/L	115	117	0.98	A		
			Co-60	pCi/L	265	262	1.01	A		
			Cr-51	pCi/L	273	217	1.26	W		
			Cs-134	pCi/L	186	201	0.93	A		
			Cs-137	pCi/L	175	172	1.02	A		
			Fe-59	pCi/L	137	125	1.09	A		
			I-131	pCi/L	78.0	71.0	1.10	A		
			Mn-54	pCi/L	128	123	1.04	A		
			Zn-65	pCi/L	206	184	1.12	A		
			E11916	Charcoal	I-131	pCi	71.9	64.4	1.12	A
			E11917	AP	Ce-141	pCi	80.1	86.3	0.93	A
Co-58	pCi	110			116	0.95	A			
Co-60	pCi	277			260	1.07	A			
Cr-51	pCi	275			215	1.28	W			
Cs-134	pCi	192			199	0.96	A			
Cs-137	pCi	165			170	0.97	A			
Fe-59	pCi	122			124	0.98	A			
Mn-54	pCi	120			122	0.99	A			
Zn-65	pCi	175	183	0.96	A					
E11918	Water	Fe-55	pCi/L	1630	1630	1.00	A			
E11919	Soil	Ce-141	pCi/g	0.136	0.142	0.96	A			
		Co-58	pCi/g	0.179	0.191	0.94	A			
		Co-60	pCi/g	0.405	0.429	0.94	A			
		Cr-51	pCi/g	0.230	0.355	0.65	N ⁽¹⁾			
		Cs-134	pCi/g	0.272	0.328	0.83	A			
		Cs-137	pCi/g	0.336	0.356	0.94	A			
		Fe-59	pCi/g	0.210	0.205	1.02	A			
		Mn-54	pCi/g	0.210	0.201	1.05	A			
Zn-65	pCi/g	0.301	0.301	1.00	A					

(a) 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

(b) 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

(1) See NCR 17-16

TABLE D.1

**Analytics Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value ^(a)	Ratio of TBE to Analytics Result	Evaluation ^(b)			
December 2017	E12054	Milk	Sr-89	pCi/L	92.1	92.3	1.00	A			
			Sr-90	pCi/L	18.3	16.9	1.09	A			
December 2017	E12055	Milk	Ce-141	pCi/L	97.8	98.3	0.99	A			
			Co-58	pCi/L	92.3	89.9	1.03	A			
			Co-60	pCi/L	176	173	1.02	A			
			Cr-51	pCi/L	226	242	0.93	A			
			Cs-134	pCi/L	118	125	0.95	A			
			Cs-137	pCi/L	148	141	1.05	A			
			Fe-59	pCi/L	123	113	1.08	A			
			I-131	pCi/L	66.0	57.8	1.14	A			
			Mn-54	pCi/L	173	161	1.08	A			
			Zn-65	pCi/L	233	211	1.10	A			
			E12056	Charcoal	I-131	pCi	48.1	47.5	1.01	A	
			December 2017	E12057A	AP	Ce-141	pCi	108	111	0.97	A
						Co-58	pCi	89.5	102	0.88	A
Co-60	pCi	223				196	1.14	A			
Cr-51	pCi	311				274	1.13	A			
Cs-134	pCi	141				142	1.00	A			
Cs-137	pCi	162				160	1.01	A			
Fe-59	pCi	121				129	0.94	A			
Mn-54	pCi	177				182	0.97	A			
Zn-65	pCi	203				239	0.85	A			
E12058	Water	Fe-55	pCi/L	1970	1740	1.13	A				
December 2017	E12059	AP	Sr-89	pCi	71.2	87.4	0.81	A			
			Sr-90	pCi	12.9	16.0	0.81	A			

(a) 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

(b) 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

DOE's Mixed Analyte Performance Evaluation Program (MAPEP)
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value ^(a)	Acceptance Range	Evaluation ^(b)	
February 2017	17-MaS36	Soil	Ni-63	Bq/kg	-5.512		(1)	A	
			Sr-90	Bq/kg	571	624	437 - 811	A	
	17-MaW36	Water	Am-241	Bq/L	0.693	0.846	0.592 - 1.100	A	
			Ni-63	Bq/L	13.4	12.2	8.5 - 15.9	A	
			Pu-238	Bq/L	0.7217	0.703	0.492 - 0.914	A	
			Pu-239/240	Bq/L	0.9277	0.934	0.654 - 1.214	A	
	17-RdF36	AP	U-234/233	Bq/sample	0.0911	0.104	0.073 - 0.135	A	
			U-238	Bq/sample	0.0967	0.107	0.075 - 0.139	A	
	17-RdV36	Vegetation	Cs-134	Bq/sample	6.44	6.95	4.87 - 9.04	A	
			Cs-137	Bq/sample	4.61	4.60	3.22 - 5.98	A	
			Co-57	Bq/sample	-0.0229		(1)	A	
			Co-60	Bq/sample	8.52	8.75	6.13 - 11.38	A	
			Mn-54	Bq/sample	3.30	3.28	2.30 - 4.26	A	
			Sr-90	Bq/sample	1.30	1.75	1.23 - 2.28	W	
			Zn-65	Bq/sample	5.45	5.39	3.77 - 7.01	A	
	August 2017	17-MaS37	Soil	Ni-63	Bq/kg	1130	1220	854 - 1586	A
				Sr-90	Bq/kg	296	289	202 - 376	A
17-MaW37		Water	Am-241	Bq/L	0.838	0.892	0.624 - 1.160	A	
			Ni-63	Bq/L	-0.096		(1)	A	
			Pu-238	Bq/L	0.572	0.603	0.422 - 0.784	A	
			Pu-239/240	Bq/L	0.863	0.781	0.547 - 1.015	A	
17-RdF37		AP	U-234/233	Bq/sample	0.103	0.084	0.059 - 0.109	W	
			U-238	Bq/sample	0.115	0.087	0.061 - 0.113	N ⁽²⁾	
17-RdV37		Vegetation	Cs-134	Bq/sample	2.34	2.32	1.62 - 3.02	A	
			Cs-137	Bq/sample	0.05		(1)	A	
	Co-57		Bq/sample	3.32	2.8	2.0 - 3.6	A		
	Co-60		Bq/sample	2.09	2.07	1.45 - 2.69	A		
	Mn-54		Bq/sample	2.90	2.62	1.83 - 3.41	A		
	Sr-90		Bq/sample	1.17	1.23	0.86 - 1.60	A		
	Zn-65		Bq/sample	6.07	5.37	3.76 - 6.98	A		

(a) 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

(b) DOE/MAPEP evaluation:

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

(1) False positive test

(2) See NCR 17-15

TABLE D.3

**ERA Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value ^(a)	Acceptance Limits	Evaluation ^(b)
March 2017	MRAD-26	AP	GR-A	pCi/sample	76.3	85.5	28.6 - 133	A
April 2017	RAD-109	Water	Ba-133	pCi/L	49.2	49.7	40.8 - 55.1	A
			Cs-134	pCi/L	83.2	90.1	74.0 - 99.1	A
			Cs-137	pCi/L	202	206	185 - 228	A
			Co-60	pCi/L	51.2	54.7	49.2 - 62.7	A
			Zn-65	pCi/L	39.3	53.8	47.2 - 65.9	N ⁽¹⁾
			GR-A	pCi/L	53.6	75.0	39.5 - 92.3	A
			GR-B	pCi/L	42.7	38.5	25.5 - 46.0	A
			U-Nat	pCi/L	50.1	55.6	45.2 - 61.7	A
			H-3	pCi/L	7080	6850	5920 - 7540	A
			Sr-89	pCi/L	40.7	66.2	53.8 - 74.3	N ⁽¹⁾
			Sr-90	pCi/L	26.9	26.7	19.3 - 31.1	A
			I-131	pCi/L	26.7	29.9	24.9 - 34.9	A
September 2017	MRAD-27	AP	GR-A	pCi/sample	40.9	50.1	16.8 - 77.8	A
		AP	GR-B	pCi/sample	58.0	61.8	39.1 - 90.1	A
October 2017	RAD-111	Water	Ba-133	pCi/L	71.3	73.7	61.7 - 81.1	A
			Cs-134	pCi/L	43.0	53.0	42.8 - 58.3	A
			Cs-137	pCi/L	48.2	52.9	47.6 - 61.1	A
			Co-60	pCi/L	69.0	69.5	62.6 - 78.9	A
			Zn-65	pCi/L	335	348	313 - 406	A
			GR-A	pCi/L	32.5	35.6	18.3 - 45.8	A
			GR-B	pCi/L	24.3	25.6	16.0 - 33.6	A
			U-Nat	pCi/L	36.6	37.0	30.0 - 40.9	A
			H-3	pCi/L	6270	6250	5390 - 6880	A
			I-131	pCi/L	26.4	24.2	20.1 - 28.7	A
November 2017	111317O	Water	Sr-89	pCi/L	57.1	50.0	39.4 - 57.5	A
			Sr-90	pCi/L	27.1	41.8	30.8 - 48.0	N ⁽²⁾

(a) 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.

(b) ERA evaluation:

A = Acceptable - Reported value falls within the Acceptance Limits

N = Not Acceptable - Reported value falls outside of the Acceptance Limits

(1) See NCR 17-09

(2) See NCR 17-19

APPENDIX E

ERRATA DATA

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**ERRATA FOR 2016 ANNUAL RADIOLOGICAL ENVIRONMENTAL
OPERATING REPORTS (AREOR)**

The following information was erroneously reported on Section I. Summary and Conclusions, Page 2 of the 2016 AREOR. The incorrect values are in *italics* and the corrected values are in **BOLD**.

2. Doses to a Member of the Public due to Gaseous Releases in 2016 (from 01/01/2016 to 12/31/2016):

UNITS 1, 2, 3

Gamma air (fission and activation gases): (*3.32E-03*) **2.32 E-03** mrad

Beta air (fission and activation gases): (*7.91E-04*) **1.12E-04** mrad

Total Body (noble gases): (*2.51E-03*) **1.54E-03** mrem

Skin (noble gases): (*4.30E-03*) **2.63E-03** mrem

Organ - bone (radioiodines/tritium/particulates): (*9.34E-02*) **9.33E-02** mrem

UNIT 1

Gamma air (fission and activation gases): N/A

Beta air (fission and activation gases): N/A

Total Body (noble gases): N/A

Skin (noble gases): N/A

Organ - bone (radioiodines/tritium/particulates): 1.87E-03 mrem

UNIT 2

Gamma air (fission and activation gases): (*8.75E-04*) **5.96E-04** mrad

Beta air (fission and activation gases): (*2.08E-04*) **3.21E-05** mrad

Total Body (noble gases): (*6.64E-04*) **3.96E-04** mrem

Skin (noble gases): (*1.13E-03*) **6.78E-04** mrem

Organ - bone (radioiodines/tritium/particulates): 4.51E-02 mrem

UNIT 3

Gamma air (fission and activation gases): (*2.45E-03*) **1.72E-03** mrad

Beta air (fission and activation gases): (*5.83E-04*) **8.04E-05** mrad

Total Body (noble gases): (*1.84E-03*) **1.15E-03** mrem

Skin (noble gases): (*3.17E-03*) **1.95E-03** mrem

Organ - bone (radioiodines/tritium/particulates): 4.72E-02 mrem

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APPENDIX F

**ANNUAL RADIOLOGICAL GROUNDWATER
PROTECTION PROGRAM REPORT (ARGPPR)**

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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 2017

Prepared By
Teledyne Brown Engineering
Environmental Services



Dresden Nuclear Power Station
Morris, IL 60450

May 2018

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Table A-1 Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2017

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Security-Related Information: Maps of the Dresden Nuclear Power Station have been withheld from public disclosure under 10CFR2.390 and N.J.S.A. 47:1A-1.1

ARGPPR Appendix B Data Tables

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Table B-I.1 Concentrations of Tritium, Strontium, Gross Alpha and Gross Beta in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2017

Table B-I.2 Concentrations of Gamma Emitters in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2017

Table B-I.3 Concentrations of Hard-To-Detects in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2017

Table B-II.1 Concentrations of Tritium in Surface Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2017

Table B-II.2 Concentrations of Gamma Emitters in Surface Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2017

Table B-III.1 Concentrations of Tritium in Precipitation Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2017

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 (PA):

The Dresden power plant has experienced leaks from underground lines and spills from systems containing radioactive water over its 50 year history. These incidents have created a number of areas of localized contamination within the PA. The liquid scintillation analyses of groundwater in many of these areas show measurable concentrations of tritium (H-3).

Dresden participated in a fleetwide hydrogeologic investigation during the summer of 2006 in an effort to characterize groundwater movement at each site. This investigation also compiled a list of the historic spills and leaks as well as a detailed analysis on groundwater hydrology for Dresden Nuclear Generation Station. 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.

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 PA. Samples taken from domestic water supply 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 has 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 96 sampling points in the RGPP:

Dresden has 47 developed groundwater monitoring wells within the Protected Area (PA). 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 30 developed groundwater monitoring wells outside the PA the majority of which form a ring just within the perimeter of the property.

Dresden has 12 surface water monitoring locations on the owner-controlled area sampled as part of the Dresden RGPP. Three of these locations are monitored for level only and have no analyses in the accompanying tables.

Dresden has 4 precipitation water monitoring locations sampled as part of the Dresden RGPP. An additional 8 locations were studied in 2011 through 2012, but only 4 locations are currently permanently a part of the RGPP program.

Dresden has 1 sentinel well and 2 CST leak detection valves. These 3 sampling points are not constructed to code or developed to a standard. These sampling points are idle and only used for qualitative troubleshooting.

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 determined by the well detection category in accordance with site document EN-DR-408-4160, Dresden RGPP Reference Material. During 2017, there were 621 analyses that were performed on 278 samples from 84 sampling points.

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. These wells are categorized as idle wells and are used only for troubleshooting purposes.

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

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 site-specific RGPP is to provide indication of short-term changes to groundwater tritium concentrations within the PA.

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 89 developed groundwater wells and surface water sample points in the RGPP.

1. Sample Collection

Sample locations can be found in Table A-1, 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 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 2017.

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.
3. Concentrations of tritium in groundwater, surface water and precipitation water.
4. Concentrations of gross alpha and gross beta in groundwater.
5. Concentrations of Am-241 in groundwater.
6. Concentrations of Cm-242 and Cm-243/244 in groundwater.
7. Concentrations of Pu-238 and Pu-239/240 in groundwater.
8. Concentrations of U-233/234, U-235 and U-238 in groundwater.
9. Concentrations of Fe-55 in groundwater.
10. Concentrations of Ni-63 in groundwater.

B. Data Interpretation

The radiological data collected prior to 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 the minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

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

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the

uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus \pm the estimated sample standard deviation as TPU that is obtained by propagating all sources of analytical uncertainty in measurements.

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

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

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

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life, and food stuffs. 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 worldwide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at stations throughout 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-site wells throughout the year in accordance with Dresden's RGPP. Analytical results and anomalies are discussed below:

Tritium

Following historic ground tritium-contamination events at Dresden Station routine sampling and analyses continue, both inside and outside the protected area, in accordance with site procedure EN-DR-408-4160, Dresden Station RGPP Reference Material.

Low level tritium was detected from January through December 2017 in several sampling and testing locations (Table B-I.1, Appendix B); however, overall tritium concentrations have been trending down.

The vast majority of these locations showed a range of tritium contamination from LLD to values less than 20,000 pCi/L.

MD-11 and MW-DN-124-I were the only 2 locations with tritium concentrations above 20,000 pCi/L. The highest level ever reached during calendar year 2017 was 195,000 pCi/L by MD-11 (sample collected on 02/17/2017).

It is important to note that wells that exceed the United States Environmental Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L were due to the 2014 2/3B CST Leak. The exceedances are located within Station property, and do not serve as a drinking water source.

Strontium

Samples were collected and analyzed for Sr-89 and Sr-90 activity (Table B-I.1, Appendix B). Sr-89 was not detected in any of the samples. Sr-90 was detected in 3 samples at location MW-DN-105S. The concentrations ranged from 0.8 to 1.7 pCi/L.

Gross Alpha and Gross Beta (dissolved and suspended)

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater samples during the second quarter of 2017 (Table B-I.1, Appendix B). Gross Alpha (dissolved) was detected in 1 groundwater location with a concentration of 6.3 pCi/L. Gross Alpha (suspended) was detected in 5 groundwater locations with concentrations ranging from 1.8 to 18.6 pCi/L. Gross Beta (dissolved) was detected at 30 of the groundwater locations. The concentrations ranged from 1.1 to 124 pCi/L. Gross Beta (suspended) was detected in 5 groundwater locations with concentrations ranging from 1.7 to 49.4 pCi/L. The concentrations of Gross Alpha and Gross Beta, which are slightly above detectable levels, are considered to be background and are not the result of plant effluents.

Gamma Emitters

Only naturally-occurring nuclides were detected in 4 samples. No other gamma-emitting nuclides were detected (Table B-I.2, Appendix B).

Hard-To-Detects

Hard-To-Detect analyses were performed on 4 groundwater locations to establish background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-233/234, U-235 and U-238. U-233/234 and U-238 were detected at MW-DN-119-I. The concentrations were 0.84 pCi/L and 0.44 pCi/L respectively (Table B-I.3, Appendix B). Ni-63 was detected in both samples taken at MW-DN-119-I. The concentrations ranged from 32.3 to 58.9 pCi/L. All other hard-to-detect nuclides were not detected at concentrations greater than their respective MDCs.

B. Surface Water Results

Surface Water

Samples were collected from 9 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 1,740 pCi/l. The measurable concentrations of tritium are from an upstream source.

Gamma Emitters

No gamma-emitting nuclides were detected in any surface water samples. (Table B-II.2, Appendix B)

C. Precipitation Water Results

Precipitation Water

Samples were collected from 4 precipitation water locations throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from 4 locations were analyzed for tritium activity (Table B-III.1, Appendix B). Tritium was not detected in any samples.

D. Drinking Water Well Survey

No drinking water well surveys were conducted in 2017.

E. Summary of Results – Inter-Laboratory Comparison Program

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

F. Leaks, Spills, and Releases

No leaks, spills, and releases occurred in 2017.

G. Trends

Overall, tritium concentrations are decreasing across the Station. The Station continued to implement the tritium monitoring plan with monthly/quarterly sampling of a subset of shallow and intermediate aquifer wells, sewage treatment plant water, and storm sewer water.

An elevated concentration persists in the area of the Condensate Storage Tanks (Event 20 in EN-DR-408-4160, Revision 6, Attachment 3). As of December 2015, active remediation was implemented. Two remediation wells were installed in August 2015, however, the West remediation well is capable of enough recharge for active remediation.

H. Investigations

No investigations performed in 2017.

I. Actions Taken

1. Compensatory Actions

None.

2. Actions to Recover/Reverse Plumes

In August 2015, two remediation wells were installed by the CSTs. The intent is to pump tritiated water out of the ground. The water is processed through the liquid radwaste system. Active remediation was initiated in December 2015. Remediation continued through 2017.

APPENDIX A

LOCATION DESIGNATION

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2017

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	Monitoring Well	25 feet south of the south edge of the Employee Parking lot
DSP-157-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	Monitoring Well	53 feet west of the Kankakee River; 33 feet west of the cinder track
DSP-158-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	Monitoring Well	250 feet west of the Thorsen house; 450 ft south of the plant access gate
DSP-159-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
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

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2017

Site	Site Type	Location
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 Collins Road; northeast of the G.E. Fuel Storage Facility
MW-DN-122-S	Monitoring Well	150 feet north of Collins 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
MW-DN-125-S	Monitoring Well	40 feet east of 2/3 B CST
MW-DN-126-S	Monitoring Well	15 feet south of fence around Unit 2/3 A CST and B CST (outside of fence)
MW-DN-127-S	Monitoring Well	20 feet south of Unit 3 HRSS
MW-DN-134-S	Monitoring Well	20-ft North of Mausoleum Building
MW-DN-135-S	Monitoring Well	20-ft East of Mausoleum Building
MW-DN-136-S	Monitoring Well	14.5-ft South of Mausoleum Building
MW-DN-137-S	Monitoring Well	20-ft West of Mausoleum Building
MW-DN-140-S	Monitoring Well	East of MW-DN-104S at SW corner outside of 2/3 crib house
MW-DN-141-S	Monitoring Well	North of 'A' Waste Tank next to 2/3 main chimney
MD-11	Sample Location	Piping located between Condensate Storage Tanks.
DSP-131	Surface Water	Storm water – 35 ft NE of the Unit 2/3 heating boiler 150,000 gallon diesel fuel storage tank 15 ft W of the hot canal fence – underneath Security Block
DSP-132	Surface Water	Storm water – 150 ft NE of the Unit 1 Sphere. The sewer is in the middle of the road with a solid cover (no slots). There are two other sewers in the vicinity with solid covers on them, but both have the word "SANITARY" on the cover. The sewer is 66 ft SE of the Unit 1 diesel fuel transfer shed.
DSP-133	Surface Water	Storm water ditch north of Pre-Access Facility
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
2/3 Discharge Hot Canal Level	Surface Water	2/3 Discharge Hot Canal Headworks
2/3 Cribhouse Cold Canal Level	Surface Water	2/3 Cribhouse
Unit 1 Cribhouse Intake Level	Surface Water	Unit 1 Cribhouse
FW-1	Precipitation	40 feet southwest of Unit 2/3 Off-gas Filter Building access door; north end of guardrail
FW-2	Precipitation	50 feet East of Chem Feed Trailer
FW-3	Precipitation	South of Stock Truck Bay rollup door
FW-4	Precipitation	Southeast corner of Unit 3 RB Interlock
FW-5	Precipitation	East of Unit 2/3 Intake Ross barrier
FW-6	Precipitation	North of Unit 1 Chimney
FW-7	Precipitation	Southeast of Unit 2 TB Trackway
FW-8	Precipitation	Southwest corner of 2/3 CST on fence
FW-9	Precipitation	South of MUDS Building on Security fence
FW-10	Precipitation	At the fence at the northwest corner of the SBO Building
FW-11	Precipitation	30 feet east of the east wall of the EM shop; at the stanchion for RGPP well DSP-105
FW-12	Precipitation	60 feet southeast of the southwest corner of the Admin Building; on the security fence

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APPENDIX B

DATA TABLES

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TABLE B-I.1

**CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER
SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION								
SITE	DATE	H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
CBE	03/13/17	< 187						
CBE	05/23/17	< 182						
CBE	08/25/17	< 179						
CBG	05/23/17	4760 \pm 533						
CBG	08/25/17	6810 \pm 732						
DSP-105	02/16/17	< 194						
DSP-105	05/17/17	< 195	< 5.3	< 0.6	< 1.8	< 0.6	7.1 \pm 1.3	< 1.4
DSP-105	08/23/17	< 190						
DSP-105	11/08/17	< 180						
DSP-106	02/16/17	1680 \pm 231						
DSP-106	05/17/17	1840 \pm 247	< 6.1	< 0.8	< 1.5	< 0.6	6.8 \pm 1.2	< 1.4
DSP-106	08/23/17	1700 \pm 237						
DSP-106	11/08/17	1700 \pm 234						
DSP-107	02/15/17	2120 \pm 273						
DSP-107	05/17/17	1940 \pm 254	< 6.7	< 0.7	< 2.7	< 0.6	11.5 \pm 1.6	< 1.4
DSP-107	08/23/17	2160 \pm 282						
DSP-107	11/08/17	2030 \pm 266						
DSP-108	02/15/17	492 \pm 145						
DSP-108	05/17/17	457 \pm 140	< 7.1	< 0.9	< 3.8	< 0.6	19.4 \pm 2.1	< 1.4
DSP-108	08/22/17	455 \pm 138						
DSP-108	11/08/17	379 \pm 131						
DSP-122	02/13/17	660 \pm 151						
DSP-122	05/15/17	641 \pm 148						
DSP-122	08/21/17	399 \pm 134						
DSP-122	11/07/17	537 \pm 136						
DSP-123	02/15/17	908 \pm 164						
DSP-123	05/16/17	927 \pm 162	< 5.5	< 0.7	< 1.7	< 0.6	8.1 \pm 1.3	< 1.4
DSP-123	08/22/17	760 \pm 152						
DSP-123	11/08/17	649 \pm 143						
DSP-124	02/20/17	1520 \pm 216						
DSP-124	05/23/17	1350 \pm 200						
DSP-124	08/29/17	839 \pm 159						
DSP-124	11/09/17	1040 \pm 172						
DSP-125	02/17/17	398 \pm 138						
DSP-125	05/24/17	281 \pm 133	< 5.5	< 0.8	< 10.7	2.2 \pm 1.0	27.4 \pm 4.4	< 1.9
DSP-125	08/25/17	192 \pm 123						
DSP-125	11/09/17	< 185						
DSP-126	05/18/17	< 186						
DSP-131	08/29/17	< 188						
DSP-131	11/09/17	< 183						
DSP-132	08/29/17	788 \pm 153						
DSP-132	11/09/17	3570 \pm 414						
DSP-133	09/01/17	< 191						
DSP-133	11/09/17	< 186						
DSP-147	05/18/17	< 189						
DSP-148	02/22/17	301 \pm 132						
DSP-148	05/22/17	229 \pm 127						
DSP-148	09/01/17	233 \pm 125						
DSP-148	11/07/17	< 180						
DSP-149R	02/22/17	376 \pm 138						
DSP-149R	05/22/17	498 \pm 142						
DSP-149R	09/01/17	430 \pm 134						
DSP-149R	11/07/17	287 \pm 128						
DSP-150	02/16/17	< 196						
DSP-150	05/17/17	< 188						
DSP-150	08/22/17	< 188						
DSP-150	11/08/17	< 181						
DSP-151	02/16/17	< 192						
DSP-151	05/17/17	< 188						
DSP-151	08/23/17	< 188						
DSP-151	11/08/17	< 183						
DSP-154	05/18/17	< 188						
DSP-156	02/22/17	< 195						
DSP-156	05/22/17	< 185						
DSP-156	09/01/17	< 185						
DSP-156	11/07/17	< 182						
DSP-157-I	05/25/17	< 186						
DSP-157-S	05/25/17	< 188						
DSP-159-I	05/24/17	205 \pm 126						

TABLE B-1.1

**CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER
SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
DSP-159-S	05/24/17	< 192						
MD-11	02/17/17	195000 \pm 19200	< 6.0	< 0.4	< 1.7	< 0.3	29.9 \pm 1.8	< 1.6
MD-11	05/24/17	159000 \pm 15800						
MD-11	08/25/17	130000 \pm 12900						
MD-11	11/09/17	114000 \pm 11300	< 3.9	< 0.6	< 1.2	< 0.8	21.6 \pm 1.5	< 1.7
MW-DN-101-I	02/15/17	568 \pm 148						
MW-DN-101-I	05/16/17	518 \pm 142	< 5.4	< 0.8	< 4.8	< 0.6	13.3 \pm 1.8	< 1.4
MW-DN-101-I	08/22/17	485 \pm 133						
MW-DN-101-I	11/08/17	410 \pm 132						
MW-DN-101-S	02/15/17	< 191						
MW-DN-101-S	05/16/17	<i>Original</i> < 190	< 7.5	< 0.8	< 6.6	6.9 \pm 2.2	< 6.6	< 3.8
MW-DN-101-S	05/16/17	<i>Recount</i>				6.6 \pm 2.4		
MW-DN-101-S	08/22/17	< 190						
MW-DN-101-S	11/08/17	< 186						
MW-DN-102-I	02/17/17	< 160						
MW-DN-102-I	05/19/17	< 188	< 5.3	< 0.8	< 13.8	< 2.3	< 9.5	< 3.8
MW-DN-102-I	08/24/17	< 184						
MW-DN-102-I	11/08/17	< 188						
MW-DN-102-S	02/17/17	< 190						
MW-DN-102-S	05/19/17	< 191	< 7.2	< 0.9	< 35.2	< 3.8	45.7 \pm 15.3	< 7.8
MW-DN-102-S	08/24/17	< 186						
MW-DN-102-S	11/08/17	< 184						
MW-DN-103-I	05/24/17	< 187						
MW-DN-103-S	05/24/17	< 189						
MW-DN-104-S	02/13/17	< 190						
MW-DN-104-S	05/15/17	< 188						
MW-DN-104-S	08/21/17	255 \pm 126						
MW-DN-104-S	11/07/17	264 \pm 124						
MW-DN-105-S	02/16/17	< 195	< 8.8	1.6 \pm 0.5				
MW-DN-105-S	05/17/17	< 186	< 6.7	< 0.9				
MW-DN-105-S	08/23/17	< 187	< 4.8	0.8 \pm 0.3				
MW-DN-105-S	11/08/17	< 180	< 4.3	1.7 \pm 0.3				
MW-DN-106-S	05/22/17	< 190						
MW-DN-107-S	02/17/17	< 194						
MW-DN-107-S	05/24/17	< 191						
MW-DN-107-S	08/25/17	< 186						
MW-DN-107-S	11/09/17	< 185						
MW-DN-108-I	02/14/17	< 190						
MW-DN-108-I	05/16/17	<i>Original</i> < 195	< 5.7	< 0.9	< 3.4	17.7 \pm 4.2	7.6 \pm 3.2	49.4 \pm 4.7
MW-DN-108-I	05/16/17	<i>Recount</i>				18.6 \pm 4.4		
MW-DN-108-I	08/21/17	< 184						
MW-DN-108-I	11/07/17	< 183						
MW-DN-109-I	02/13/17	398 \pm 138						
MW-DN-109-I	05/15/17	361 \pm 135	< 5.9	< 0.8	< 4.0	< 1.8	6.1 \pm 3.4	< 3.9
MW-DN-109-I	08/29/17	511 \pm 138						
MW-DN-109-I	11/07/17	376 \pm 133						
MW-DN-109-S	02/13/17	< 192						
MW-DN-109-S	05/15/17	< 189	< 5.8	< 0.9	< 5.9	< 1.8	14.1 \pm 5.0	< 3.9
MW-DN-109-S	08/29/17	< 186						
MW-DN-109-S	11/07/17	< 185						
MW-DN-110-I	02/13/17	< 190						
MW-DN-110-I	05/15/17	< 192						
MW-DN-110-I	08/21/17	< 184						
MW-DN-110-I	11/07/17	< 185						
MW-DN-110-S	02/20/17	< 189						
MW-DN-110-S	05/15/17	< 191						
MW-DN-110-S	08/21/17	< 189						
MW-DN-110-S	11/07/17	< 187						
MW-DN-111-S	02/20/17	261 \pm 138						
MW-DN-111-S	05/23/17	289 \pm 131						
MW-DN-111-S	08/29/17	384 \pm 134						
MW-DN-111-S	11/09/17	209 \pm 122						
MW-DN-112-I	02/13/17	< 191						
MW-DN-112-I	05/15/17	< 188						
MW-DN-112-I	08/29/17	< 187						
MW-DN-112-I	11/09/17	< 182						
MW-DN-112-S	02/13/17	< 195						
MW-DN-112-S	05/15/17	< 196						
MW-DN-112-S	08/29/17	< 190						

TABLE B-I.1

**CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER
SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION		H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
	DATE								
MW-DN-112-S	11/09/17		< 185						
MW-DN-113-I	02/17/17		< 197						
MW-DN-113-I	05/19/17		< 197	< 5.8	< 0.8	< 3.9	< 1.9	< 5.1	< 3.9
MW-DN-113-I	08/24/17		< 182						
MW-DN-113-I	11/08/17		< 181						
MW-DN-113-S	02/17/17		< 198						
MW-DN-113-S	05/19/17		< 196	< 7.5	< 0.9	< 3.2	7.6 ± 2.1	< 4.7	10.0 ± 2.8
MW-DN-113-S	08/24/17		< 186						
MW-DN-113-S	11/08/17		< 184						
MW-DN-114-I	02/17/17		6150 ± 669						
MW-DN-114-I	05/23/17		3310 ± 392						
MW-DN-114-I	08/29/17		2100 ± 275						
MW-DN-114-I	11/08/17		7240 ± 779						
MW-DN-114-S	02/17/17		301 ± 136						
MW-DN-114-S	05/23/17		250 ± 135						
MW-DN-114-S	08/29/17		6360 ± 694						
MW-DN-114-S	11/08/17		< 184						
MW-DN-115-I	02/16/17		202 ± 129						
MW-DN-115-I	05/19/17		301 ± 139						
MW-DN-115-I	08/25/17		408 ± 134						
MW-DN-115-I	11/08/17		373 ± 131						
MW-DN-115-S	02/16/17		< 190						
MW-DN-115-S	05/19/17		< 195						
MW-DN-115-S	08/25/17		< 188						
MW-DN-115-S	11/08/17		< 183						
MW-DN-116-I	02/14/17		< 189						
MW-DN-116-I	05/16/17		< 198	< 9.7	< 0.7	< 3.8	< 0.6	16.2 ± 2.0	< 1.4
MW-DN-116-I	08/21/17		< 198						
MW-DN-116-I	11/07/17		223 ± 122						
MW-DN-116-S	02/14/17		< 188						
MW-DN-116-S	05/16/17		< 198	< 7.2	< 1.0	< 3.8	< 1.0	16.5 ± 2.0	< 2.0
MW-DN-116-S	08/21/17		< 194						
MW-DN-116-S	11/07/17		< 180						
MW-DN-117-I	02/14/17		< 190						
MW-DN-117-I	05/16/17		< 193						
MW-DN-117-I	08/29/17		< 194						
MW-DN-117-I	11/07/17		< 184	< 3.6	< 0.5	< 1.0	< 0.8	2.4 ± 0.7	< 1.7
MW-DN-118-S	02/15/17		287 ± 133						
MW-DN-118-S	05/17/17		< 192	< 9.8	< 0.9	< 2.3	< 0.8	7.9 ± 1.4	< 1.4
MW-DN-118-S	08/23/17		< 193						
MW-DN-118-S	11/08/17		< 183						
MW-DN-119-I	02/15/17		< 194						
MW-DN-119-I	05/23/17	Original	< 194	< 6.2	< 0.9	< 28.9	< 2.8	124 ± 11.4	< 4.0
MW-DN-119-I	05/23/17	Recount						120 ± 11.2	
MW-DN-119-I	08/29/17		< 193						
MW-DN-119-I	11/08/17		< 184						
MW-DN-119-I	11/17/17		< 179	< 3.6	< 0.5	6.3 ± 2.5	< 0.9	28.5 ± 2.8	< 2.6
MW-DN-119-S	02/15/17		< 193						
MW-DN-119-S	05/23/17	Original	< 194	< 4.2	< 0.7	< 1.6	1.8 ± 1.0	2.3 ± 0.9	1.7 ± 1.1
MW-DN-119-S	05/23/17	Recount					2.0 ± 0.9		
MW-DN-119-S	08/29/17		< 192						
MW-DN-119-S	11/08/17		< 178						
MW-DN-122-I	05/25/17		< 196						
MW-DN-122-S	05/25/17		< 198						
MW-DN-124-I	02/20/17		27900 ± 2830						
MW-DN-124-I	05/19/17		25300 ± 2580	< 6.4	< 0.8	< 7.2	< 2.8	9.6 ± 4.0	< 4.0
MW-DN-124-I	08/25/17		29300 ± 2990						
MW-DN-124-I	11/09/17		24500 ± 2490						
MW-DN-124-S	02/20/17	Original	7960 ± 850						
MW-DN-124-S	02/20/17	Reanalysis	7520 ± 804						
MW-DN-124-S	05/19/17		293 ± 136	< 9.0	< 0.9	< 6.4	< 2.9	< 5.5	4.5 ± 2.6
MW-DN-124-S	08/25/17		205 ± 128						
MW-DN-124-S	11/09/17		2700 ± 328						
MW-DN-125-S	02/16/17		< 190						
MW-DN-125-S	05/23/17		< 197	< 4.7	< 0.7	< 30.0	< 2.9	< 11.5	< 4.0
MW-DN-125-S	08/25/17		< 197						
MW-DN-125-S	11/09/17		< 182						
MW-DN-126-S	02/17/17		2740 ± 332						
MW-DN-126-S	05/24/17		1460 ± 215	< 4.7	< 0.7	< 6.9	< 2.8	< 5.7	< 4.0
MW-DN-126-S	08/25/17		1730 ± 247						

TABLE B-I.1

**CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER
SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
	DATE								
MW-DN-126-S	11/08/17		< 179						
MW-DN-127-S	02/20/17		978 \pm 168						
MW-DN-127-S	05/19/17		822 \pm 158	< 6.7	< 0.9	< 5.9	< 0.8	12.6 \pm 1.9	< 1.4
MW-DN-127-S	08/24/17		< 194						
MW-DN-127-S	11/08/17		< 181						
MW-DN-134-S	02/22/17		< 189						
MW-DN-134-S	05/18/17		< 186	< 8.5	< 0.7	< 1.1	< 0.8	1.1 \pm 0.7	< 1.4
MW-DN-134-S	08/30/17		< 194						
MW-DN-134-S	11/07/17		< 180						
MW-DN-135-S	02/22/17		< 196						
MW-DN-135-S	05/18/17		< 188	< 6.0	< 0.9	< 2.1	< 0.8	9.1 \pm 1.6	< 1.4
MW-DN-135-S	08/30/17		< 197						
MW-DN-135-S	11/07/17		< 178						
MW-DN-136-S	02/22/17		< 189						
MW-DN-136-S	05/18/17		< 188	< 5.1	< 0.6	< 3.7	< 1.8	8.5 \pm 4.2	< 3.9
MW-DN-136-S	08/30/17		< 198						
MW-DN-136-S	11/07/17		< 179						
MW-DN-137-S	02/22/17		< 192						
MW-DN-137-S	05/18/17		< 185	< 4.8	< 0.7	< 5.5	< 2.6	13.1 \pm 4.7	< 4.4
MW-DN-137-S	08/30/17		< 194						
MW-DN-137-S	11/07/17		< 177						
MW-DN-140-S	02/13/17		447 \pm 141						
MW-DN-140-S	05/23/17		462 \pm 135						
MW-DN-140-S	08/21/17		447 \pm 141						
MW-DN-140-S	11/17/17		441 \pm 130						
MW-DN-141-S	02/13/17		915 \pm 163						
MW-DN-141-S	05/16/17		1660 \pm 231	< 7.6	< 0.7	< 0.8	< 0.8	8.5 \pm 0.9	< 1.4
MW-DN-141-S	08/21/17		1030 \pm 167						
MW-DN-141-S	11/09/17		1130 \pm 179						
MW-DN-142-S	02/22/17		< 191						
MW-DN-142-S	05/22/17		< 181	< 4.8	< 1.0	< 3.0	< 0.6	18.7 \pm 2.7	1.8 \pm 0.9
MW-DN-142-S	08/31/17		< 170						
MW-DN-142-S	11/07/17		< 180						
MW-DN-143-S	02/22/17		< 192						
MW-DN-143-S	05/22/17		< 182	< 6.1	< 0.8	< 4.7	< 1.8	9.7 \pm 3.9	< 3.9
MW-DN-143-S	08/31/17		< 173						
MW-DN-143-S	11/07/17		< 180						
MW-DN-144-S	02/22/17		< 192						
MW-DN-144-S	05/22/17		< 187	< 4.4	< 0.6	< 4.8	< 1.9	12.4 \pm 4.1	< 3.9
MW-DN-144-S	08/30/17		< 171						
MW-DN-144-S	11/07/17		< 179						

TABLE B-I.2

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		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
	DATE															
DSP-105	02/16/17	< 38	< 78	< 4	< 4	< 10	< 4	< 9	< 5	< 7	< 13	< 4	< 5	< 29	< 11	
DSP-105	05/17/17	< 24	< 39	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 14	< 2	< 2	< 23	< 8	
DSP-105	08/23/17	< 30	< 66	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 13	< 4	< 3	< 26	< 8	
DSP-105	11/08/17	< 44	< 100	< 5	< 5	< 9	< 4	< 10	< 5	< 8	< 9	< 5	< 5	< 21	< 7	
DSP-106	02/16/17	< 37	< 40	< 4	< 4	< 9	< 3	< 7	< 5	< 8	< 13	< 5	< 4	< 31	< 10	
DSP-106	05/17/17	< 19	< 32	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 21	< 8	
DSP-106	08/23/17	< 33	< 71	< 4	< 4	< 8	< 4	< 7	< 4	< 6	< 13	< 4	< 4	< 28	< 8	
DSP-106	11/08/17	< 41	< 96	< 5	< 5	< 11	< 4	< 7	< 5	< 8	< 10	< 5	< 5	< 23	< 7	
DSP-107	02/15/17	< 34	< 57	< 3	< 4	< 8	< 4	< 6	< 4	< 7	< 13	< 3	< 4	< 31	< 8	
DSP-107	05/17/17	< 18	< 16	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 13	< 2	< 2	< 20	< 7	
DSP-107	08/23/17	< 38	< 35	< 4	< 4	< 8	< 4	< 8	< 4	< 7	< 15	< 4	< 4	< 31	< 8	
DSP-107	11/08/17	< 65	< 73	< 7	< 7	< 15	< 7	< 16	< 7	< 13	< 12	< 7	< 8	< 35	< 11	
DSP-108	02/15/17	< 40	< 63	< 4	< 4	< 9	< 4	< 9	< 5	< 8	< 13	< 4	< 4	< 33	< 10	
DSP-108	05/17/17	< 22	< 46	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 14	< 2	< 2	< 24	< 8	
DSP-108	08/22/17	< 37	< 31	< 4	< 4	< 9	< 4	< 8	< 4	< 7	< 13	< 4	< 4	< 30	< 11	
DSP-108	11/08/17	< 57	< 66	< 6	< 6	< 15	< 6	< 12	< 6	< 11	< 12	< 8	< 6	< 30	< 9	
DSP-123	02/15/17	< 40	< 85	< 4	< 4	< 10	< 4	< 10	< 4	< 8	< 15	< 5	< 4	< 33	< 8	
DSP-123	05/16/17	< 17	< 27	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 12	< 2	< 2	< 20	< 7	
DSP-123	08/22/17	< 34	< 89	< 3	< 3	< 9	< 4	< 8	< 4	< 7	< 15	< 4	< 4	< 30	< 13	
DSP-123	11/08/17	< 44	< 97	< 5	< 6	< 9	< 4	< 9	< 5	< 10	< 10	< 6	< 5	< 27	< 7	
DSP-125	05/24/17	< 50	< 59	< 6	< 4	< 11	< 5	< 10	< 7	< 10	< 15	< 6	< 6	< 40	< 13	
DSP-126	05/18/17	< 23	< 45	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 14	< 2	< 2	< 25	< 8	
DSP-147	05/18/17	< 20	< 17	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 21	< 7	
DSP-154	05/18/17	< 21	< 17	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 22	< 7	
DSP-157-I	05/25/17	< 43	< 44	< 5	< 5	< 10	< 5	< 9	< 5	< 8	< 13	< 6	< 5	< 29	< 10	
DSP-157-S	05/25/17	< 45	95 \pm 63	< 6	< 6	< 14	< 7	< 10	< 5	< 11	< 15	< 6	< 6	< 38	< 8	
DSP-159-I	05/24/17	< 39	< 103	< 5	< 5	< 10	< 4	< 10	< 5	< 9	< 14	< 5	< 4	< 27	< 8	
DSP-159-S	05/24/17	< 48	< 84	< 5	< 5	< 9	< 5	< 10	< 6	< 11	< 15	< 6	< 6	< 32	< 5	
MD-11	02/17/17	< 43	< 44	< 5	< 5	< 11	< 5	< 9	< 5	< 8	< 13	< 6	< 5	< 35	< 9	
MD-11	11/09/17	< 39	< 72	< 5	< 4	< 10	< 5	< 9	< 5	< 8	< 8	< 5	< 5	< 23	< 6	
MW-DN-101-I	02/15/17	< 42	< 31	< 4	< 4	< 9	< 4	< 8	< 5	< 8	< 14	< 5	< 5	< 27	< 10	
MW-DN-101-I	05/16/17	< 19	< 34	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 13	< 2	< 2	< 21	< 6	
MW-DN-101-I	08/22/17	< 38	< 68	< 3	< 4	< 10	< 4	< 7	< 4	< 7	< 15	< 5	< 4	< 28	< 10	
MW-DN-101-I	11/08/17	< 59	< 142	< 6	< 6	< 13	< 6	< 10	< 7	< 11	< 14	< 7	< 8	< 32	< 12	
MW-DN-101-S	02/15/17	< 41	< 27	< 3	< 4	< 10	< 3	< 7	< 4	< 6	< 15	< 5	< 4	< 30	< 9	
MW-DN-101-S	05/16/17	< 20	< 15	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 23	< 8	
MW-DN-101-S	08/22/17	< 27	< 29	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 12	< 3	< 3	< 24	< 6	
MW-DN-101-S	11/08/17	< 55	< 50	< 6	< 5	< 9	< 5	< 12	< 7	< 11	< 14	< 7	< 5	< 29	< 10	
MW-DN-102-I	05/19/17	< 24	43 \pm 27	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 23	< 6	
MW-DN-102-S	05/19/17	< 30	< 27	< 3	< 4	< 7	< 3	< 7	< 4	< 6	< 15	< 4	< 3	< 31	< 11	
MW-DN-103-I	05/24/17	< 37	< 73	< 4	< 5	< 10	< 4	< 8	< 4	< 7	< 12	< 5	< 4	< 30	< 9	
MW-DN-103-S	05/24/17	< 41	< 94	< 5	< 5	< 14	< 4	< 9	< 5	< 8	< 15	< 5	< 5	< 31	< 12	
MW-DN-106-S	05/22/17	< 35	< 61	< 3	< 4	< 8	< 3	< 7	< 4	< 6	< 14	< 4	< 3	< 28	< 10	
MW-DN-108-I	02/14/17	< 38	< 32	< 3	< 4	< 8	< 3	< 7	< 4	< 8	< 13	< 4	< 4	< 29	< 8	
MW-DN-108-I	05/16/17	< 23	< 47	< 2	< 3	< 6	< 2	< 4	< 3	< 5	< 14	< 2	< 2	< 24	< 8	

TABLE B-I.2

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION	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
	DATE														
MW-DN-108-I	08/21/17	< 30	< 31	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 14	< 3	< 3	< 27	< 10
MW-DN-108-I	11/07/17	< 60	< 108	< 6	< 6	< 8	< 6	< 12	< 6	< 10	< 12	< 5	< 7	< 31	< 13
MW-DN-109-I	05/15/17	< 17	< 33	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 12	< 2	< 2	< 20	< 6
MW-DN-109-S	05/15/17	< 17	< 16	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 12	< 2	< 2	< 20	< 6
MW-DN-113-I	05/19/17	< 26	< 36	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 14	< 3	< 3	< 25	< 6
MW-DN-113-S	05/19/17	60 \pm 22	< 48	< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 11	< 2	< 2	< 20	< 7
MW-DN-116-I	02/14/17	< 35	< 94	< 4	< 5	< 7	< 4	< 9	< 5	< 7	< 15	< 5	< 4	< 32	< 10
MW-DN-116-I	05/16/17	< 21	< 33	< 2	< 2	< 6	< 2	< 4	< 2	< 5	< 14	< 2	< 2	< 24	< 8
MW-DN-116-I	08/21/17	< 25	< 19	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 13	< 3	< 2	< 21	< 7
MW-DN-116-I	11/07/17	< 50	< 110	< 5	< 4	< 10	< 6	< 11	< 5	< 10	< 12	< 5	< 5	< 32	< 9
MW-DN-116-S	02/14/17	< 28	< 47	< 3	< 3	< 7	< 3	< 6	< 3	< 5	< 12	< 3	< 3	< 22	< 6
MW-DN-116-S	05/16/17	< 20	< 32	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 20	< 7
MW-DN-116-S	08/21/17	< 24	< 22	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 14	< 3	< 3	< 25	< 8
MW-DN-116-S	11/07/17	< 64	< 125	< 8	< 7	< 16	< 8	< 15	< 8	< 14	< 15	< 7	< 8	< 34	< 12
MW-DN-117-I	02/14/17	< 26	< 63	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 12	< 3	< 3	< 23	< 8
MW-DN-117-I	05/16/17	< 20	< 34	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 22	< 6
MW-DN-117-I	08/29/17	< 31	< 27	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 9	< 3	< 3	< 20	< 6
MW-DN-117-I	11/07/17	< 46	< 46	< 5	< 5	< 14	< 6	< 12	< 5	< 9	< 11	< 5	< 7	< 30	< 8
MW-DN-118-S	02/15/17	< 39	< 83	< 4	< 4	< 10	< 4	< 10	< 5	< 8	< 15	< 4	< 4	< 34	< 9
MW-DN-118-S	05/17/17	< 18	< 14	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 19	< 7
MW-DN-118-S	08/23/17	< 28	< 22	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 14	< 3	< 3	< 26	< 7
MW-DN-118-S	11/08/17	< 71	< 131	< 6	< 6	< 15	< 8	< 13	< 6	< 11	< 13	< 8	< 7	< 35	< 12
MW-DN-119-I	05/23/17	< 37	< 37	< 4	< 4	< 9	< 4	< 7	< 5	< 8	< 14	< 5	< 4	< 29	< 9
MW-DN-119-I	11/17/17	< 67	< 59	< 6	< 6	< 14	< 6	< 13	< 7	< 11	< 14	< 8	< 7	< 35	< 10
MW-DN-119-S	05/23/17	< 42	< 98	< 4	< 5	< 10	< 4	< 8	< 5	< 8	< 15	< 5	< 5	< 31	< 12
MW-DN-122-I	05/25/17	< 41	< 35	< 5	< 4	< 11	< 5	< 8	< 4	< 8	< 15	< 4	< 4	< 29	< 11
MW-DN-122-S	05/25/17	< 47	< 91	< 5	< 5	< 11	< 5	< 9	< 5	< 9	< 15	< 5	< 5	< 31	< 12
MW-DN-124-I	05/19/17	< 20	< 37	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 19	< 7
MW-DN-124-I	11/09/17	< 47	< 49	< 5	< 5	< 11	< 4	< 10	< 5	< 9	< 9	< 6	< 5	< 25	< 6
MW-DN-124-S	05/19/17	< 30	< 27	< 3	< 3	< 6	< 3	< 5	< 3	< 5	< 15	< 3	< 3	< 28	< 10
MW-DN-124-S	11/09/17	< 70	< 120	< 8	< 8	< 16	< 9	< 18	< 8	< 15	< 14	< 9	< 8	< 41	< 13
MW-DN-125-S	05/23/17	< 39	< 72	< 4	< 4	< 9	< 4	< 7	< 4	< 7	< 14	< 3	< 4	< 30	< 8
MW-DN-126-S	05/24/17	< 51	< 75	< 4	< 5	< 10	< 6	< 12	< 5	< 9	< 14	< 6	< 4	< 32	< 10
MW-DN-127-S	05/19/17	< 24	< 47	< 2	< 3	< 7	< 2	< 5	< 3	< 5	< 12	< 3	< 2	< 24	< 8
MW-DN-134-S	05/18/17	< 26	< 26	< 3	< 3	< 6	< 3	< 5	< 3	< 5	< 14	< 3	< 3	< 23	< 7
MW-DN-135-S	05/18/17	< 20	< 33	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 20	< 7
MW-DN-136-S	05/18/17	< 23	< 48	< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 13	< 2	< 2	< 21	< 8
MW-DN-137-S	05/18/17	< 17	< 18	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 2	< 2	< 17	< 6
MW-DN-141-S	05/16/17	< 15	< 24	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 2	< 1	< 17	< 5
MW-DN-142-S	05/22/17	< 45	< 40	< 5	< 4	< 10	< 5	< 9	< 5	< 8	< 14	< 5	< 4	< 34	< 12
MW-DN-143-S	05/22/17	< 31	< 33	< 3	< 4	< 8	< 4	< 6	< 4	< 6	< 13	< 4	< 3	< 25	< 10
MW-DN-144-S	05/22/17	< 44	73 \pm 47	< 4	< 5	< 11	< 4	< 9	< 5	< 7	< 15	< 5	< 4	< 28	< 12

TABLE B-1.3

**CONCENTRATIONS OF HARD TO DETECTS IN GROUNDWATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		Am-241	Cm-242	Cm-243/244	Pu-238	Pu-239/240	U-233/234	U-235	U-238	Fe-55	Ni-63
	DATE											
MD-11	02/17/17		< 0.07	< 0.06	< 0.11	< 0.05	< 0.13	< 0.03	< 0.04	< 0.06	< 157	< 3.3
	11/09/17		< 0.19	< 0.03	< 0.09	< 0.03	< 0.07	< 0.13	< 0.19	< 0.13	< 133	< 3.4
MW-DN-119-I	05/23/17										< 174	58.9 \pm 3.9
	05/23/17	<i>Reanalysis</i>										46.8 \pm 13.5
	05/23/17	<i>Reanalysis</i>										45.6 \pm 3.2
	05/23/17	<i>Reanalysis</i>										48.0 \pm 7.1
	11/17/17		< 0.10	< 0.02	< 0.08	< 0.13	< 0.13	0.84 \pm 0.30	< 0.04	0.44 \pm 0.21	< 187	42.7 \pm 3.3
	11/17/17	<i>Recount</i>										46.4 \pm 3.5
	11/17/17	<i>Recount</i>										47.3 \pm 11.8
	11/17/17	<i>Reanalysis</i>										32.3 \pm 3.5
MW-DN-124-I	05/19/17		< 0.19	< 0.19	< 0.13	< 0.19	< 0.12	< 0.10	< 0.16	< 0.16	< 179	< 4.1
MW-DN-124-S	05/19/17		< 0.1	< 0.13	< 0.05	< 0.13	< 0.03	< 0.11	< 0.05	< 0.04	< 160	< 4.0

**TABLE B-II.1 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA**

SITE	COLLECTION DATE	H-3
DSP-131	02/20/17	284 \pm 133
DSP-131	05/24/17	< 188
DSP-132	02/20/17	463 \pm 141
DSP-132	05/23/17	1740 \pm 236
DSP-133	02/23/17	< 190
DSP-133	05/22/17	< 189
SW-DN-101	02/22/17	< 194
SW-DN-101	05/22/17	< 186
SW-DN-101	09/01/17	< 178
SW-DN-101	11/09/17	696 \pm 144
SW-DN-102	02/22/17	363 \pm 138
SW-DN-102	05/22/17	554 \pm 137
SW-DN-102	09/01/17	962 \pm 161
SW-DN-102	11/09/17	1410 \pm 196
SW-DN-103	02/22/17	356 \pm 132
SW-DN-103	05/22/17	596 \pm 139
SW-DN-103	09/01/17	877 \pm 155
SW-DN-103	11/09/17	1160 \pm 181
SW-DN-104	02/23/17	424 \pm 139
SW-DN-104	05/25/17	566 \pm 137
SW-DN-104	08/30/17	613 \pm 137
SW-DN-104	11/09/17	1280 \pm 193
SW-DN-105	02/23/17	292 \pm 131
SW-DN-105	05/25/17	394 \pm 131
SW-DN-105	08/30/17	287 \pm 120
SW-DN-105	11/09/17	1450 \pm 209
SW-DN-106	02/23/17	292 \pm 131
SW-DN-106	05/22/17	681 \pm 139
SW-DN-106	08/30/17	1000 \pm 164
SW-DN-106	11/09/17	1410 \pm 206

TABLE B-II.2

**CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2017
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA**

SITE	COLLECTION		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
	DATE															
DSP-131	05/24/17		< 43	< 43	< 4	< 5	< 10	< 5	< 10	< 5	< 9	< 14	< 5	< 5	< 32	< 10
DSP-132	05/23/17		< 38	< 39	< 3	< 4	< 10	< 3	< 7	< 4	< 7	< 14	< 5	< 4	< 25	< 10
DSP-133	05/22/17		< 49	< 80	< 4	< 4	< 12	< 5	< 9	< 6	< 9	< 14	< 6	< 5	< 34	< 10
SW-DN-101	05/22/17		< 27	< 55	< 3	< 4	< 7	< 3	< 6	< 3	< 6	< 12	< 3	< 3	< 22	< 6
SW-DN-102	05/22/17		< 34	< 59	< 3	< 4	< 9	< 4	< 8	< 4	< 6	< 13	< 3	< 4	< 25	< 10
SW-DN-103	05/22/17		< 34	< 82	< 3	< 4	< 8	< 3	< 6	< 4	< 6	< 15	< 4	< 3	< 29	< 10
SW-DN-104	05/25/17		< 43	< 98	< 5	< 5	< 12	< 4	< 9	< 5	< 8	< 15	< 5	< 5	< 27	< 10
SW-DN-105	05/25/17		< 51	< 41	< 5	< 5	< 12	< 5	< 12	< 6	< 11	< 15	< 6	< 6	< 41	< 9
SW-DN-106	05/22/17		< 38	< 70	< 4	< 4	< 9	< 4	< 8	< 4	< 7	< 15	< 4	< 4	< 28	< 9

TABLE B-III.1

CONCENTRATIONS OF TRITIUM IN PRECIPITATION WATER SAMPLES
COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016
RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION	
	DATE	H-3
FW-1	05/15/17	< 177
FW-10	05/23/17	< 177
FW-11	05/17/17	< 175
FW-12	05/24/17	< 178