APPENDIX 1

Environmental, Inc. Midwest Laboratory
Final Report for the Point Beach Nuclear Plant
and
Other Analyses
Reporting Period: January – December 2016

112 pages follow

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MONTHLY PROGRESS REPORT
TO
NextEra Energy

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)
FOR
THE POINT BEACH NUCLEAR PLANT
TWO RIVERS, WISCONSIN

PREPARED AND SUBMITTED
BY
ENVIRONMENTAL INCORPORATED MIDWEST LABORATORY

Project Number: 8006

Reporting Period: January-December, 2016

Reviewed and
Approved by _____ Date 02-03-2017

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Reviewed 2/22/17 KAJ

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1.0 INTRODUCTION

The following constitutes the current Monthly Progress Report for the Environmental Radiological Monitoring Program conducted at the Point Beach Nuclear Plant, Two Rivers, Wisconsin. Results of completed analyses are presented in the attached tables. Missing entries indicate analyses that are not completed. These results will appear in subsequent reports. Data tables reflect sample analysis results for both Technical Specification requirements and Special Interest locations and samples are randomly selected within the Program monitoring area to provide additional data for cross-comparisons.

For all gamma isotopic analyses, the spectrum is computer scanned from 80 to 2048 KeV. Specifically included are Mn-54, Fe-59, Co-58, Co-60, Zn-65, Zr-95, Nb-95, Ru-103, Ru-106, I-131, Ba-La-140, Cs-134, Cs-137, Ce-141, and Ce-144. Naturally occurring gamma-emitters, such as K-40 and Ra daughters, are frequently detected in soil and sediment samples. Specific isotopes listed are K-40, Tl-208, Pb-212, Bi-214, Ra-226 and Ac-228. The results reported under "Other Gammas" may be Co-60, Ru-103 or any other radionuclide which is indicative of other gammas for the sample type. "Other Gammas" do not include naturally occuring radionuclides.

All concentrations, except gross beta, are decay corrected.

All samples were collected within the scheduled period unless noted otherwise in the Listing of Missed Samples.

POINT BEACH NUCLEAR PLANT

2.0 LISTING OF MISSED SAMPLES

Sample Type	Location	Expected Collection Date	Reason
LW	E-005	01-13-16	No sample due to icy conditions.
LW	E-006	01-13-16	No sample due to icy conditions.
LW	E-033	01-13-16	No sample due to icy conditions.
AP/AI	E-02	02-04-16	GFI tripped.
LW	E-033	02-11-16	No sample due to icy conditions.
AP/AI	E-01	03-30-16	Pump failure.
Algae	E-005	06-08-16	No algea available
Algae	E-012	06-08-16	No algea available
AP/AI	E-01	06-22-16	Loss of power <10 cubic meters.
AP/AI	E-04	06-22-16	Loss of power <20 cubic meters.
AP/AI	E-01	07-06-16	Electrical issues with sampler.
Algae	E-005	08-10-16	No algea available
Algae	E-012	08-10-16	No algea available
AP/AI	E-01	07-27-16	Electrical issues with sampler.
AP/AI	E-02	08-24-16	Pump tripped off due to storm on 8-20-16. Gross beta result = 0.032±0.007 pCi/m3.
WW	GW-17	09-28-16	Water not available.
Algae	E-005	10-05-16	No algea available
Algae	E-012	10-05-16	No algea available
LW	E-001	12-31-16	No sample due to icy conditions.
LW	E-005	12-31-16	No sample due to icy conditions.
LW	E-006	12-31-16	No sample due to icy conditions.
LW	E-033	12-31-16	No sample due to icy conditions.

3.0 Data Tables

Table 1. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.
Location: E-01, Meteorological Tower
Units: pCi/m^3
Collection: Continuous, weekly exchange.

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
01-06-16	308	0.038 ± 0.004	< 0.008
01-14-16	344	0.029 ± 0.004	< 0.010
01-20-16	271	0.021 ± 0.004	< 0.012
01-27-16	295	0.030 ± 0.004	< 0.008
02-04-16	339	0.022 ± 0.003	< 0.008
02-10-16	255	0.029 ± 0.004	< 0.011
02-17-16	303	0.023 ± 0.004	< 0.007
02-24-16	298	0.023 ± 0.004	< 0.008
03-02-16	305	0.026 ± 0.004	< 0.009
03-10-16	341	0.021 ± 0.003	< 0.007
03-16-16	240	0.014 ± 0.004	< 0.009
03-23-16	312	0.017 ± 0.003	< 0.007
03-30-16		ND[a]	
1st Quarter Mean ± s.d.		0.025 ± 0.007	< 0.009
04-06-16	299	0.018 ± 0.003	< 0.008
04-13-16	307	0.015 ± 0.003	< 0.008
04-20-16	295	0.021 ± 0.003	< 0.007
04-27-16	303	0.019 ± 0.003	< 0.009
05-04-16	300	0.016 ± 0.003	< 0.010
05-11-16	302	0.015 ± 0.003	< 0.011
05-18-16	298	0.015 ± 0.003	< 0.010
05-25-16	299	0.026 ± 0.004	< 0.010
06-01-16	297	0.017 ± 0.003	< 0.007
06-08-16	294	0.010 ± 0.003	< 0.009
06-15-16	103	0.024 ± 0.007	< 0.014 [b]
06-22-16		ND[a]	
06-29-16	292	0.015 ± 0.003	< 0.011
2nd Quarter Mean ± s.d.		0.018 ± 0.005	< 0.010

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
07-06-16		ND[a]	
07-13-16	303	0.023 ± 0.003	< 0.008
07-20-16	304	0.017 ± 0.003	< 0.008
07-27-16		ND[a]	
08-03-16	288	0.021 ± 0.003	< 0.009
08-11-16	333	0.033 ± 0.004	< 0.008
08-17-16	253	0.031 ± 0.004	< 0.007
08-24-16	289	0.026 ± 0.004	< 0.013
08-31-16	300	0.026 ± 0.004	< 0.007
09-07-16	310	0.025 ± 0.003	< 0.007
09-14-16	302	0.022 ± 0.003	< 0.010
09-21-16	298	0.031 ± 0.004	< 0.009
09-28-16	299	0.020 ± 0.003	< 0.010
3rd Quarter Mean ± s.d.		0.025 ± 0.005	< 0.009
10-05-16		0.022 ± 0.003	< 0.009
10-12-16		0.030 ± 0.004	< 0.009
10-19-16		0.026 ± 0.004	< 0.012
10-26-16		0.014 ± 0.003	< 0.011
11-02-16		0.019 ± 0.003	< 0.008
11-09-16		0.044 ± 0.004	< 0.010
11-16-16		0.031 ± 0.004	< 0.012
11-22-16		0.043 ± 0.005	< 0.013
11-30-16		0.038 ± 0.004	< 0.006
12-07-16		0.023 ± 0.003	< 0.010
12-15-16		0.023 ± 0.003	< 0.009
12-21-16		0.036 ± 0.004	< 0.011
12-28-16		0.025 ± 0.004	< 0.009
4th Quarter Mean ± s.d.		0.029 ± 0.009	< 0.010
Cumulative Average		0.024 ± 0.008	< 0.009

[a] "ND" = No data; see Table 2.0, Listing of Missed Samples.
[b] Low volume due to tripped breaker.

Table 1. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.
Location: E-02, Site Boundary Control Center
Units: pCi/m^3
Collection: Continuous, weekly exchange.

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
01-06-16	308	0.037 ± 0.004	< 0.008
01-14-16	336	0.031 ± 0.004	< 0.010
01-20-16	256	0.031 ± 0.005	< 0.012
01-27-16	295	0.034 ± 0.004	< 0.008
02-04-16		ND[a]	
02-10-16	240	0.028 ± 0.004	< 0.011
02-17-16	284	0.021 ± 0.004	< 0.008
02-24-16	287	0.021 ± 0.004	< 0.008
03-02-16	293	0.026 ± 0.004	< 0.009
03-10-16	333	0.021 ± 0.003	< 0.007
03-16-16	242	0.015 ± 0.004	< 0.009
03-23-16	308	0.014 ± 0.003	< 0.007
03-30-16	296	0.024 ± 0.004	< 0.010
1st Quarter Mean ± s.d.		0.025 ± 0.007	< 0.009
04-06-16	297	0.023 ± 0.004	< 0.008
04-13-16	299	0.020 ± 0.003	< 0.008
04-20-16	270	0.024 ± 0.004	< 0.007
04-27-16	297	0.019 ± 0.003	< 0.009
05-04-16	292	0.020 ± 0.003	< 0.011
05-11-16	308	0.013 ± 0.003	< 0.010
05-18-16	287	0.017 ± 0.003	< 0.011
05-25-16	295	0.027 ± 0.004	< 0.010
06-01-16	294	0.019 ± 0.003	< 0.007
06-08-16	287	0.012 ± 0.003	< 0.009
06-15-16	294	0.019 ± 0.003	< 0.005
06-22-16	291	0.024 ± 0.003	< 0.007
06-29-16	302	0.018 ± 0.003	< 0.011
2nd Quarter Mean ± s.d.		0.020 ± 0.004	< 0.009
07-06-16	303	0.021 ± 0.003	< 0.010
07-13-16	308	0.025 ± 0.004	< 0.008
07-20-16	300	0.018 ± 0.003	< 0.008
07-27-16	292	0.028 ± 0.004	< 0.006
08-03-16	304	0.019 ± 0.003	< 0.009
08-11-16	342	0.032 ± 0.004	< 0.008
08-17-16	262	0.026 ± 0.004	< 0.006
08-24-16		ND[a]	
08-31-16	302	0.022 ± 0.003	< 0.007
09-07-16	312	0.022 ± 0.003	< 0.007
09-14-16	294	0.019 ± 0.003	< 0.010
09-21-16	301	0.033 ± 0.004	< 0.009
09-28-16	299	0.020 ± 0.003	< 0.010
3rd Quarter Mean ± s.d.		0.024 ± 0.005	< 0.008
10-05-16	291	0.023 ± 0.004	< 0.009
10-12-16	293	0.027 ± 0.004	< 0.009
10-19-16	299	0.024 ± 0.004	< 0.012
10-26-16	307	0.015 ± 0.003	< 0.011
11-02-16	301	0.021 ± 0.003	< 0.008
11-09-16	309	0.040 ± 0.004	< 0.010
11-16-16	300	0.035 ± 0.004	< 0.012
11-22-16	267	0.045 ± 0.005	< 0.013
11-30-16	337	0.034 ± 0.004	< 0.006
12-07-16	311	0.021 ± 0.003	< 0.010
12-15-16	355	0.023 ± 0.003	< 0.009
12-21-16	260	0.033 ± 0.004	< 0.011
12-28-16	303	0.028 ± 0.004	< 0.009
4th Quarter Mean ± s.d.		0.028 ± 0.009	< 0.010
Cumulative Average		0.024 ± 0.007	< 0.009

[a] "ND" = No data; see Table 2.0, Listing of Missed Samples.

Table 1. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.
Location: E-03, West Boundary
Units: pCi/m^3
Collection: Continuous, weekly exchange.

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
01-06-16	308	0.035 ± 0.004	< 0.008
01-14-16	346	0.033 ± 0.004	< 0.010
01-20-16	264	0.029 ± 0.004	< 0.012
01-27-16	302	0.031 ± 0.004	< 0.008
02-04-16	344	0.020 ± 0.003	< 0.008
02-10-16	265	0.028 ± 0.004	< 0.010
02-17-16	288	0.020 ± 0.004	< 0.007
02-24-16	290	0.021 ± 0.004	< 0.008
03-02-16	301	0.027 ± 0.004	< 0.009
03-10-16	340	0.022 ± 0.003	< 0.007
03-16-16	249	0.013 ± 0.004	< 0.009
03-23-16	311	0.016 ± 0.003	< 0.007
03-30-16	297	0.021 ± 0.004	< 0.010
1st Quarter Mean ± s.d.		0.024 ± 0.007	< 0.009
04-06-16	293	0.020 ± 0.003	< 0.008
04-13-16	298	0.019 ± 0.003	< 0.008
04-20-16	302	0.021 ± 0.003	< 0.007
04-27-16	301	0.017 ± 0.003	< 0.009
05-04-16	303	0.019 ± 0.003	< 0.010
05-11-16	312	0.012 ± 0.003	< 0.010
05-18-16	294	0.014 ± 0.003	< 0.010
05-25-16	299	0.029 ± 0.004	< 0.010
06-01-16	292	0.018 ± 0.003	< 0.007
06-08-16	296	0.013 ± 0.003	< 0.009
06-15-16	297	0.021 ± 0.003	< 0.005
06-22-16	291	0.019 ± 0.003	< 0.007
06-29-16	301	0.016 ± 0.003	< 0.011
2nd Quarter Mean ± s.d.		0.018 ± 0.004	< 0.009

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
07-06-16	300	0.021 ± 0.003	< 0.010
07-13-16	305	0.023 ± 0.003	< 0.008
07-20-16	301	0.015 ± 0.003	< 0.008
07-27-16	296	0.022 ± 0.003	< 0.006
08-03-16	306	0.018 ± 0.003	< 0.009
08-11-16	344	0.026 ± 0.003	< 0.007
08-17-16	260	0.024 ± 0.004	< 0.007
08-24-16	297	0.022 ± 0.003	< 0.012
08-31-16	301	0.022 ± 0.003	< 0.007
09-07-16	307	0.021 ± 0.003	< 0.007
09-14-16	302	0.019 ± 0.003	< 0.010
09-21-16	299	0.027 ± 0.004	< 0.009
09-28-16	298	0.018 ± 0.003	< 0.010
3rd Quarter Mean ± s.d.		0.022 ± 0.003	< 0.008
10-05-16	303	0.022 ± 0.003	< 0.008
10-12-16	303	0.027 ± 0.004	< 0.009
10-19-16	300	0.024 ± 0.004	< 0.012
10-26-16	302	0.014 ± 0.003	< 0.011
11-02-16	298	0.019 ± 0.003	< 0.008
11-09-16	311	0.039 ± 0.004	< 0.010
11-16-16	301	0.029 ± 0.004	< 0.012
11-22-16	264	0.042 ± 0.005	< 0.013
11-30-16	337	0.033 ± 0.004	< 0.006
12-07-16	305	0.024 ± 0.003	< 0.010
12-15-16	357	0.025 ± 0.003	< 0.009
12-21-16	259	0.027 ± 0.004	< 0.011
12-28-16	299	0.028 ± 0.004	< 0.009
4th Quarter Mean ± s.d.		0.027 ± 0.008	< 0.010
Cumulative Average		0.023 ± 0.006	< 0.009

Table 1. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.
Location: E-04, North Boundary
Units: pCi/m^3
Collection: Continuous, weekly exchange.

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
01-06-16	307	0.039 ± 0.004	< 0.008
01-14-16	351	0.031 ± 0.004	< 0.010
01-20-16	271	0.029 ± 0.004	< 0.012
01-27-16	299	0.032 ± 0.004	< 0.008
02-04-16	345	0.023 ± 0.003	< 0.008
02-10-16	257	0.027 ± 0.004	< 0.011
02-17-16	296	0.020 ± 0.004	< 0.007
02-24-16	300	0.021 ± 0.004	< 0.008
03-02-16	304	0.025 ± 0.004	< 0.009
03-10-16	339	0.024 ± 0.003	< 0.007
03-16-16	246	0.021 ± 0.004	< 0.009
03-23-16	314	0.016 ± 0.003	< 0.007
03-30-16	298	0.023 ± 0.004	< 0.010
1st Quarter Mean ± s.d.		0.025 ± 0.006	< 0.009
04-06-16	300	0.024 ± 0.004	< 0.008
04-13-16	300	0.015 ± 0.003	< 0.008
04-20-16	299	0.019 ± 0.003	< 0.007
04-27-16	300	0.017 ± 0.003	< 0.009
05-04-16	297	0.017 ± 0.003	< 0.010
05-11-16	301	0.014 ± 0.003	< 0.011
05-18-16	284	0.015 ± 0.003	< 0.011
05-25-16	295	0.029 ± 0.004	< 0.010
06-01-16	291	0.016 ± 0.003	< 0.007
06-08-16	301	0.012 ± 0.003	< 0.009
06-15-16	294	0.019 ± 0.003	< 0.005
06-22-16		ND[a]	
06-29-16	290	0.017 ± 0.003	< 0.011
2nd Quarter Mean ± s.d.		0.018 ± 0.005	< 0.009
07-06-16	288	0.017 ± 0.003	< 0.010
07-13-16	299	0.021 ± 0.003	< 0.008
07-20-16	301	0.020 ± 0.003	< 0.008
07-27-16	297	0.025 ± 0.004	< 0.006
08-03-16	306	0.022 ± 0.003	< 0.009
08-11-16	346	0.029 ± 0.003	< 0.007
08-17-16	261	0.028 ± 0.004	< 0.007
08-24-16	296	0.022 ± 0.003	< 0.012
08-31-16	301	0.024 ± 0.003	< 0.007
09-07-16	308	0.021 ± 0.003	< 0.007
09-14-16	302	0.017 ± 0.003	< 0.010
09-21-16	300	0.031 ± 0.004	< 0.009
09-28-16	303	0.019 ± 0.003	< 0.010
3rd Quarter Mean ± s.d.		0.023 ± 0.004	< 0.008
10-05-16	309	0.020 ± 0.003	< 0.008
10-12-16	310	0.027 ± 0.004	< 0.009
10-19-16	302	0.024 ± 0.003	< 0.012
10-26-16	305	0.015 ± 0.003	< 0.011
11-02-16	298	0.018 ± 0.003	< 0.008
11-09-16	308	0.039 ± 0.004	< 0.010
11-16-16	299	0.031 ± 0.004	< 0.012
11-22-16	267	0.043 ± 0.005	< 0.013
11-30-16	344	0.037 ± 0.004	< 0.006
12-07-16	314	0.025 ± 0.003	< 0.009
12-15-16	356	0.021 ± 0.003	< 0.009
12-21-16	262	0.031 ± 0.004	< 0.011
12-28-16	308	0.030 ± 0.004	< 0.009
4th Quarter Mean ± s.d.		0.028 ± 0.008	< 0.010
Cumulative Average		0.024 ± 0.007	< 0.009

[a] "ND" = No data; see Table 2.0, Listing of Missed Samples.

Table 1. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.
Location: E-08, G.J. Francar Residence
Units: pCi/m^3
Collection: Continuous, weekly exchange.

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
01-06-16	306	0.043 ± 0.005	< 0.008
01-14-16	344	0.031 ± 0.004	< 0.010
01-20-16	262	0.027 ± 0.004	< 0.012
01-27-16	296	0.030 ± 0.004	< 0.008
02-04-16	339	0.021 ± 0.003	< 0.008
02-10-16	263	0.029 ± 0.004	< 0.010
02-17-16	294	0.022 ± 0.004	< 0.007
02-24-16	286	0.021 ± 0.004	< 0.008
03-02-16	309	0.023 ± 0.004	< 0.009
03-10-16	338	0.021 ± 0.003	< 0.007
03-16-16	242	0.017 ± 0.004	< 0.009
03-23-16	315	0.013 ± 0.003	< 0.007
03-30-16	296	0.021 ± 0.004	< 0.010
1st Quarter Mean ± s.d.		0.024 ± 0.008	< 0.009
04-06-16	307	0.024 ± 0.003	< 0.008
04-13-16	309	0.015 ± 0.003	< 0.008
04-20-16	294	0.019 ± 0.003	< 0.007
04-27-16	304	0.019 ± 0.003	< 0.009
05-04-16	301	0.016 ± 0.003	< 0.010
05-11-16	307	0.012 ± 0.003	< 0.010
05-18-16	291	0.014 ± 0.003	< 0.011
05-25-16	299	0.026 ± 0.004	< 0.010
06-01-16	293	0.016 ± 0.003	< 0.007
06-08-16	307	0.013 ± 0.003	< 0.009
06-15-16	294	0.021 ± 0.003	< 0.005
06-22-16	282	0.022 ± 0.003	< 0.007
06-29-16	306	0.018 ± 0.003	< 0.011
2nd Quarter Mean ± s.d.		0.018 ± 0.004	< 0.009

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
07-06-16	301	0.019 ± 0.003	< 0.010
07-13-16	311	0.021 ± 0.003	< 0.008
07-20-16	306	0.020 ± 0.003	< 0.008
07-27-16	300	0.026 ± 0.004	< 0.006
08-03-16	306	0.018 ± 0.003	< 0.009
08-11-16	347	0.029 ± 0.003	< 0.007
08-17-16	264	0.024 ± 0.004	< 0.006
08-24-16	296	0.022 ± 0.003	< 0.012
08-31-16	300	0.025 ± 0.003	< 0.007
09-07-16	312	0.019 ± 0.003	< 0.007
09-14-16	309	0.022 ± 0.003	< 0.009
09-21-16	302	0.028 ± 0.004	< 0.009
09-28-16	306	0.019 ± 0.003	< 0.010
3rd Quarter Mean ± s.d.		0.022 ± 0.004	< 0.008
10-05-16	321	0.014 ± 0.003	< 0.008
10-12-16	314	0.027 ± 0.004	< 0.009
10-19-16	303	0.025 ± 0.004	< 0.012
10-26-16	306	0.015 ± 0.003	< 0.011
11-02-16	296	0.019 ± 0.003	< 0.008
11-09-16	310	0.043 ± 0.004	< 0.010
11-16-16	302	0.033 ± 0.004	< 0.011
11-22-16	265	0.037 ± 0.004	< 0.013
11-30-16	336	0.035 ± 0.004	< 0.006
12-07-16	317	0.025 ± 0.003	< 0.009
12-15-16	356	0.021 ± 0.003	< 0.009
12-21-16	267	0.029 ± 0.004	< 0.011
12-28-16	300	0.024 ± 0.003	< 0.009
4th Quarter Mean ± s.d.		0.027 ± 0.009	< 0.010
Cumulative Average		0.023 ± 0.007	< 0.009
Indicator Locations Annual Mean ± s.d.		**0.023 ± 0.007**	**< 0.009**

Table 1. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.
Location: E-20, Silver Lake
Units: pCi/m^3
Collection: Continuous, weekly exchange.

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
01-06-16	303	0.041 ± 0.004	< 0.008
01-14-16	346	0.047 ± 0.004	< 0.010
01-20-16	272	0.026 ± 0.004	< 0.012
01-27-16	298	0.027 ± 0.004	< 0.008
02-04-16	341	0.024 ± 0.003	< 0.008
02-10-16	259	0.028 ± 0.004	< 0.011
02-17-16	297	0.020 ± 0.004	< 0.007
02-24-16	294	0.022 ± 0.004	< 0.008
03-02-16	307	0.021 ± 0.003	< 0.009
03-10-16	334	0.021 ± 0.003	< 0.007
03-16-16	249	0.017 ± 0.004	< 0.009
03-23-16	310	0.015 ± 0.003	< 0.007
03-30-16	293	0.023 ± 0.004	< 0.010
1st Quarter Mean ± s.d.		0.026 ± 0.009	< 0.009
04-06-16	306	0.020 ± 0.003	< 0.008
04-13-16	308	0.017 ± 0.003	< 0.008
04-20-16	291	0.023 ± 0.004	< 0.007
04-27-16	301	0.017 ± 0.003	< 0.009
05-04-16	299	0.016 ± 0.003	< 0.010
05-11-16	305	0.012 ± 0.003	< 0.010
05-18-16	290	0.016 ± 0.003	< 0.011
05-25-16	294	0.030 ± 0.004	< 0.010
06-01-16	294	0.018 ± 0.003	< 0.007
06-08-16	302	0.011 ± 0.003	< 0.009
06-15-16	294	0.020 ± 0.003	< 0.005
06-22-16	286	0.021 ± 0.003	< 0.007
06-29-16	300	0.017 ± 0.003	< 0.011
2nd Quarter Mean ± s.d.		0.018 ± 0.005	< 0.009

Date Collected	Vol. (m^3)	Gross Beta	I-131
Required LLD		0.010	0.030
07-06-16	298	0.021 ± 0.003	< 0.010
07-13-16	308	0.020 ± 0.003	< 0.008
07-20-16	302	0.020 ± 0.003	< 0.008
07-27-16	295	0.024 ± 0.003	< 0.006
08-03-16	300	0.021 ± 0.003	< 0.009
08-11-16	346	0.027 ± 0.003	< 0.007
08-17-16	262	0.025 ± 0.004	< 0.006
08-24-16	295	0.025 ± 0.003	< 0.012
08-31-16	301	0.023 ± 0.003	< 0.007
09-07-16	292	0.020 ± 0.003	< 0.008
09-14-16	280	0.023 ± 0.004	< 0.010
09-21-16	301	0.028 ± 0.004	< 0.009
09-28-16	300	0.022 ± 0.003	< 0.010
3rd Quarter Mean ± s.d.		0.023 ± 0.003	< 0.008
10-05-16	301	0.021 ± 0.003	< 0.008
10-12-16	305	0.027 ± 0.004	< 0.009
10-19-16	301	0.024 ± 0.003	< 0.012
10-26-16	311	0.015 ± 0.003	< 0.011
11-02-16	302	0.022 ± 0.003	< 0.008
11-09-16	311	0.039 ± 0.004	< 0.010
11-16-16	301	0.029 ± 0.004	< 0.012
11-22-16	264	0.044 ± 0.005	< 0.013
11-30-16	339	0.037 ± 0.004	< 0.006
12-07-16	313	0.021 ± 0.003	< 0.009
12-15-16	355	0.026 ± 0.003	< 0.009
12-21-16	268	0.031 ± 0.004	< 0.011
12-28-16	307	0.026 ± 0.004	< 0.009
4th Quarter Mean ± s.d.		0.028 ± 0.008	< 0.010
Cumulative Average		0.024 ± 0.007	< 0.009
Control Annual Mean ± s.d.		0.024 ± 0.007	< 0.009

POINT BEACH NUCLEAR PLANT

Table 2. Gamma emitters in quarterly composites of air particulate filters

Units: pCi/m^3

Location	Lab Code Req. LLD	Be-7 -	Be-7 MDC	Cs-134 0.01	Cs-134 MDC	Cs-137 0.01	Cs-137 MDC	(Other) Co-60 (0.10)	(Other) (Co-60) MDC	Volume m^3
					1st Quarter					
E-01	EAP- 1810	0.059 ± 0.012	-	-0.0004 ± 0.0004	< 0.0007	-0.0002 ± 0.0004	< 0.0005	-0.0003 ± 0.0006	< 0.0007	3609
E-02	- 1811	0.068 ± 0.015	-	-0.0009 ± 0.0006	< 0.0010	0.0004 ± 0.0006	< 0.0010	0.0000 ± 0.0009	< 0.0008	3477
E-03	- 1812	0.063 ± 0.016	-	-0.0004 ± 0.0005	< 0.0008	0.0001 ± 0.0005	< 0.0006	0.0006 ± 0.0005	< 0.0008	3904
E-04	- 1813	0.065 ± 0.013	-	0.0003 ± 0.0004	< 0.0008	-0.0003 ± 0.0004	< 0.0005	-0.0002 ± 0.0005	< 0.0006	3927
E-08	- 1814	0.061 ± 0.011	-	-0.0005 ± 0.0004	< 0.0007	-0.0001 ± 0.0004	< 0.0005	0.0002 ± 0.0003	< 0.0005	3889
E-20	- 1815	0.067 ± 0.015	-	-0.0006 ± 0.0005	< 0.0007	-0.0006 ± 0.0005	< 0.0005	-0.0001 ± 0.0006	< 0.0008	3903
					2nd Quarter					
E-01	EAP- 3825	0.071 ± 0.013	-	0.0001 ± 0.0004	< 0.0006	0.0000 ± 0.0004	< 0.0006	-0.0001 ± 0.0004	< 0.0006	3389
E-02	- 3826	0.083 ± 0.018	-	0.0001 ± 0.0004	< 0.0008	-0.0001 ± 0.0005	< 0.0006	0.0002 ± 0.0005	< 0.0003	3814
E-03	- 3827	0.093 ± 0.015	-	-0.0002 ± 0.0004	< 0.0009	-0.0003 ± 0.0005	< 0.0005	0.0002 ± 0.0005	< 0.0007	3879
E-04	- 3828	0.099 ± 0.017	-	0.0004 ± 0.0005	< 0.0010	0.0001 ± 0.0006	< 0.0008	0.0001 ± 0.0007	< 0.0006	3550
E-08	- 3829	0.088 ± 0.012	-	-0.0001 ± 0.0003	< 0.0007	0.0000 ± 0.0004	< 0.0007	0.0001 ± 0.0004	< 0.0007	3894
E-20	- 3831	0.096 ± 0.019	-	-0.0001 ± 0.0004	< 0.0008	0.0004 ± 0.0006	< 0.0009	0.0002 ± 0.0007	< 0.0005	3868
					3rd Quarter					
E-01	EAP- 5685	0.085 ± 0.016		0.0001 ± 0.0006	< 0.0011	0.0000 ± 0.0006	< 0.0008	-0.0001 ± 0.0005	< 0.0005	3277
E-02	- 5686	0.070 ± 0.014		-0.0004 ± 0.0004	< 0.0009	0.0000 ± 0.0005	< 0.0006	0.0003 ± 0.0005	< 0.0005	3750
E-03	- 5687	0.068 ± 0.015		0.0003 ± 0.0004	< 0.0008	-0.0002 ± 0.0005	< 0.0006	0.0003 ± 0.0004	< 0.0005	3916
E-04	- 5688	0.076 ± 0.015		0.0004 ± 0.0005	< 0.0010	0.0003 ± 0.0006	< 0.0008	0.0000 ± 0.0006	< 0.0006	3906
E-08	- 5689	0.076 ± 0.014		0.0001 ± 0.0005	< 0.0009	0.0001 ± 0.0006	< 0.0010	0.0002 ± 0.0005	< 0.0007	3960
E-20	- 5690	0.075 ± 0.018		0.0001 ± 0.0005	< 0.0010	-0.0001 ± 0.0006	< 0.0008	-0.0003 ± 0.0005	< 0.0007	3879
					4th Quarter					
E-01	EAP- 7198	0.049 ± 0.014		-0.0001 ± 0.0005	< 0.0010	0.0002 ± 0.0005	< 0.0008	0.0000 ± 0.0005	< 0.0007	3895
E-02	- 7199	0.064 ± 0.014		0.0001 ± 0.0005	< 0.0009	0.0004 ± 0.0005	< 0.0008	-0.0002 ± 0.0005	< 0.0008	3933
E-03	- 7201	0.050 ± 0.011		-0.0001 ± 0.0004	< 0.0007	0.0000 ± 0.0004	< 0.0007	-0.0005 ± 0.0005	< 0.0004	3939
E-04	- 7202	0.065 ± 0.014		0.0000 ± 0.0005	< 0.0008	-0.0002 ± 0.0006	< 0.0008	0.0001 ± 0.0006	< 0.0009	3981
E-08	- 7203	0.051 ± 0.011		-0.0007 ± 0.0004	< 0.0006	0.0005 ± 0.0006	< 0.0005	-0.0001 ± 0.0005	< 0.0007	3993
E-20	- 7204	0.051 ± 0.014		-0.0001 ± 0.0003	< 0.0007	0.0003 ± 0.0004	< 0.0008	-0.0002 ± 0.0005	< 0.0005	3979
Annual Mean±s.d.		**0.071 ± 0.014**		**-0.0001 ± 0.0003**	**< 0.0008**	**0.0000 ± 0.0003**	**< 0.0007**	**0.0000 ± 0.0002**	**< 0.0006**	

POINT BEACH NUCLEAR PLANT

Table 3. Radioactivity in milk samples

Collection: Monthly

Sample Description and Concentration (pCi/L)

E-11 Lambert Dairy Farm

Collection Date	01-13-16	MDC	02-10-16	MDC	03-09-16	MDC	Required LLD
Lab Code	EMI- 195		EMI- 566		EMI- 1006		
Sr-89	-0.5 ± 0.8	< 0.7	-0.1 ± 0.7	< 0.7	-0.4 ± 0.9	< 0.8	5.0
Sr-90	0.8 ± 0.3	< 0.5	0.6 ± 0.3	< 0.5	0.9 ± 0.4	< 0.6	1.0
I-131	0.02 ± 0.16	< 0.29	0.10 ± 0.14	< 0.24	-0.11 ± 0.17	< 0.35	0.5
K-40	1299 ± 101	-	1348 ± 101	-	1302 ± 96	-	
Cs-134	-0.3 ± 1.8	< 3.4	1.3 ± 1.6	< 3.2	-0.4 ± 1.7	< 3.0	5.0
Cs-137	0.3 ± 2.3	< 4.3	0.3 ± 1.7	< 3.2	-0.2 ± 1.9	< 2.7	5.0
Ba-La-140	0.1 ± 1.8	< 2.4	-0.4 ± 1.8	< 1.8	-0.5 ± 1.6	< 1.2	5.0
Other (Co-60)	-0.6 ± 2.1	< 3.0	0.9 ± 1.9	< 2.5	-1.1 ± 1.8	< 1.9	15.0

Collection Date	04-13-16		05-11-16		06-08-16		Required LLD
Lab Code	EMI- 1541		EMI- 2295		EMI- 2886		
Sr-89	0.1 ± 0.8	< 0.8	0.4 ± 0.7	< 0.7	0.8 ± 0.8	< 1.0	5.0
Sr-90	0.8 ± 0.3	< 0.5	0.6 ± 0.3	< 0.5	0.3 ± 0.3	< 0.5	1.0
I-131	0.12 ± 0.25	< 0.47	-0.03 ± 0.18	< 0.39	0.06 ± 0.15	< 0.26	0.5
K-40	1305 ± 94	-	1351 ± 97	-	1378 ± 102	-	
Cs-134	-1.2 ± 1.7	< 3.0	-0.3 ± 1.6	< 2.9	0.7 ± 1.6	< 3.2	5.0
Cs-137	1.0 ± 1.9	< 3.8	0.7 ± 1.6	< 2.9	2.1 ± 1.9	< 3.5	5.0
Ba-La-140	0.4 ± 1.4	< 2.5	-1.7 ± 1.5	< 3.8	-0.5 ± 1.7	< 1.6	5.0
Other (Co-60)	1.5 ± 2.0	< 2.5	-1.4 ± 1.6	< 1.0	-1.6 ± 2.1	< 2.4	15.0

POINT BEACH NUCLEAR PLANT

Table 3. Radioactivity in milk samples

Collection: Monthly

Sample Description and Concentration (pCi/L)

E-11 Lambert Dairy Farm

Collection Date	07-13-16	MDC	08-10-16	MDC	09-14-16	MDC	Required LLD
Lab Code	EMI- 3530		EMI- 4253		EMI- 4826		
Sr-89	0.3 ± 0.7	< 0.7	0.2 ± 0.9	< 0.8	-0.4 ± 0.8	< 0.7	5.0
Sr-90	0.5 ± 0.3	< 0.5	0.7 ± 0.4	< 0.6	0.9 ± 0.4	< 0.6	1.0
I-131	0.08 ± 0.10	< 0.14	0.08 ± 0.23	< 0.45	0.03 ± 0.13	< 0.23	0.5
K-40	1376 ± 43	-	1414 ± 120	-	1198 ± 97	-	
Cs-134	0.0 ± 0.7	< 1.5	0.6 ± 1.8	< 3.0	0.8 ± 1.7	< 3.3	5.0
Cs-137	0.6 ± 0.8	< 1.6	2.3 ± 2.3	< 4.5	0.2 ± 1.8	< 3.0	5.0
Ba-La-140	-0.6 ± 0.7	< 2.4	-2.0 ± 2.1	< 4.9	-0.3 ± 1.6	< 3.4	5.0
Other (Co-60)	-0.1 ± 0.9	< 1.9	1.3 ± 2.4	< 4.6	-0.1 ± 1.8	< 2.5	15.0

Collection Date	10-12-16		11-09-16		12-14-16		Required LLD
Lab Code	EMI- 5455		EMI- 6166		EMI- 6822		
Sr-89	-0.2 ± 0.8	< 0.7	-0.3 ± 0.7	< 0.6	-0.2 ± 0.8	< 0.8	5.0
Sr-90	0.9 ± 0.3	< 0.5	0.7 ± 0.3	< 0.5	0.8 ± 0.4	< 0.6	1.0
I-131	0.09 ± 0.11	< 0.18	0.01 ± 0.16	< 0.28	0.06 ± 0.15	< 0.26	0.5
K-40	1370 ± 107	-	1405 ± 104	-	1383 ± 98	-	
Cs-134	-0.6 ± 1.8	< 3.2	-0.3 ± 2.0	< 4.0	0.1 ± 1.7	< 3.5	5.0
Cs-137	-0.1 ± 2.2	< 4.1	0.6 ± 2.3	< 3.8	0.8 ± 2.1	< 3.7	5.0
Ba-La-140	-0.3 ± 1.9	< 4.2	-0.3 ± 1.8	< 4.9	-0.7 ± 1.3	< 2.6	5.0
Other (Co-60)	0.5 ± 2.0	< 3.3	3.3 ± 2.2	< 3.4	-0.6 ± 2.1	< 2.8	15.0

POINT BEACH NUCLEAR PLANT

Table 3. Radioactivity in milk samples

Collection: Monthly

Sample Description and Concentration (pCi/L)

E-21 Strutz Dairy Farm

Collection Date	01-13-16	MDC	02-10-16	MDC	03-09-16	MDC	Required LLD
Lab Code	EMI- 196		EMI- 567		EMI- 1007		
Sr-89	0.1 ± 0.8	< 0.9	0.0 ± 0.7	< 0.9	-1.0 ± 1.1	< 1.1	5.0
Sr-90	0.3 ± 0.3	< 0.6	0.3 ± 0.3	< 0.6	0.8 ± 0.4	< 0.7	1.0
I-131	-0.01 ± 0.16	< 0.29	-0.09 ± 0.12	< 0.22	0.01 ± 0.19	< 0.38	0.5
K-40	1442 ± 111	-	1285 ± 96	-	1436 ± 105	-	
Cs-134	-1.2 ± 1.9	< 3.3	-1.7 ± 1.5	< 2.8	-0.3 ± 1.7	< 2.8	5.0
Cs-137	0.9 ± 2.1	< 3.8	0.1 ± 1.8	< 2.7	2.2 ± 1.8	< 3.3	5.0
Ba-La-140	0.9 ± 1.5	< 2.0	-2.2 ± 1.7	< 2.6	0.2 ± 1.8	< 2.7	5.0
Other (Co-60)	-0.3 ± 2.3	< 3.3	-0.7 ± 1.9	< 2.7	3.1 ± 2.1	< 3.2	15.0

Collection Date	04-13-16		05-11-16		06-08-16		Required LLD
Lab Code	EMI- 1542		EMI- 2296		EMI- 2887		
Sr-89	0.6 ± 0.7	< 0.8	0.5 ± 0.6	< 0.8	0.3 ± 0.7	< 0.8	5.0
Sr-90	0.5 ± 0.3	< 0.5	0.1 ± 0.3	< 0.6	0.3 ± 0.3	< 0.5	1.0
I-131	0.09 ± 0.16	< 0.29	0.06 ± 0.21	< 0.43	0.09 ± 0.12	< 0.17	0.5
K-40	1415 ± 109	-	1310 ± 79	-	1385 ± 97	-	
Cs-134	-0.4 ± 1.6	< 2.9	-0.8 ± 1.4	< 2.6	-0.6 ± 1.5	< 2.8	5.0
Cs-137	0.8 ± 2.3	< 3.4	0.5 ± 1.5	< 2.4	0.9 ± 1.9	< 3.3	5.0
Ba-La-140	-0.2 ± 1.8	< 3.1	3.0 ± 1.2	< 4.6	-1.3 ± 1.6	< 1.7	5.0
Other (Co-60)	0.9 ± 1.9	< 3.0	-0.7 ± 1.7	< 2.0	1.3 ± 1.7	< 2.5	15.0

POINT BEACH NUCLEAR PLANT

Table 3. Radioactivity in milk samples

Collection: Monthly

Sample Description and Concentration (pCi/L)

E-21 Strutz Dairy Farm

Collection Date	07-13-16	MDC	08-10-16	MDC	09-14-16	MDC	Required LLD
Lab Code	EMI- 3531		EMI- 4254		EMI- 4828		
Sr-89	-0.5 ± 0.7	< 0.8	0.4 ± 0.8	< 0.8	-0.7 ± 0.7	< 0.7	5.0
Sr-90	0.6 ± 0.3	< 0.5	0.3 ± 0.3	< 0.6	0.7 ± 0.3	< 0.6	1.0
I-131	-0.02 ± 0.12	< 0.22	0.16 ± 0.24	< 0.47	-0.16 ± 0.16	< 0.39	0.5
K-40	1371 ± 43	-	1348 ± 79	-	1445 ± 90	-	
Cs-134	-0.5 ± 0.7	< 1.5	-0.2 ± 1.2	< 2.3	-0.3 ± 1.4	< 2.6	5.0
Cs-137	-0.1 ± 0.8	< 1.4	1.7 ± 1.2	< 2.5	-0.2 ± 1.7	< 3.5	5.0
Ba-La-140	-1.1 ± 0.7	< 3.0	-0.4 ± 1.4	< 4.4	-1.1 ± 1.6	< 3.5	5.0
Other (Co-60)	0.1 ± 0.8	< 1.3	0.5 ± 1.5	< 2.6	-0.3 ± 1.6	< 2.7	15.0

Collection Date	10-12-16		11-09-16		12-14-16		Required LLD
Lab Code	EMI- 5456		EMI- 6167		EMI- 6823		
Sr-89	0.4 ± 0.8	< 0.9	-0.1 ± 0.6	< 0.6	-0.1 ± 0.7	< 0.7	5.0
Sr-90	0.2 ± 0.3	< 0.6	0.3 ± 0.2	< 0.5	0.4 ± 0.3	< 0.6	1.0
I-131	0.01 ± 0.11	< 0.20	0.03 ± 0.18	< 0.33	-0.06 ± 0.12	< 0.18	0.5
K-40	1469 ± 94	-	1369 ± 98	-	1438 ± 103	-	
Cs-134	-0.7 ± 1.7	< 3.4	-0.5 ± 1.6	< 2.8	-1.0 ± 1.7	< 2.6	5.0
Cs-137	-1.1 ± 1.8	< 1.9	-0.4 ± 2.0	< 2.9	1.8 ± 2.0	< 3.1	5.0
Ba-La-140	-1.6 ± 1.4	< 4.5	-3.2 ± 1.7	< 4.9	-2.1 ± 1.7	< 2.7	5.0
Other (Co-60)	1.5 ± 1.9	< 2.6	-0.7 ± 1.9	< 2.9	0.4 ± 2.1	< 3.0	15.0

POINT BEACH NUCLEAR PLANT

Table 3. Radioactivity in milk samples

Collection: Monthly

Sample Description and Concentration (pCi/L)

E-40 Barta

Collection Date	01-03-16	MDC	02-10-16	MDC	03-09-16	MDC	Required LLD
Lab Code	EMI- 197		EMI- 568		EMI- 1008		
Sr-89	0.0 ± 0.7	< 0.7	-0.1 ± 0.7	< 0.7	0.1 ± 0.7	< 0.7	5.0
Sr-90	0.4 ± 0.3	< 0.5	0.6 ± 0.3	< 0.5	0.4 ± 0.3	< 0.5	1.0
I-131	0.02 ± 0.17	< 0.31	-0.02 ± 0.12	< 0.23	-0.05 ± 0.18	< 0.37	0.5
K-40	1333 ± 112	-	1314 ± 107	-	1373 ± 94	-	
Cs-134	-1.0 ± 1.9	< 3.4	0.3 ± 1.9	< 3.7	0.5 ± 1.4	< 2.6	5.0
Cs-137	-2.0 ± 2.2	< 2.6	0.4 ± 2.2	< 3.9	0.5 ± 1.9	< 2.2	5.0
Ba-La-140	1.2 ± 1.9	< 3.4	-0.1 ± 2.0	< 3.1	-0.7 ± 1.7	< 1.8	5.0
Other (Co-60)	3.2 ± 2.2	< 3.3	1.4 ± 1.8	< 2.2	-1.1 ± 2.0	< 1.6	15.0

Collection Date	04-13-16		05-11-16		06-08-16	
Lab Code	EMI- 1543		EMI- 2297		EMI- 2888	
Sr-89	0.4 ± 0.6	< 0.6	-0.1 ± 0.7	< 0.6	-0.7 ± 0.7	< 0.7
Sr-90	0.3 ± 0.3	< 0.5	0.5 ± 0.3	< 0.5	0.7 ± 0.3	< 0.5
I-131	0.08 ± 0.22	< 0.39	0.11 ± 0.19	< 0.37	0.07 ± 0.22	< 0.42
K-40	1305 ± 104	-	1419 ± 95	-	1448 ± 98	-
Cs-134	1.3 ± 1.6	< 2.8	1.3 ± 1.7	< 3.0	0.7 ± 1.4	< 2.8
Cs-137	1.0 ± 1.9	< 3.5	1.3 ± 1.8	< 3.5	2.2 ± 1.9	< 3.4
Ba-La-140	2.3 ± 1.6	< 3.8	3.0 ± 1.3	< 4.1	0.3 ± 1.2	< 2.7
Other (Co-60)	-1.1 ± 2.0	< 1.6	-0.3 ± 1.8	< 2.3	0.7 ± 2.0	< 3.2

POINT BEACH NUCLEAR PLANT

Table 3. Radioactivity in milk samples

Collection: Monthly

Sample Description and Concentration (pCi/L)

E-40 Barta

Collection Date	07-13-16	MDC	08-10-16	MDC	09-14-16	MDC	Required LLD
Lab Code	EMI- 3532		EMI- 4255		EMI- 4829		
Sr-89	0.1 ± 0.6	< 0.6	0.6 ± 0.7	< 0.6	-0.3 ± 0.8	< 0.7	5.0
Sr-90	0.5 ± 0.3	< 0.4	0.4 ± 0.3	< 0.5	0.7 ± 0.4	< 0.6	1.0
I-131	-0.19 ± 0.12	< 0.23	0.17 ± 0.23	< 0.44	0.12 ± 0.19	< 0.37	0.5
K-40	1448 ± 43	-	1410 ± 92	-	1295 ± 106	-	
Cs-134	0.0 ± 0.7	< 1.3	0.3 ± 1.5	< 2.7	-1.5 ± 1.9	< 3.5	5.0
Cs-137	0.3 ± 0.8	< 1.5	-0.5 ± 1.6	< 2.5	-0.5 ± 2.0	< 3.1	5.0
Ba-La-140	0.8 ± 0.7	< 3.4	0.4 ± 1.3	< 4.8	-1.4 ± 1.9	< 3.2	5.0
Other (Co-60)	-1.0 ± 0.8	< 1.0	-1.4 ± 1.8	< 3.0	0.4 ± 1.9	< 2.2	15.0

Collection Date	10-12-16		11-09-16		12-14-16		Required LLD
Lab Code	EMI- 5457		EMI- 6168		EMI- 6824		
Sr-89	-0.7 ± 0.8	< 0.7	1.9 ± 2.0	< 1.6	0.5 ± 0.6	< 0.6	5.0
Sr-90	0.9 ± 0.3	< 0.5	1.2 ± 0.5	< 0.8	0.3 ± 0.3	< 0.5	1.0
I-131	0.00 ± 0.19	< 0.41	-0.08 ± 0.18	< 0.32	0.06 ± 0.12	< 0.18	0.5
K-40	1395 ± 105	-	1322 ± 109	-	1405 ± 110	-	
Cs-134	0.5 ± 1.8	< 3.2	0.6 ± 1.9	< 4.5	-0.9 ± 1.7	< 3.1	5.0
Cs-137	-0.7 ± 1.9	< 3.7	-1.1 ± 2.4	< 3.1	-1.3 ± 1.9	< 2.8	5.0
Ba-La-140	-1.2 ± 1.5	< 3.3	-5.1 ± 1.7	< 3.8	-2.6 ± 1.5	< 2.9	5.0
Other (Co-60)	-1.1 ± 1.8	< 2.3	-1.4 ± 2.5	< 3.5	0.4 ± 2.1	< 3.7	15.0

Sr-89 Annual Mean + s.d.	**0.0 ± 0.5**
Sr-90 Annual Mean + s.d.	**0.6 ± 0.3**
I-131 Annual Mean + s.d.	**0.03 ± 0.08**
K-40 Annual Mean + s.d.	**1370 ± 60**
Cs-134 Annual Mean + s.d.	**-0.2 ± 0.8**
Cs-137 Annual Mean + s.d.	**0.4 ± 1.0**
Ba-La Annual Mean + s.d.	**-0.5 ± 1.6**
Co-60 Annual Mean + s.d.	**0.2 ± 1.3**

POINT BEACH NUCLEAR PLANT

Table 4. Radioactivity in Well Water Samples, E-10
Collection: Quarterly
Units: pCi/L

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Req. LLD	Annual Mean ±s.d
Collection Date	01-15-16	04-12-16	07-14-16	10-11-16		
Lab Code	EWW- 240	EWW- 1555	EWW- 3556	EWW- 5508		
Gross Beta	3.9 ± 2.1	2.9 ± 1.3	4.1 ± 1.7	2.8 ± 1.2	4.0	**3.4**
H-3	-3.4 ± 71.9	-16.8 ± 72.3	26.5 ± 78.7	25.6 ± 79.2	500	**8.0**
Sr-89	-0.3 ± 0.4	0.3 ± 0.5	0.1 ± 0.4	0.1 ± 0.4	5.0	**0.1**
Sr-90	0.2 ± 0.2	-0.2 ± 0.2	0.0 ± 0.2	0.0 ± 0.2	1.0	**0.0**
I-131	0.02 ± 0.12	-0.02 ± 0.12	0.02 ± 0.13	-0.16 ± 0.23	0.5	**-0.04**
Mn-54	1.0 ± 1.9	-0.4 ± 1.3	-0.4 ± 1.1	0.2 ± 1.7	10	**0.1**
Fe-59	-2.1 ± 3.3	-0.6 ± 2.0	-1.9 ± 2.0	4.2 ± 3.5	30	**-0.1**
Co-58	0.3 ± 1.6	-0.2 ± 1.2	-1.2 ± 1.0	-0.4 ± 1.6	10	**-0.4**
Co-60	1.1 ± 1.4	-0.6 ± 1.3	0.0 ± 1.1	0.6 ± 1.8	10	**0.3**
Zn-65	-2.5 ± 2.8	1.9 ± 2.6	0.2 ± 2.2	-4.3 ± 4.5	30	**-1.2**
Zr-Nb-95	-4.9 ± 2.2	-0.1 ± 1.3	-2.1 ± 1.4	-1.3 ± 1.9	15	**-2.1**
Cs-134	0.3 ± 1.6	0.3 ± 1.3	-0.6 ± 1.2	3.1 ± 1.8	10	**0.8**
Cs-137	0.0 ± 2.0	0.6 ± 1.5	-1.1 ± 1.3	-0.9 ± 1.8	10	**-0.4**
Ba-La-140	-1.2 ± 2.0	-0.3 ± 1.4	-1.3 ± 1.2	-0.8 ± 2.3	15	**-0.9**
Other (Ru-103)	-0.1 ± 1.5	0.7 ± 1.2	0.2 ± 0.9	-0.4 ± 2.0	30	**0.1**

MDC Data

Collection Date	01-15-16	04-12-16	07-14-16	10-11-16		
Lab Code	EWW- 240	EWW- 1555	EWW- 3556	EWW- 5508		
Gross Beta	< 3.8	< 2.0	< 2.8	< 2.0	4.0	**< 2.7**
H-3	< 145.5	< 147.8	< 146.9	< 150.9	500	**< 147.8**
Sr-89	< 0.5	< 0.7	< 0.5	< 0.6	5.0	**< 0.6**
Sr-90	< 0.5	< 0.5	< 0.4	< 0.4	1.0	**< 0.5**
I-131	< 0.22	< 0.21	< 0.23	< 0.44	0.5	**< 0.28**
Mn-54	< 3.2	< 1.7	< 1.7	< 3.0	10	**< 2.4**
Fe-59	< 5.1	< 4.2	< 2.8	< 6.2	30	**< 4.6**
Co-58	< 3.0	< 2.1	< 1.4	< 2.3	10	**< 2.2**
Co-60	< 2.2	< 1.1	< 1.6	< 2.6	10	**< 1.9**
Zn-65	< 4.5	< 3.8	< 3.5	< 5.9	30	**< 4.4**
Zr-Nb-95	< 4.1	< 2.1	< 2.7	< 2.7	15	**< 2.9**
Cs-134	< 3.0	< 2.7	< 2.0	< 3.5	10	**< 2.8**
Cs-137	< 3.5	< 2.1	< 1.8	< 1.7	10	**< 2.3**
Ba-La-140	< 3.2	< 3.9	< 1.6	< 2.6	15	**< 2.8**
Other (Ru-103)	< 2.4	< 3.2	< 1.8	< 2.2	30	**< 2.4**

POINT BEACH

Table 5. Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.
Location: E-01 (Meteorological Tower)
Collection: Monthly composites

Units: pCi/L

Lab Code	ELW- 198	MDC	ELW- 583	MDC	ELW- 1032	MDC	ELW- 1544	MDC	
Date Collected	01-13-16		02-10-16		03-09-16		04-12-16		Req. LLD
Gross beta	2.8 ± 0.7	< 0.9	3.0 ± 1.0	< 1.7	2.3 ± 0.6	< 0.9	1.6 ± 0.6	< 0.9	4.0
I-131	0.08 ± 0.11	< 0.19	0.10 ± 0.18	< 0.31	0.13 ± 0.16	< 0.27	0.13 ± 0.16	< 0.28	0.5
Be-7	2.6 ± 19.3	< 36.2	4.3 ± 16.5	< 19.6	-3.0 ± 12.3	< 24.4	5.4 ± 15.6	< 28.7	
Mn-54	-0.3 ± 1.8	< 3.1	-0.3 ± 1.6	< 2.3	-0.5 ± 1.5	< 2.2	-0.6 ± 1.8	< 2.5	10
Fe-59	2.5 ± 3.4	< 5.8	-0.1 ± 2.5	< 3.7	-0.8 ± 2.2	< 3.6	4.1 ± 3.0	< 7.0	30
Co-58	-2.7 ± 1.8	< 1.7	2.5 ± 1.7	< 2.5	0.8 ± 1.6	< 3.2	-1.2 ± 1.5	< 1.9	10
Co-60	0.6 ± 1.8	< 3.0	0.9 ± 1.7	< 2.4	0.8 ± 1.9	< 2.6	-0.4 ± 2.0	< 1.5	10
Zn-65	-2.4 ± 4.3	< 5.1	1.1 ± 3.8	< 4.3	0.2 ± 3.3	< 6.1	-1.4 ± 4.0	< 3.5	30
Zr-Nb-95	-0.6 ± 1.6	< 2.9	-0.7 ± 1.7	< 2.5	-0.5 ± 1.6	< 2.5	0.5 ± 1.7	< 4.3	15
Cs-134	-0.6 ± 1.9	< 3.8	0.0 ± 1.6	< 3.1	0.3 ± 1.8	< 3.1	0.6 ± 1.8	< 3.6	10
Cs-137	-1.8 ± 2.3	< 2.4	-2.8 ± 1.9	< 1.2	0.7 ± 1.7	< 3.0	-1.0 ± 1.9	< 2.6	10
Ba-La-140	-0.3 ± 1.9	< 2.4	-0.3 ± 1.5	< 2.0	-1.2 ± 2.1	< 5.1	0.3 ± 1.7	< 3.7	15
Other (Ru-103)	-1.7 ± 2.1	< 3.5	-0.9 ± 1.9	< 2.9	0.5 ± 1.5	< 3.2	0.4 ± 1.9	< 2.3	30

Lab Code	ELW- 2360	MDC	ELW- 2929	MDC	ELW- 3568	MDC	ELW- 4276	MDC	
Date Collected	05-11-16		06-08-16		07-13-16		08-10-16		Req. LLD
Gross beta	2.1 ± 0.9	< 1.6	3.1 ± 0.7	< 0.9	1.6 ± 0.7	< 1.1	0.9 ± 0.3	< 0.4	4.0
I-131	-0.12 ± 0.22	< 0.41	0.01 ± 0.15	< 0.27	0.07 ± 0.14	< 0.24	0.12 ± 0.24	< 0.42	0.5
Be-7	7.9 ± 12.1	< 31.3	2.7 ± 11.1	< 20.7	-1.7 ± 6.2	< 15.5	-7.0 ± 8.0	< 19.3	
Mn-54	1.6 ± 1.3	< 2.5	-0.6 ± 1.4	< 1.6	0.3 ± 0.6	< 1.2	-0.3 ± 1.1	< 1.8	10
Fe-59	-3.7 ± 2.8	< 4.8	-2.1 ± 2.6	< 3.1	-0.4 ± 1.2	< 1.9	0.1 ± 2.2	< 5.4	30
Co-58	1.7 ± 1.2	< 2.5	-1.3 ± 1.5	< 2.1	0.8 ± 0.6	< 1.1	0.7 ± 1.2	< 3.2	10
Co-60	-1.8 ± 1.3	< 1.3	0.2 ± 1.3	< 2.1	0.4 ± 0.7	< 1.0	0.0 ± 1.2	< 2.0	10
Zn-65	-0.6 ± 2.9	< 3.7	1.4 ± 3.1	< 5.2	0.1 ± 1.4	< 2.6	1.5 ± 2.1	< 3.3	30
Zr-Nb-95	-1.5 ± 1.3	< 2.6	1.6 ± 1.3	< 2.5	0.1 ± 0.6	< 1.8	-0.6 ± 1.2	< 2.9	15
Cs-134	0.8 ± 1.3	< 2.8	0.8 ± 1.6	< 2.8	-0.2 ± 0.6	< 1.4	-0.3 ± 1.1	< 2.1	10
Cs-137	0.2 ± 1.6	< 2.7	1.5 ± 1.9	< 3.3	0.1 ± 0.7	< 1.3	0.2 ± 1.2	< 1.9	10
Ba-La-140	-0.9 ± 1.5	< 4.9	2.6 ± 1.4	< 5.1	-2.8 ± 0.7	< 5.4	-4.6 ± 1.2	< 8.0	15
Other (Ru-103)	-0.6 ± 1.5	< 2.7	-0.6 ± 1.4	< 2.9	-1.3 ± 0.7	< 1.2	-0.9 ± 1.1	< 2.7	30

Lab Code	ELW- 4901	MDC	ELW- 5450	MDC	ELW- 6265	MDC	NS[a]		
Date Collected	09-14-16		10-11-16		11-09-16		12-31-16		Req. LLD
Gross beta	1.3 ± 0.6	< 0.9	1.6 ± 0.7	< 1.1	1.4 ± 0.9	< 1.6	-		4.0
I-131	0.14 ± 0.23	< 0.43	-0.03 ± 0.21	< 0.46	-0.12 ± 0.23	< 0.48	-		0.5
Be-7	2.7 ± 15.4	< 39.3	7.4 ± 13.2	< 37.2	-1.9 ± 7.5	< 19.2	-		
Mn-54	0.5 ± 1.6	< 2.7	1.0 ± 1.3	< 3.1	-0.4 ± 0.7	< 1.1	-		10
Fe-59	2.3 ± 3.4	< 8.0	2.7 ± 2.4	< 4.9	0.4 ± 1.6	< 3.6	-		30
Co-58	0.7 ± 1.6	< 2.8	0.4 ± 1.3	< 3.0	0.1 ± 0.7	< 1.8	-		10
Co-60	-0.9 ± 1.7	< 2.2	-1.5 ± 1.6	< 1.9	-0.6 ± 0.8	< 1.4	-		10
Zn-65	1.4 ± 2.9	< 3.4	-0.2 ± 3.4	< 4.2	0.4 ± 1.6	< 2.9	-		30
Zr-Nb-95	0.0 ± 1.5	< 4.0	-1.5 ± 1.4	< 2.7	-1.0 ± 0.8	< 1.7	-		15
Cs-134	0.5 ± 1.6	< 3.0	-0.9 ± 1.2	< 2.6	-0.8 ± 0.8	< 1.6	-		10
Cs-137	1.6 ± 1.7	< 2.9	-0.3 ± 1.6	< 2.5	0.7 ± 0.9	< 1.5	-		10
Ba-La-140	7.0 ± 1.4	< 5.5	-9.8 ± 1.5	< 9.9	-2.5 ± 0.9	< 3.5	-		15
Other (Ru-103)	-0.7 ± 1.7	< 3.3	-1.0 ± 1.4	< 3.4	-0.2 ± 0.9	< 2.5	-		30

[a] "NS" = No sample; see Table 2.0, Listing of Missed Samples.

POINT BEACH

Table 5. Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.
Location: E-05 (Two Creeks Park)
Collection: Monthly composites Units: pCi/L

		MDC		MDC		MDC		MDC	
Lab Code	NS[a]		ELW- 584		ELW- 1033		ELW- 1545		
Date Collected	01-13-16		02-11-16		03-09-16		04-12-16		Req. LLD
Gross beta	-		2.2 ± 1.0	< 1.8	2.5 ± 0.7	< 0.9	1.0 ± 0.5	< 0.8	4.0
I-131	-		0.08 ± 0.13	< 0.20	-0.04 ± 0.13	< 0.24	-0.07 ± 0.17	< 0.32	0.5
Be-7	-		5.5 ± 18.3	< 34.1	-15.3 ± 12.9	< 17.6	0.4 ± 13.7	< 20.0	
Mn-54	-		0.2 ± 1.5	< 2.3	1.0 ± 1.6	< 2.6	0.2 ± 1.9	< 2.9	10
Fe-59	-		-0.8 ± 4.2	< 6.7	-1.6 ± 3.1	< 6.9	-0.2 ± 2.6	< 4.1	30
Co-58	-		0.6 ± 1.8	< 3.0	-0.7 ± 1.6	< 1.3	-0.9 ± 1.5	< 2.0	10
Co-60	-		0.2 ± 2.1	< 2.3	2.7 ± 1.3	< 2.0	0.4 ± 1.6	< 2.2	10
Zn-65	-		0.7 ± 3.2	< 3.9	0.1 ± 3.1	< 4.7	-1.6 ± 2.8	< 1.6	30
Zr-Nb-95	-		-0.2 ± 1.6	< 2.1	0.5 ± 1.8	< 4.2	3.2 ± 1.7	< 4.2	15
Cs-134	-		-0.5 ± 1.6	< 3.2	0.0 ± 1.6	< 3.2	-0.9 ± 1.6	< 2.8	10
Cs-137	-		1.3 ± 2.2	< 3.9	1.1 ± 1.9	< 3.6	-0.7 ± 1.6	< 1.8	10
Ba-La-140	-		-1.7 ± 1.7	< 1.3	-1.1 ± 1.5	< 2.3	3.6 ± 2.3	< 7.9	15
Other (Ru-103)	-		-1.2 ± 2.0	< 2.0	-0.8 ± 1.6	< 4.1	1.2 ± 1.8	< 3.3	30

Lab Code	ELW- 2361		ELW- 2930		ELW- 3569		ELW- 4277		
Date Collected	05-11-16		06-08-16		07-13-16		08-10-16		Req. LLD
Gross beta	1.9 ± 0.9	< 1.6	1.1 ± 0.9	< 1.6	1.9 ± 0.8	< 1.2	0.6 ± 0.3	< 0.4	4.0
I-131	-0.11 ± 0.19	< 0.35	0.07 ± 0.23	< 0.48	0.12 ± 0.13	< 0.21	0.07 ± 0.14	< 0.24	0.5
Be-7	16.5 ± 11.2	< 27.7	-0.9 ± 14.0	< 25.0	4.1 ± 5.7	< 15.6	1.0 ± 5.7	< 15.2	
Mn-54	0.7 ± 1.2	< 2.4	0.0 ± 1.4	< 2.0	0.3 ± 0.5	< 1.0	0.6 ± 0.6	< 1.2	10
Fe-59	1.2 ± 1.9	< 3.6	-0.3 ± 2.9	< 4.9	0.2 ± 1.0	< 2.5	-0.2 ± 1.1	< 3.2	30
Co-58	-0.3 ± 1.1	< 1.9	-1.5 ± 1.6	< 2.4	0.1 ± 0.6	< 1.2	-0.5 ± 0.6	< 1.3	10
Co-60	0.3 ± 1.2	< 1.4	-0.4 ± 1.6	< 1.7	-0.2 ± 0.6	< 1.0	0.4 ± 0.6	< 1.0	10
Zn-65	0.5 ± 1.9	< 3.0	-5.2 ± 3.8	< 3.2	0.3 ± 1.1	< 1.8	-0.6 ± 1.1	< 2.2	30
Zr-Nb-95	0.3 ± 1.3	< 2.1	0.7 ± 1.6	< 3.0	-0.1 ± 0.6	< 2.2	-0.4 ± 0.7	< 2.5	15
Cs-134	-0.3 ± 1.1	< 2.1	-0.3 ± 1.5	< 3.0	0.1 ± 0.6	< 1.2	-0.8 ± 0.6	< 1.2	10
Cs-137	-0.7 ± 1.4	< 1.4	0.7 ± 1.6	< 2.4	0.2 ± 0.7	< 1.2	0.2 ± 0.7	< 1.3	10
Ba-La-140	-1.6 ± 1.4	< 3.0	0.4 ± 1.4	< 2.1	-0.4 ± 0.6	< 5.0	-1.0 ± 0.7	< 6.8	15
Other (Ru-103)	-0.1 ± 1.3	< 2.4	0.0 ± 2.0	< 4.0	-0.1 ± 0.7	< 1.6	-0.3 ± 0.7	< 1.2	30

Lab Code	ELW- 4902		ELW- 5451		ELW- 6266		NS[a]		
Date Collected	09-15-16		10-11-16		11-10-16		12-31-16		Req. LLD
Gross beta	0.6 ± 0.5	< 0.8	1.6 ± 0.7	< 1.2	2.1 ± 1.0	< 1.7	-		4.0
I-131	-0.05 ± 0.18	< 0.37	0.04 ± 0.23	< 0.49	0.00 ± 0.22	< 0.45	-		0.5
Be-7	26.7 ± 15.0	< 37.8	-4.8 ± 11.0	< 29.2	-1.6 ± 14.0	< 29.9	-		
Mn-54	0.3 ± 1.7	< 2.9	-0.3 ± 1.4	< 2.3	-0.4 ± 1.3	< 2.7	-		10
Fe-59	-2.0 ± 2.5	< 2.8	0.4 ± 2.2	< 5.2	-1.7 ± 2.7	< 4.3	-		30
Co-58	1.3 ± 1.6	< 2.0	-0.7 ± 1.2	< 2.3	-0.3 ± 1.4	< 2.2	-		10
Co-60	0.6 ± 1.8	< 2.3	0.7 ± 1.1	< 2.0	0.8 ± 1.6	< 3.3	-		10
Zn-65	0.4 ± 2.6	< 4.4	1.5 ± 2.9	< 4.9	-1.7 ± 3.5	< 4.9	-		30
Zr-Nb-95	-0.5 ± 1.5	< 3.3	-1.4 ± 1.4	< 3.0	-0.8 ± 1.4	< 4.0	-		15
Cs-134	-1.2 ± 1.8	< 3.3	-1.5 ± 1.5	< 2.3	0.1 ± 1.4	< 3.1	-		10
Cs-137	-1.8 ± 1.7	< 1.7	0.3 ± 1.5	< 2.3	-0.4 ± 1.7	< 2.3	-		10
Ba-La-140	-4.5 ± 1.7	< 10.3	-4.2 ± 1.3	< 4.7	-1.2 ± 1.2	< 3.3	-		15
Other (Ru-103)	-0.4 ± 1.8	< 4.6	0.3 ± 1.3	< 4.0	-0.5 ± 1.5	< 3.2	-		30

[a] "NS" = No sample; see Table 2.0, Listing of Missed Samples.

POINT BEACH

Table 5. Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.
Location: E-06 (Coast Guard Station)
Collection: Monthly composites

Units: pCi/L

Lab Code		MDC		MDC		MDC		MDC	
Date Collected	NS[a] 01-13-16		ELW- 585 02-11-16		ELW- 1034 03-09-16		ELW- 1546 04-12-16		Req. LLD
Gross beta	-		1.6 ± 0.6	< 0.9	2.1 ± 0.6	< 0.9	2.7 ± 0.6	< 0.8	4.0
I-131	-		0.03 ± 0.15	< 0.28	0.04 ± 0.12	< 0.21	0.05 ± 0.24	< 0.49	0.5
Be-7	-		20.2 ± 24.4	< 52.1	1.0 ± 14.4	< 29.0	-3.4 ± 4.6	< 19.8	
Mn-54	-		1.6 ± 3.0	< 5.0	-1.2 ± 1.8	< 2.1	0.5 ± 0.6	< 1.4	10
Fe-59	-		-2.4 ± 4.7	< 6.3	3.8 ± 2.4	< 2.4	0.7 ± 1.0	< 4.0	30
Co-58	-		2.4 ± 2.8	< 5.1	-0.1 ± 1.1	< 1.5	0.5 ± 0.5	< 2.2	10
Co-60	-		0.3 ± 3.3	< 4.8	-0.5 ± 1.3	< 2.1	0.1 ± 0.6	< 1.1	10
Zn-65	-		-7.4 ± 8.4	< 8.6	-0.2 ± 3.1	< 3.5	-0.2 ± 1.1	< 2.6	30
Zr-Nb-95	-		0.4 ± 3.0	< 5.9	-1.2 ± 1.6	< 2.7	3.0 ± 0.6	< 4.0	15
Cs-134	-		3.5 ± 3.4	< 6.5	-0.9 ± 1.5	< 2.7	0.2 ± 0.6	< 1.1	10
Cs-137	-		2.5 ± 3.7	< 6.3	0.8 ± 1.8	< 2.0	0.7 ± 0.6	< 1.4	10
Ba-La-140	-		2.0 ± 3.0	< 3.0	2.3 ± 1.5	< 3.8	-14.1 ± 0.7	< 41.5 [b]	15
Other (Ru-103)	-		-1.1 ± 2.9	< 5.9	-3.2 ± 1.9	< 3.1	-1.5 ± 0.5	< 2.8	30

Lab Code									
Date Collected	ELW- 2362 05-11-16		ELW- 2931 06-08-16		ELW- 3570 07-13-16		ELW- 4278 08-10-16		Req. LLD
Gross beta	2.0 ± 0.9	< 1.5	1.3 ± 0.9	< 1.8	2.1 ± 0.7	< 1.2	0.9 ± 0.3	< 0.4	4.0
I-131	-0.24 ± 0.17	< 0.34	0.10 ± 0.19	< 0.38	0.02 ± 0.12	< 0.22	0.08 ± 0.14	< 0.25	0.5
Be-7	6.0 ± 15.1	< 29.7	4.9 ± 12.4	< 21.4	-1.6 ± 7.8	< 14.7	-2.8 ± 6.3	< 15.5	
Mn-54	-0.4 ± 1.6	< 2.4	-1.1 ± 1.6	< 2.3	0.8 ± 0.8	< 1.6	-0.6 ± 0.6	< 0.7	10
Fe-59	3.4 ± 3.4	< 6.5	-2.1 ± 2.7	< 3.7	0.6 ± 1.4	< 4.2	-1.6 ± 1.3	< 3.8	30
Co-58	0.0 ± 1.7	< 3.0	-0.1 ± 1.5	< 2.9	0.0 ± 0.7	< 0.9	-0.4 ± 0.7	< 1.1	10
Co-60	-0.7 ± 1.4	< 1.9	0.4 ± 1.4	< 1.5	0.6 ± 0.8	< 1.3	-0.2 ± 0.7	< 1.4	10
Zn-65	1.9 ± 3.0	< 2.3	-3.6 ± 3.1	< 3.7	-1.0 ± 1.8	< 3.2	0.1 ± 1.4	< 2.6	30
Zr-Nb-95	-2.0 ± 1.8	< 2.6	-0.5 ± 1.4	< 2.9	0.5 ± 0.7	< 2.1	0.1 ± 0.7	< 2.5	15
Cs-134	0.0 ± 1.6	< 3.2	0.6 ± 1.6	< 3.0	-0.9 ± 0.8	< 1.7	-0.2 ± 0.7	< 1.4	10
Cs-137	0.2 ± 1.8	< 2.5	-2.8 ± 1.6	< 1.5	0.0 ± 0.9	< 1.2	0.4 ± 0.7	< 1.3	10
Ba-La-140	-1.3 ± 1.5	< 4.3	-0.7 ± 1.9	< 5.4	-4.5 ± 1.0	< 5.2	-7.1 ± 0.8	< 6.7	15
Other (Ru-103)	-1.0 ± 1.7	< 4.2	-0.8 ± 1.5	< 2.4	-0.1 ± 0.9	< 2.5	0.7 ± 0.7	< 2.3	30

Lab Code									
Date Collected	ELW- 4903 09-15-16		ELW- 5452 10-11-16		ELW- 6267 11-10-16		NS[a] 12-31-16		Req. LLD
Gross beta	1.1 ± 0.5	< 0.9	2.2 ± 0.7	< 1.1	3.2 ± 1.0	< 1.8	-		4.0
I-131	-0.03 ± 0.21	< 0.43	0.01 ± 0.20	< 0.43	-0.13 ± 0.21	< 0.45	-		0.5
Be-7	2.2 ± 26.2	< 44.7	3.0 ± 13.4	< 32.1	3.7 ± 12.2	< 25.1	-		
Mn-54	-0.2 ± 3.0	< 6.4	-0.3 ± 1.4	< 2.6	0.2 ± 1.4	< 2.5	-		10
Fe-59	-3.2 ± 6.5	< 8.2	-0.1 ± 2.7	< 5.1	-0.5 ± 2.7	< 6.8	-		30
Co-58	0.2 ± 3.2	< 5.9	1.4 ± 1.3	< 2.7	2.0 ± 1.4	< 2.5	-		10
Co-60	-3.8 ± 3.6	< 4.2	0.5 ± 1.3	< 2.0	0.9 ± 1.7	< 2.5	-		10
Zn-65	-5.4 ± 6.8	< 6.2	-0.8 ± 2.6	< 3.9	-1.1 ± 3.3	< 5.1	-		30
Zr-Nb-95	-0.4 ± 3.3	< 6.0	0.9 ± 1.5	< 4.1	-0.2 ± 1.6	< 4.2	-		15
Cs-134	0.4 ± 3.4	< 6.5	-0.1 ± 1.6	< 3.0	0.5 ± 1.6	< 2.6	-		10
Cs-137	-1.1 ± 3.7	< 3.2	-1.0 ± 1.5	< 2.2	0.7 ± 1.6	< 2.8	-		10
Ba-La-140	-1.0 ± 4.1	< 6.4	2.4 ± 1.5	< 13.1	6.2 ± 1.2	< 5.3	-		15
Other (Ru-103)	-0.5 ± 3.1	< 3.2	-1.8 ± 1.6	< 4.2	-0.2 ± 1.4	< 4.6	-		30

[a] "NS" = No sample; see Table 2.0, Listing of Missed Samples.
[b] LLD not reached due to age of sample; container incorrectly identified as GW-06 in April.

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Table 5. Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.
Location: E-33 (Kewaunee)
Collection: Monthly composites Units: pCi/L

Lab Code	NS[a]	MDC	NS[a]	MDC	ELW- 1035	MDC	ELW- 1547	MDC	
Date Collected	01-13-16		02-11-16		03-09-16		04-12-16		Req. LLD
Gross beta	-		-		1.7 ± 0.6	< 0.8	0.6 ± 0.5	< 0.8	4.0
I-131	-		-		-0.05 ± 0.12	< 0.23	0.00 ± 0.18	< 0.32	0.5
Be-7	-		-		9.3 ± 12.9	< 31.0	15.1 ± 16.0	< 37.1	
Mn-54	-		-		-0.3 ± 1.7	< 2.0	0.1 ± 1.5	< 1.5	10
Fe-59	-		-		-1.4 ± 2.7	< 5.1	3.6 ± 3.1	< 5.6	30
Co-58	-		-		-0.8 ± 1.7	< 3.1	1.5 ± 1.4	< 2.7	10
Co-60	-		-		1.9 ± 1.5	< 1.6	1.5 ± 1.4	< 0.9	10
Zn-65	-		-		1.2 ± 2.6	< 3.6	-1.0 ± 3.1	< 3.3	30
Zr-Nb-95	-		-		-0.6 ± 1.7	< 2.9	-0.1 ± 1.8	< 4.4	15
Cs-134	-		-		0.0 ± 1.5	< 2.7	-0.1 ± 1.8	< 3.1	10
Cs-137	-		-		1.4 ± 1.7	< 3.1	1.6 ± 1.8	< 3.1	10
Ba-La-140	-		-		-3.2 ± 1.7	< 2.0	5.7 ± 2.0	< 6.8	15
Other (Ru-103)	-		-		-0.5 ± 1.4	< 2.6	0.2 ± 2.0	< 3.8	30

Lab Code	ELW- 2363	MDC	ELW- 2932	MDC	ELW- 3571	MDC	ELW- 4279	MDC	
Date Collected	05-11-16		06-08-16		07-13-16		08-10-16		Req. LLD
Gross beta	1.7 ± 1.0	< 1.9	1.5 ± 0.9	< 1.6	2.4 ± 0.7	< 1.1	0.7 ± 0.3	< 0.4	4.0
I-131	-0.08 ± 0.16	< 0.30	0.11 ± 0.16	< 0.27	-0.02 ± 0.13	< 0.24	0.16 ± 0.19	< 0.36	0.5
Be-7	3.9 ± 11.0	< 27.8	5.8 ± 10.2	< 23.6	4.4 ± 4.4	< 11.3	7.3 ± 4.3	< 12.8	
Mn-54	-0.9 ± 1.3	< 2.3	-0.7 ± 1.2	< 2.3	-0.2 ± 0.6	< 0.8	0.0 ± 0.6	< 1.1	10
Fe-59	-0.2 ± 2.6	< 3.3	-2.1 ± 2.4	< 5.3	0.6 ± 1.0	< 2.2	0.8 ± 1.0	< 3.0	30
Co-58	-0.6 ± 1.4	< 1.8	0.1 ± 1.2	< 2.2	0.0 ± 0.6	< 1.2	-0.6 ± 0.5	< 0.8	10
Co-60	0.3 ± 1.2	< 1.4	0.2 ± 0.9	< 1.5	-0.2 ± 0.6	< 0.8	0.1 ± 0.6	< 1.2	10
Zn-65	-0.8 ± 2.5	< 3.1	-0.7 ± 2.2	< 2.7	-1.0 ± 1.1	< 1.3	-0.4 ± 1.1	< 2.4	30
Zr-Nb-95	-1.2 ± 1.4	< 3.6	-0.3 ± 1.1	< 2.2	0.0 ± 0.6	< 2.0	-1.1 ± 0.6	< 2.0	15
Cs-134	-0.7 ± 1.4	< 2.7	0.7 ± 1.2	< 2.2	-0.1 ± 0.6	< 1.1	0.0 ± 0.6	< 1.0	10
Cs-137	-0.7 ± 1.6	< 2.7	-1.1 ± 1.3	< 2.2	0.1 ± 0.7	< 1.3	-0.1 ± 0.7	< 1.1	10
Ba-La-140	0.2 ± 1.3	< 4.2	-0.5 ± 1.7	< 4.8	0.6 ± 0.6	< 4.1	-0.4 ± 0.6	< 5.9	15
Other (Ru-103)	-0.7 ± 1.2	< 3.0	0.1 ± 1.1	< 2.6	-0.4 ± 0.5	< 1.1	-0.6 ± 0.5	< 1.0	30

Lab Code	ELW- 4904	MDC	ELW- 5453	MDC	ELW- 6268	MDC	NS[a]	MDC	
Date Collected	09-15-16		10-11-16		11-10-16		12-31-16		Req. LLD
Gross beta	1.0 ± 0.5	< 0.8	1.4 ± 0.7	< 1.2	1.9 ± 0.9	< 1.6	-		4.0
I-131	0.12 ± 0.14	< 0.23	0.22 ± 0.23	< 0.43	0.16 ± 0.21	< 0.39	-		0.5
Be-7	-13.5 ± 11.5	< 27.4	-15.5 ± 12.2	< 28.1	-10.5 ± 9.1	< 29.1	-		
Mn-54	-0.1 ± 1.6	< 3.2	1.1 ± 1.5	< 2.5	-0.4 ± 1.2	< 1.6	-		10
Fe-59	0.8 ± 3.0	< 5.8	-0.5 ± 2.6	< 4.0	0.3 ± 1.8	< 5.0	-		30
Co-58	-0.1 ± 1.5	< 3.4	0.2 ± 1.6	< 3.5	0.1 ± 1.1	< 2.6	-		10
Co-60	0.4 ± 1.5	< 1.5	0.6 ± 1.7	< 2.6	-0.1 ± 1.2	< 1.1	-		10
Zn-65	0.6 ± 2.6	< 3.6	0.2 ± 3.0	< 3.9	-1.7 ± 2.1	< 2.6	-		30
Zr-Nb-95	0.5 ± 1.4	< 4.2	-1.1 ± 1.4	< 3.7	0.2 ± 1.1	< 2.5	-		15
Cs-134	-0.3 ± 1.5	< 2.8	0.7 ± 1.5	< 2.9	-0.4 ± 1.1	< 2.3	-		10
Cs-137	0.0 ± 1.7	< 2.4	1.2 ± 1.7	< 3.2	0.5 ± 1.2	< 2.2	-		10
Ba-La-140	-6.9 ± 1.8	< 8.0	0.5 ± 1.5	< 10.0	1.1 ± 1.4	< 12.5	-		15
Other (Ru-103)	1.0 ± 1.5	< 4.5	-1.6 ± 1.4	< 3.3	-2.2 ± 0.9	< 2.2	-		30

[a] "NS" = No sample; see Table 2.0, Listing of Missed Samples.

Annual

All locations	Mean ± s.d.		Mean ± s.d.		Mean ± s.d.
Gross Beta	**1.7 ± 0.7**				
I-131	**0.03 ± 0.10**	**Co-58**	**0.1 ± 1.0**	**Cs-134**	**-0.1 ± 0.8**
Be-7	**2.2 ± 8.4**	**Co-60**	**0.1 ± 1.0**	**Cs-137**	**0.1 ± 1.1**
Mn-54	**0.0 ± 0.7**	**Zn-65**	**-0.6 ± 1.9**	**Ba-La-140**	**-1.0 ± 4.0**
Fe-59	**0.0 ± 1.9**	**Zr-Nb-95**	**-0.1 ± 1.0**	**Ru-103**	**-0.6 ± 0.9**

Table 6. Lake water, analyses for tritium, strontium-89 and strontium-90.
Collection: Quarterly composites of weekly grab samples
Units: pCi/L

Location	E-01 (Meteorological Tower)							
Period	1st Qtr.	MDC	2nd Qtr.	MDC	3rd Qtr.	MDC	4th Qtr.	MDC
Lab Code	ELW- 1077		ELW- 3058		ELW- 4920		ELW- 6991	
H-3	80 ± 77	< 146	188 ± 81	< 148	43 ± 76	< 149	286 ± 87	< 145 [a]
Sr-89	0.48 ± 0.69	< 0.71	-0.52 ± 0.90	< 0.97	-0.30 ± 0.73	< 0.78	-0.55 ± 1.80	< 1.81
Sr-90	0.20 ± 0.29	< 0.56	0.38 ± 0.30	< 0.56	0.48 ± 0.30	< 0.51	0.51 ± 0.43	< 0.81

Location	E-05 (Two Creeks Park)							
Period	1st Qtr.		2nd Qtr.		3nd Qtr.		4th Qtr.	
Lab Code	ELW- 1078		ELW- 3059		ELW- 4921		ELW- 6992	
H-3	30 ± 74	< 143	102 ± 77	< 148	67 ± 78	< 149	109 ± 83	< 155
Sr-89	0.27 ± 0.60	< 0.71	-0.88 ± 1.12	< 1.29	-0.29 ± 0.65	< 0.71	0.50 ± 1.49	< 1.72
Sr-90	0.21 ± 0.24	< 0.45	0.36 ± 0.37	< 0.72	0.37 ± 0.27	< 0.47	0.03 ± 0.35	< 0.75

Location	E-06 (Coast Guard Station)							
Period	1st Qtr.		2nd Qtr.		3nd Qtr.		4th Qtr.	
Lab Code	ELW- 1079		ELW- 3060		ELW- 4922		ELW- 6993	
H-3	61 ± 76	< 146	206 ± 82	< 148	143 ± 82	< 149	99 ± 77	< 145
Sr-89	0.07 ± 0.61	< 0.82	0.21 ± 0.77	< 0.89	-0.10 ± 0.67	< 0.74	-0.32 ± 1.38	< 1.35
Sr-90	0.11 ± 0.23	< 0.48	0.14 ± 0.25	< 0.49	0.23 ± 0.28	< 0.53	0.37 ± 0.35	< 0.65

Location	E-33 (Kewaunee)							
Period	1st Qtr.		2nd Qtr.		3nd Qtr.		4th Qtr.	
Lab Code	ELW- 1080		ELW- 3061		ELW- 4923		ELW- 6994	
H-3	82 ± 77	< 146	72 ± 75	< 148	43 ± 76	< 149	137 ± 79	< 145
Sr-89	-0.16 ± 0.64	< 0.87	0.51 ± 0.74	< 0.85	0.51 ± 0.66	< 0.82	0.11 ± 1.34	< 1.45
Sr-90	0.23 ± 0.25	< 0.49	0.09 ± 0.23	< 0.47	-0.05 ± 0.25	< 0.56	0.25 ± 0.32	< 0.61

[a] Tritium reanalyzed with a result of 224±89 pCi/L (<155).

Tritium Annual Mean ± s.d.	**109 ± 69**
Sr-89 Annual Mean ± s.d.	**-0.03 ± 0.43**
Sr-90 Annual Mean ± s.d.	**0.24 ± 0.16**

POINT BEACH NUCLEAR PLANT

Table 7. Fish, analyses for gross beta and gamma emitting isotopes.
Location: E-13
Collection: 2x / year Units: pCi/g wet

	Sample Description and Concentration	MDC		MDC		MDC	Req. LLD
Collection Date	01-11-16		01-04-16		01-04-16		
Lab Code	EF- 312		EF- 313		EF- 314		
Type	Lake Herring		Chinook		Lake Trout		
Ratio (wet/dry wt.)	4.85		4.31		4.08		
Gross Beta	3.56 ± 0.07	< 0.052	3.30 ± 0.07	< 0.087	3.71 ± 0.07	< 0.240	0.5
K-40	3.36 ± 0.41	-	3.08 ± 0.42	-	3.11 ± 0.44	-	
Mn-54	-0.003 ± 0.009	< 0.009	-0.006 ± 0.010	< 0.011	-0.006 ± 0.010	< 0.014	0.13
Fe-59	-0.004 ± 0.020	< 0.057	0.038 ± 0.020	< 0.075	-0.020 ± 0.022	< 0.046	0.26
Co-58	0.011 ± 0.009	< 0.021	0.009 ± 0.009	< 0.023	0.007 ± 0.010	< 0.029	0.13
Co-60	0.003 ± 0.010	< 0.014	0.017 ± 0.012	< 0.018	0.001 ± 0.012	< 0.019	0.13
Zn-65	-0.022 ± 0.026	< 0.029	-0.040 ± 0.026	< 0.027	-0.027 ± 0.030	< 0.043	0.26
Cs-134	0.001 ± 0.010	< 0.020	-0.008 ± 0.011	< 0.021	-0.029 ± 0.013	< 0.021	0.13
Cs-137	0.004 ± 0.012	< 0.021	0.013 ± 0.012	< 0.022	0.028 ± 0.012	< 0.019	0.15
Other (Ru-103)	0.028 ± 0.011	< 0.048	0.002 ± 0.011	< 0.047	0.001 ± 0.011	< 0.041	0.5
Collection Date	01-15-16		01-16-16		01-16-16		
Lab Code	EF- 315		EF- 316		EF- 317		
Type	Coho		Whitefish		Perch		
Ratio (wet/dry wt.)	3.48		4.98		5.66		
Gross Beta	3.04 ± 0.06	< 0.059	3.66 ± 0.07	< 0.026	2.53 ± 0.06	< 0.026	0.5
K-40	2.93 ± 0.44	-	3.50 ± 0.49		2.68 ± 0.47		
Mn-54	0.008 ± 0.012	< 0.027	0.003 ± 0.011	< 0.021	0.006 ± 0.011	< 0.024	0.13
Fe-59	0.003 ± 0.024	< 0.055	-0.010 ± 0.025	< 0.066	0.058 ± 0.020	< 0.056	0.26
Co-58	-0.017 ± 0.011	< 0.022	-0.013 ± 0.010	< 0.019	0.002 ± 0.012	< 0.030	0.13
Co-60	-0.003 ± 0.014	< 0.023	0.006 ± 0.015	< 0.022	-0.009 ± 0.013	< 0.016	0.13
Zn-65	-0.220 ± 0.039	< 0.050	-0.006 ± 0.026	< 0.024	-0.007 ± 0.020	< 0.033	0.26
Cs-134	-0.186 ± 0.018	< 0.023	-0.003 ± 0.013	< 0.026	0.003 ± 0.011	< 0.019	0.13
Cs-137	0.015 ± 0.015	< 0.029	0.012 ± 0.014	< 0.023	0.077 ± 0.031	< 0.031	0.15
Other (Ru-103)	0.010 ± 0.011	< 0.041	0.007 ± 0.013	< 0.037	-0.002 ± 0.009	< 0.032	0.5

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Table 7. Fish, analyses for gross beta and gamma emitting isotopes.
Location: E-13
Collection: 2x / year Units: pCi/g wet

	Sample Description and Concentration (pCi/g wet)	MDC		MDC		MDC	Req. LLD
Collection Date	01-19-16		03-07-16		03-07-16		
Lab Code	EF- 319		EF- 1302		EF- 1304		
Type	Steelhead Trout		Coho		Lake Herring		
Ratio (wet/dry wt.)	4.20		3.45		4.89		
Gross Beta	4.89 ± 0.10	< 0.033	4.16 ± 0.09	< 0.031	3.02 ± 0.07	< 0.023	0.5
K-40	2.79 ± 0.44	-	3.32 ± 0.48		2.45 ± 0.40		
Mn-54	0.011 ± 0.013	< 0.025	0.012 ± 0.011	< 0.021	0.006 ± 0.009	< 0.020	0.13
Fe-59	-0.024 ± 0.022	< 0.025	-0.018 ± 0.025	< 0.073	0.026 ± 0.019	< 0.047	0.26
Co-58	-0.014 ± 0.011	< 0.019	0.009 ± 0.011	< 0.025	0.004 ± 0.009	< 0.021	0.13
Co-60	0.004 ± 0.012	< 0.011	0.009 ± 0.011	< 0.015	-0.003 ± 0.012	< 0.014	0.13
Zn-65	-0.011 ± 0.032	< 0.042	-0.088 ± 0.032	< 0.032	0.017 ± 0.023	< 0.031	0.26
Cs-134	-0.008 ± 0.011	< 0.022	-0.037 ± 0.014	< 0.020	-0.014 ± 0.010	< 0.020	0.13
Cs-137	0.023 ± 0.015	< 0.029	0.013 ± 0.013	< 0.019	0.007 ± 0.012	< 0.021	0.15
Other (Ru-103)	0.004 ± 0.012	< 0.042	-0.009 ± 0.010	< 0.030	0.003 ± 0.011	< 0.034	0.5
Collection Date	04-04-16		04-11-16		04-11-16		
Lab Code	EF- 1946		EF- 1947		EF- 1948		
Type	Coho		Whitefish		Whitefish		
Ratio (wet/dry wt.)	4.89		4.80		5.06		
Gross Beta	3.33 ± 0.07	< 0.024	3.98 ± 0.08	< 0.026	3.78 ± 0.08	< 0.022	0.5
K-40	3.52 ± 0.43	-	3.65 ± 0.39	-	3.27 ± 0.40	-	
Mn-54	0.002 ± 0.008	< 0.013	0.003 ± 0.008	< 0.013	0.000 ± 0.010	< 0.017	0.13
Fe-59	-0.025 ± 0.017	< 0.031	0.003 ± 0.017	< 0.029	0.009 ± 0.020	< 0.056	0.26
Co-58	-0.002 ± 0.006	< 0.010	0.005 ± 0.008	< 0.016	-0.001 ± 0.010	< 0.016	0.13
Co-60	0.007 ± 0.010	< 0.015	0.007 ± 0.009	< 0.012	-0.003 ± 0.012	< 0.010	0.13
Zn-65	-0.008 ± 0.021	< 0.022	-0.010 ± 0.017	< 0.026	0.009 ± 0.025	< 0.039	0.26
Cs-134	0.007 ± 0.007	< 0.015	0.000 ± 0.008	< 0.014	-0.009 ± 0.009	< 0.019	0.13
Cs-137	0.027 ± 0.013	< 0.021	0.012 ± 0.010	< 0.018	0.008 ± 0.012	< 0.016	0.15
Other (Ru-103)	0.003 ± 0.008	< 0.021	-0.007 ± 0.009	< 0.013	0.009 ± 0.010	< 0.028	0.5

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Table 7. Fish, analyses for gross beta and gamma emitting isotopes.
Location: E-13
Collection: 2x / year Units: pCi/g wet

	Sample Description and Concentration (pCi/g wet)	MDC		MDC		MDC	Req. LLD
Collection Date	04-17-16		06-23-16		06-21-16		
Lab Code	EF- 1949		EF- 3306		EF- 3307		
Type	Lake Trout		Salmon		Salmon		
Ratio (wet/dry wt.)	3.47		3.57		3.20		
Gross Beta	3.70 ± 0.09	< 0.040	4.23 ± 0.06	< 0.017	3.35 ± 0.05	< 0.014	0.5
K-40	3.66 ± 0.40	-	3.21 ± 0.40	-	2.70 ± 0.38	-	
Mn-54	-0.003 ± 0.008	< 0.012	-0.007 ± 0.009	< 0.011	0.004 ± 0.007	< 0.013	0.13
Fe-59	0.003 ± 0.020	< 0.042	0.005 ± 0.017	< 0.051	-0.022 ± 0.016	< 0.038	0.26
Co-58	0.009 ± 0.008	< 0.018	0.005 ± 0.008	< 0.020	0.010 ± 0.008	< 0.021	0.13
Co-60	-0.005 ± 0.009	< 0.007	0.003 ± 0.008	< 0.013	0.001 ± 0.008	< 0.010	0.13
Zn-65	0.015 ± 0.020	< 0.032	0.002 ± 0.019	< 0.029	-0.001 ± 0.018	< 0.020	0.26
Cs-134	-0.002 ± 0.008	< 0.015	0.007 ± 0.008	< 0.012	-0.004 ± 0.008	< 0.014	0.13
Cs-137	0.011 ± 0.010	< 0.014	0.022 ± 0.012	< 0.018	0.019 ± 0.010	< 0.015	0.15
Other (Ru-103)	0.008 ± 0.008	< 0.024	0.004 ± 0.008	< 0.028	-0.002 ± 0.007	< 0.025	0.5
Collection Date	06-07-16		07-27-16		08-02-16		
Lab Code	EF- 3308		EF- 4472		EF- 4473		
Type	Lake Trout		Rainbow Trout		Brown Trout		
Ratio (wet/dry wt.)	4.33		3.74		3.73		
Gross Beta	3.62 ± 0.05	< 0.013	4.01 ± 0.08	< 0.026	3.45 ± 0.07	< 0.019	0.5
K-40	3.10 ± 0.37	-	3.13 ± 0.46	-	2.86 ± 0.41	-	
Mn-54	0.001 ± 0.009	< 0.011	0.002 ± 0.012	< 0.026	-0.001 ± 0.010	< 0.020	0.13
Fe-59	0.003 ± 0.016	< 0.034	-0.008 ± 0.023	< 0.062	0.014 ± 0.021	< 0.039	0.26
Co-58	0.010 ± 0.008	< 0.017	-0.014 ± 0.013	< 0.036	-0.005 ± 0.010	< 0.013	0.13
Co-60	-0.002 ± 0.010	< 0.013	-0.011 ± 0.014	< 0.016	0.001 ± 0.012	< 0.019	0.13
Zn-65	0.003 ± 0.018	< 0.017	-0.065 ± 0.040	< 0.071	-0.010 ± 0.027	< 0.038	0.26
Cs-134	-0.003 ± 0.008	< 0.013	-0.106 ± 0.020	< 0.029	-0.010 ± 0.011	< 0.021	0.13
Cs-137	0.002 ± 0.011	< 0.015	0.006 ± 0.017	< 0.031	0.018 ± 0.013	< 0.027	0.15
Other (Ru-103)	0.004 ± 0.006	< 0.030	-0.006 ± 0.013	< 0.049	0.015 ± 0.010	< 0.036	0.5

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Table 7. Fish, analyses for gross beta and gamma emitting isotopes.
Location: E-13
Collection: 2x / year Units: pCi/g wet

	Sample Description and Concentration (pCi/g wet)	MDC		MDC		MDC	Req. LLD
Collection Date	08-14-16		10-14-16		10-13-16		
Lab Code	EF- 4474		EF- 6209		EF- 6210		
Type	Rainbow Trout		Chinook		Catfish		
Ratio (wet/dry wt.)	4.01		4.74		4.01		
Gross Beta	3.43 ± 0.07	< 0.024	3.78 ± 0.07	< 0.022	3.36 ± 0.06	< 0.019	0.5
K-40	2.98 ± 0.41	-	3.11 ± 0.41	-	2.75 ± 0.36	-	
Mn-54	0.011 ± 0.009	< 0.021	-0.001 ± 0.009	< 0.020	0.001 ± 0.008	< 0.017	0.13
Fe-59	-0.011 ± 0.019	< 0.040	-0.026 ± 0.020	< 0.056	-0.021 ± 0.017	< 0.032	0.26
Co-58	0.004 ± 0.009	< 0.021	0.012 ± 0.009	< 0.024	-0.007 ± 0.009	< 0.015	0.13
Co-60	-0.006 ± 0.010	< 0.016	0.008 ± 0.012	< 0.012	0.009 ± 0.008	< 0.014	0.13
Zn-65	-0.032 ± 0.026	< 0.023	-0.023 ± 0.025	< 0.039	0.013 ± 0.015	< 0.026	0.26
Cs-134	-0.002 ± 0.010	< 0.019	-0.013 ± 0.010	< 0.020	-0.006 ± 0.008	< 0.015	0.13
Cs-137	0.023 ± 0.012	< 0.019	0.007 ± 0.013	< 0.023	0.020 ± 0.011	< 0.017	0.15
Other (Ru-103)	-0.001 ± 0.010	< 0.028	-0.006 ± 0.009	< 0.028	0.002 ± 0.007	< 0.022	0.5
Collection Date	10-28-16		11-29-16		12-06-16		
Lab Code	EF- 6211		EF- 6743		EF- 6744		
Type	Sturgeon		Salmon		Rainbow Trout		
Ratio (wet/dry wt.)	3.97		5.94		5.25		
Gross Beta	3.27 ± 0.07	< 0.022	3.78 ± 0.07	< 0.022	4.16 ± 0.08	< 0.028	0.5
K-40	2.49 ± 0.37	-	2.93 ± 0.36	-	3.53 ± 0.40	-	
Mn-54	0.005 ± 0.009	< 0.017	0.007 ± 0.009	< 0.016	0.001 ± 0.011	< 0.020	0.13
Fe-59	-0.017 ± 0.017	< 0.038	-0.011 ± 0.016	< 0.025	-0.005 ± 0.016	< 0.028	0.26
Co-58	-0.004 ± 0.009	< 0.014	-0.006 ± 0.008	< 0.013	-0.006 ± 0.007	< 0.010	0.13
Co-60	-0.013 ± 0.010	< 0.006	0.005 ± 0.008	< 0.013	0.000 ± 0.008	< 0.013	0.13
Zn-65	-0.014 ± 0.021	< 0.018	-0.012 ± 0.018	< 0.022	0.003 ± 0.020	< 0.030	0.26
Cs-134	0.003 ± 0.008	< 0.016	0.005 ± 0.007	< 0.014	-0.001 ± 0.009	< 0.017	0.13
Cs-137	0.003 ± 0.010	< 0.016	0.015 ± 0.011	< 0.019	0.016 ± 0.012	< 0.018	0.15
Other (Ru-103)	-0.008 ± 0.009	< 0.022	0.006 ± 0.006	< 0.015	0.006 ± 0.007	< 0.019	0.5

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Table 7. Fish, analyses for gross beta and gamma emitting isotopes.
Location: E-13
Collection: 2x / year Units: pCi/g wet

	Sample Description and Concentration (pCi/g wet)	MDC	MDC	MDC	Req. LLD
Collection Date	12-07-16				
Lab Code	EF- 6745		**Annual**		
Type	Rainbow Trout				
Ratio (wet/dry wt.)	4.28		**Mean ± s.d.**		
Gross Beta	4.28 ± 0.09	< 0.034	**3.66 ± 0.49**		0.5
K-40	3.12 ± 0.37	-	**3.09 ± 0.34**		
Mn-54	-0.001 ± 0.007	< 0.012	**0.002 ± 0.005**		0.13
Fe-59	-0.010 ± 0.013	< 0.018	**-0.003 ± 0.020**		0.26
Co-58	0.009 ± 0.007	< 0.013	**0.001 ± 0.009**		0.13
Co-60	-0.001 ± 0.009	< 0.014	**0.001 ± 0.007**		0.13
Zn-65	-0.010 ± 0.015	< 0.010	**-0.022 ± 0.048**		0.26
Cs-134	-0.006 ± 0.007	< 0.012	**-0.017 ± 0.042**		0.13
Cs-137	0.015 ± 0.010	< 0.017	**0.017 ± 0.015**		0.15
Other (Ru-103)	0.001 ± 0.006	< 0.014	**0.003 ± 0.008**		0.5

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Table 8. Radioactivity in shoreline sediment samples

Collection: Semiannual

Sample Description and Concentration (pCi/g dry)							
		MDC		MDC		MDC	
Collection Date	4/12/2016		4/12/2016		4/12/2016		
Lab Code	ESS- 1549		ESS- 1550		ESS- 1551		LLD
Location	E-01		E-05		E-06		
Gross Beta	7.11 ± 1.07	< 1.50	10.48 ± 1.23	< 1.62	8.71 ± 1.11	< 1.46	2.0
Be-7	0.011 ± 0.056	< 0.12	-0.074 ± 0.055	< 0.09	-0.006 ± 0.052	< 0.12	
K-40	5.45 ± 0.38	-	7.47 ± 0.42	-	6.73 ± 0.41	-	-
Cs-134	-0.005 ± 0.006	< 0.009	-0.004 ± 0.006	< 0.009	-0.003 ± 0.006	< 0.008	0.15
Cs-137	0.021 ± 0.012	< 0.013	0.013 ± 0.008	< 0.014	0.012 ± 0.008	< 0.012	0.15
Tl-208	0.045 ± 0.017	-	0.047 ± 0.019	-	0.045 ± 0.015	-	-
Pb-212	0.11 ± 0.019	-	0.11 ± 0.018	-	0.13 ± 0.019	-	-
Bi-214	0.090 ± 0.025	-	0.11 ± 0.025	-	0.10 ± 0.023	-	-
Ra-226	0.33 ± 0.19	-	0.34 ± 0.15	-	0.35 ± 0.17	-	-
Ac-228	0.15 ± 0.050	-	0.15 ± 0.049	-	0.16 ± 0.053	-	-
Collection Date	4/12/2016		4/12/2016				
Lab Code	ESS- 1553		ESS- 1554				
Location	E-12		E-33				
Gross Beta	6.47 ± 1.01	< 1.40	10.64 ± 1.30	< 1.77			2.0
Be-7	-0.050 ± 0.059	< 0.12	-0.012 ± 0.045	< 0.09			
K-40	3.82 ± 0.34	-	6.12 ± 0.38	-			-
Cs-134	-0.001 ± 0.006	< 0.011	0.004 ± 0.006	< 0.010			0.15
Cs-137	0.023 ± 0.012	< 0.012	0.008 ± 0.008	< 0.015			0.15
Tl-208	0.049 ± 0.015	-	0.037 ± 0.014	-			-
Pb-212	0.15 ± 0.021	-	0.10 ± 0.017	-			-
Bi-214	0.12 ± 0.026	-	0.11 ± 0.023	-			-
Ra-226	0.51 ± 0.15	< 0.34	0.45 ± 0.13	< 0.26			-
Ac-228	0.15 ± 0.041	-	0.11 ± 0.041	-			-

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Table 8. Radioactivity in shoreline sediment samples

Collection: Semiannual

Sample Description and Concentration (pCi/g dry)								
Collection Date	10/11/2016	MDC	10/11/2016	MDC	10/11/2016	MDC		
Lab Code	ESS- 5546		ESS- 5547		ESS- 5549		Req. LLD	
Location	E-01		E-05		E-06			
Gross Beta	9.02 ± 1.12	< 1.49	9.47 ± 1.20	< 1.61	11.60 ± 1.29	< 1.67	2.0	
Be-7	-0.068 ± 0.069	< 0.17	0.012 ± 0.049	< 0.14	0.12 ± 0.12	< 0.39		
K-40	6.05 ± 0.46	-	7.23 ± 0.46	-	4.40 ± 0.53	-	-	
Cs-134	0.009 ± 0.007	< 0.013	-0.001 ± 0.006	< 0.008	-0.090 ± 0.019	< 0.028	0.15	
Cs-137	0.003 ± 0.009	< 0.014	0.009 ± 0.008	< 0.013	-0.012 ± 0.020	< 0.032	0.15	
Tl-208	0.049 ± 0.023	-	0.040 ± 0.018	-	0.43 ± 0.044	-	-	
Pb-212	0.13 ± 0.024	-	0.11 ± 0.019	-	1.01 ± 0.051	-	-	
Bi-214	0.17 ± 0.030	-	0.12 ± 0.027	-	0.97 ± 0.072	-	-	
Ra-226	0.28 ± 0.18	< 0.35	0.40 ± 0.14	< 0.26	1.74 ± 0.38	-	-	
Ac-228	0.15 ± 0.078	-	0.16 ± 0.050	-	1.14 ± 0.11	-	-	

Collection Date	10/11/2016		10/11/2016				
Lab Code	ESS- 5550		ESS- 5551				
Location	E-12		E-33				**Annual Mean ±s.d.**
Gross Beta	7.76 ± 1.10	< 1.51	8.57 ± 1.06	< 1.36		2.0	**8.98 ± 1.62**
Be-7	0.015 ± 0.055	< 0.14	0.071 ± 0.077	< 0.25			**0.002 ± 0.060**
K-40	4.67 ± 0.39	-	6.19 ± 0.46	-		-	**5.81 ± 1.22**
Cs-134	0.003 ± 0.006	< 0.012	-0.003 ± 0.008	< 0.015		0.15	**-0.01 ± 0.03**
Cs-137	0.016 ± 0.009	< 0.013	0.007 ± 0.010	< 0.017		0.15	**0.010 ± 0.010**
Tl-208	0.039 ± 0.018	-	0.059 ± 0.023	-		-	**0.08 ± 0.12**
Pb-212	0.12 ± 0.020	-	0.11 ± 0.027	-		-	**0.21 ± 0.28**
Bi-214	0.10 ± 0.025	-	0.099 ± 0.029	-		-	**0.20 ± 0.27**
Ra-226	0.47 ± 0.15	< 0.30	0.43 ± 0.25	-		-	**0.53 ± 0.43**
Ac-228	0.11 ± 0.064	-	0.18 ± 0.086	-		-	**0.25 ± 0.32**

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Table 9. Radioactivity in soil samples

Collection: Semiannual

Sample Description and Concentration (pCi/g dry)							
		MDC		MDC		MDC	
Collection Date	5/26/2016		5/26/2016		5/26/2016		Req.
Lab Code	ESO- 2663		ESO- 2665		ESO- 2666		LLD
Location	E-01		E-02		E-03		
Gross Beta	24.35 ± 1.00	< 0.92	28.04 ± 1.16	< 1.02	31.59 ± 1.29	< 1.16	2.0
Be-7	0.52 ± 0.29	-	0.14 ± 0.11	< 0.32	0.061 ± 0.082	< 0.24	
K-40	12.44 ± 0.68	-	18.72 ± 0.97	-	16.35 ± 0.78	-	-
Cs-134	-0.004 ± 0.012	< 0.017	-0.005 ± 0.014	< 0.023	-0.007 ± 0.011	< 0.016	0.15
Cs-137	0.077 ± 0.031	< 0.029	0.079 ± 0.040	< 0.036	0.10 ± 0.024	< 0.024	0.15
Tl-208	0.13 ± 0.024	-	0.18 ± 0.043	-	0.17 ± 0.030	-	-
Pb-212	0.43 ± 0.037	-	0.49 ± 0.038	-	0.42 ± 0.034	-	-
Bi-214	0.32 ± 0.045	-	0.39 ± 0.049	-	0.31 ± 0.043	-	-
Ra-226	1.19 ± 0.34	-	1.17 ± 0.32	-	2.83 ± 0.34	-	-
Ac-228	0.45 ± 0.087	-	0.70 ± 0.13	-	0.52 ± 0.076	-	-
Collection Date	5/26/2016		5/26/2016		5/26/2016		
Lab Code	ESO- 2667		ESO- 2668		ESO- 2669		
Location	E-04		E-06		E-08		
Gross Beta	16.74 ± 0.95	< 0.97	17.73 ± 0.91	< 0.86	21.34 ± 1.11	< 1.13	2.0
Be-7	-0.048 ± 0.069	< 0.18	-0.035 ± 0.073	< 0.16	-0.051 ± 0.055	< 0.12	
K-40	10.43 ± 0.52	-	9.67 ± 0.51	-	12.15 ± 0.54	-	-
Cs-134	-0.006 ± 0.008	< 0.014	-0.013 ± 0.008	< 0.012	-0.011 ± 0.008	< 0.011	0.15
Cs-137	0.13 ± 0.025	< 0.022	0.37 ± 0.032	< 0.023	0.079 ± 0.017	< 0.017	0.15
Tl-208	0.10 ± 0.021	-	0.083 ± 0.020	-	0.090 ± 0.022	-	-
Pb-212	0.27 ± 0.025	-	0.23 ± 0.025	-	0.26 ± 0.022	-	-
Bi-214	0.24 ± 0.032	-	0.48 ± 0.052	-	0.28 ± 0.039	-	-
Ra-226	0.84 ± 0.21	-	0.46 ± 0.21	-	0.73 ± 0.20	-	-
Ac-228	0.39 ± 0.065	-	0.30 ± 0.072	-	0.28 ± 0.052	-	-
Collection Date	5/26/2016		5/26/2016				
Lab Code	ESO- 2670		ESO- 2671				
Location	E-09		E-20				
Gross Beta	30.27 ± 1.53	< 1.35	35.41 ± 1.65	< 1.42			2.0
Be-7	0.056 ± 0.081	< 0.20	-0.072 ± 0.10	< 0.28			
K-40	20.13 ± 0.74	-	21.94 ± 0.84	-			-
Cs-134	-0.003 ± 0.011	< 0.016	-0.038 ± 0.013	< 0.023			0.15
Cs-137	0.16 ± 0.024	< 0.022	0.11 ± 0.022	< 0.028			0.15
Tl-208	0.16 ± 0.028	-	0.23 ± 0.035	-			-
Pb-212	0.54 ± 0.035	-	0.81 ± 0.045	-			-
Bi-214	0.73 ± 0.053	-	1.01 ± 0.068	-			-
Ra-226	1.57 ± 0.29	-	1.59 ± 0.74	-			-
Ac-228	0.61 ± 0.086	-	0.75 ± 0.11	-			-

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Table 9. Radioactivity in soil samples

Collection: Semiannual

	Sample Description and Concentration (pCi/g dry)						
		MDC		**MDC**		**MDC**	
Collection Date	10/27/2016		10/27/2016		10/27/2016		Req.
Lab Code	ESO- 5900		ESO- 5902		ESO- 5903		LLD
Location	E-01		E-02		E-03		
Gross Beta	17.71 ± 1.03	< 1.06	22.82 ± 1.14	< 1.11	29.63 ± 1.20	< 1.50	2.0
Be-7	0.18 ± 0.088	< 0.25	0.23 ± 0.10	< 0.29	0.12 ± 0.11	< 0.26	
K-40	10.77 ± 0.61	-	13.12 ± 0.74	-	19.29 ± 0.77	-	-
Cs-134	-0.001 ± 0.010	< 0.020	0.002 ± 0.011	< 0.020	-0.004 ± 0.010	< 0.019	0.15
Cs-137	0.035 ± 0.019	< 0.023	0.11 ± 0.031	< 0.028	0.11 ± 0.030	< 0.028	0.15
Tl-208	0.14 ± 0.028	-	0.14 ± 0.029	-	0.19 ± 0.036	-	-
Pb-212	0.33 ± 0.034	-	0.37 ± 0.042	-	0.52 ± 0.039	-	-
Bi-214	0.27 ± 0.041	-	0.22 ± 0.042	-	0.48 ± 0.050	-	-
Ra-226	0.61 ± 0.27	-	0.70 ± 0.35	-	1.27 ± 0.32	-	-
Ac-228	0.48 ± 0.089	-	0.37 ± 0.088	-	0.59 ± 0.094	-	-
Collection Date	10/27/2016		10/27/2016		10/27/2016		
Lab Code	ESO- 5904		ESO- 5905		ESO- 5906		
Location	E-04		E-06		E-08		
Gross Beta	28.23 ± 1.25	< 1.17	15.25 ± 1.00	< 1.07	21.34 ± 1.01	< 0.93	2.0
Be-7	0.099 ± 0.072	< 0.18	-0.081 ± 0.097	< 0.27	-0.024 ± 0.091	< 0.17	
K-40	17.96 ± 0.74	-	9.49 ± 0.59	-	13.82 ± 0.73	-	-
Cs-134	-0.002 ± 0.009	< 0.017	-0.002 ± 0.009	< 0.014	-0.006 ± 0.010	< 0.015	0.15
Cs-137	0.13 ± 0.028	< 0.026	0.37 ± 0.041	< 0.028	0.16 ± 0.034	< 0.027	0.15
Tl-208	0.15 ± 0.028	-	0.076 ± 0.024	-	0.086 ± 0.028	-	-
Pb-212	0.44 ± 0.033	-	0.20 ± 0.033	-	0.25 ± 0.031	-	-
Bi-214	0.39 ± 0.041	-	0.19 ± 0.037	-	0.25 ± 0.035	< 0.085	-
Ra-226	1.00 ± 0.26	-	0.56 ± 0.23	< 0.49	0.55 ± 0.27	-	-
Ac-228	0.53 ± 0.072	-	0.32 ± 0.090	-	0.37 ± 0.086	-	-
Collection Date	10/27/2016		10/27/2016				
Lab Code	ESO- 5907		ESO- 5908		**Annual**		
Location	E-09		E-20		**Mean ± s.d.**		
Gross Beta	36.87 ± 1.40	< 1.25	28.67 ± 1.18	< 1.06	**25.37 ± 6.70**		2.0
Be-7	0.24 ± 0.094	< 0.27	0.072 ± 0.080	< 0.20	**0.088 ± 0.16**		
K-40	20.95 ± 0.95	-	16.42 ± 0.73	-	**15.23 ± 4.25**		-
Cs-134	-0.002 ± 0.013	< 0.020	-0.007 ± 0.010	< 0.015	**0.017 ± 0.09**		0.15
Cs-137	0.13 ± 0.029	< 0.028	0.22 ± 0.030	< 0.025	**0.15 ± 0.10**		0.15
Tl-208	0.22 ± 0.032	-	0.17 ± 0.032	-	**0.14 ± 0.05**		-
Pb-212	0.61 ± 0.045	-	0.50 ± 0.036	-	**0.42 ± 0.16**		-
Bi-214	0.42 ± 0.052	-	0.38 ± 0.043	-	**0.40 ± 0.21**		-
Ra-226	1.26 ± 0.33	-	1.13 ± 0.28	-	**1.09 ± 0.59**		-
Ac-228	0.69 ± 0.10	-	0.60 ± 0.075	-	**0.50 ± 0.15**		-

Table 10. Radioactivity in vegetation samples
Collection: Tri-annual

Sample Description and Concentration (pCi/g wet)

		MDC		MDC		MDC	
Location	E-01		E-02		E-03		
Collection Date	05-26-16		05-26-16		05-26-16		
Lab Code	EG- 2642		EG- 2644		EG- 2645		Req. LLD
Ratio (wet/dry)	6.77		7.00		6.05		-
Gross Beta	5.47 ± 0.11	< 0.034	4.90 ± 0.09	< 0.028	4.90 ± 0.09	< 0.029	0.25
Be-7	0.44 ± 0.18	-	0.63 ± 0.14	-	0.32 ± 0.11	-	-
K-40	4.89 ± 0.43	-	5.20 ± 0.36	-	5.41 ± 0.37	-	-
I-131	0.004 ± 0.007	< 0.023	0.003 ± 0.006	< 0.018	0.006 ± 0.006	< 0.021	0.060
Cs-134	0.005 ± 0.008	< 0.015	-0.005 ± 0.006	< 0.011	0.001 ± 0.005	< 0.011	0.060
Cs-137	0.004 ± 0.009	< 0.013	-0.002 ± 0.006	< 0.007	0.001 ± 0.006	< 0.009	0.080
Other (Co-60)	0.004 ± 0.007	< 0.009	-0.006 ± 0.008	< 0.011	0.005 ± 0.008	< 0.010	0.060
Location	E-04		E-06		E-08		
Collection Date	05-26-16		05-26-16		05-26-16		
Lab Code	EG- 2646		EG- 2647		EG- 2648		Req. LLD
Ratio (wet/dry)	7.00		5.36		8.15		-
Gross Beta	4.61 ± 0.09	< 0.028	4.03 ± 0.09	< 0.031	3.73 ± 0.07	< 0.024	0.25
Be-7	0.30 ± 0.09	-	2.54 ± 0.21	-	0.68 ± 0.13	-	-
K-40	4.05 ± 0.29	-	3.01 ± 0.27	-	3.58 ± 0.27	-	-
I-131	0.008 ± 0.004	< 0.011	0.001 ± 0.005	< 0.025	0.000 ± 0.006	< 0.020	0.060
Cs-134	0.004 ± 0.004	< 0.008	0.002 ± 0.005	< 0.010	0.000 ± 0.005	< 0.009	0.060
Cs-137	-0.003 ± 0.006	< 0.008	0.007 ± 0.006	< 0.012	-0.004 ± 0.006	< 0.006	0.080
Other (Co-60)	0.000 ± 0.005	< 0.005	-0.004 ± 0.006	< 0.005	0.001 ± 0.006	< 0.006	0.060
Location	E-09		E-20				
Collection Date	05-26-16		05-26-16				
Lab Code	EG- 2649		EG- 2650				Req. LLD
Ratio (wet/dry)	5.89		9.07				-
Gross Beta	5.34 ± 0.11	< 0.033	4.01 ± 0.08	< 0.026			0.25
Be-7	0.63 ± 0.14	-	0.50 ± 0.12	-			-
K-40	5.20 ± 0.36	-	3.80 ± 0.27	-			-
I-131	0.003 ± 0.006	< 0.018	0.001 ± 0.005	< 0.020			0.060
Cs-134	-0.005 ± 0.006	< 0.011	0.002 ± 0.005	< 0.008			0.060
Cs-137	-0.002 ± 0.006	< 0.007	-0.004 ± 0.005	< 0.007			0.080
Other (Co-60)	-0.006 ± 0.008	< 0.011	-0.004 ± 0.005	< 0.007			0.060

Table 10. Radioactivity in vegetation samples
Collection: Tri-annual

Sample Description and Concentration (pCi/g wet)

		MDC		MDC		MDC	
Location	E-01		E-02		E-03		
Collection Date	07-28-16		07-28-16		07-28-16		
Lab Code	EG- 3961		EG- 3962		EG- 3963		Req. LLD
Ratio (wet/dry)	4.26		3.73		5.92		-
Gross Beta	4.28 ± 0.10	< 0.036	7.64 ± 0.17	< 0.053	7.51 ± 0.14	< 0.045	0.25
Be-7	1.05 ± 0.17	-	1.43 ± 0.22	-	0.93 ± 0.15	-	-
K-40	6.06 ± 0.42	-	4.64 ± 0.44	-	6.46 ± 0.38	-	-
I-131	0.000 ± 0.008	< 0.021	0.009 ± 0.008	< 0.023	-0.006 ± 0.005	< 0.021	0.060
Cs-134	0.006 ± 0.007	< 0.015	-0.004 ± 0.008	< 0.017	0.003 ± 0.006	< 0.012	0.060
Cs-137	-0.001 ± 0.008	< 0.011	0.001 ± 0.008	< 0.011	0.002 ± 0.006	< 0.010	0.080
Other (Co-60)	-0.001 ± 0.007	< 0.007	-0.006 ± 0.009	< 0.008	0.002 ± 0.007	< 0.006	0.060
Location	E-04		E-06		E-08		
Collection Date	07-28-16		07-28-16		07-28-16		
Lab Code	EG- 3964		EG- 3965		EG- 3966		Req. LLD
Ratio (wet/dry)	3.77		3.07		4.23		-
Gross Beta	6.75 ± 0.15	< 0.053	2.98 ± 0.07	< 0.028	6.09 ± 0.13	< 0.047	0.25
Be-7	1.45 ± 0.19	-	1.59 ± 0.19	-	1.66 ± 0.19	-	-
K-40	5.36 ± 0.40	-	3.72 ± 0.36	-	4.36 ± 0.39	-	-
I-131	-0.001 ± 0.006	< 0.017	-0.006 ± 0.006	< 0.022	-0.001 ± 0.006	< 0.019	0.060
Cs-134	-0.002 ± 0.006	< 0.012	0.001 ± 0.007	< 0.013	-0.002 ± 0.006	< 0.012	0.060
Cs-137	0.005 ± 0.008	< 0.015	0.017 ± 0.009	< 0.016	-0.003 ± 0.007	< 0.010	0.080
Other (Co-60)	-0.005 ± 0.007	< 0.007	-0.005 ± 0.007	< 0.006	-0.007 ± 0.008	< 0.007	0.060
Location	E-09		E-20				
Collection Date	07-28-16		07-28-16				
Lab Code	EG- 3967		EG- 3968				Req. LLD
Ratio (wet/dry)	3.49		3.61				-
Gross Beta	7.42 ± 0.16	< 0.055	8.92 ± 0.18	< 0.066			0.25
Be-7	2.00 ± 0.23	-	2.31 ± 0.20	-			-
K-40	6.58 ± 0.52	-	5.65 ± 0.39	-			-
I-131	-0.009 ± 0.007	< 0.016	-0.007 ± 0.005	< 0.015			0.060
Cs-134	-0.006 ± 0.008	< 0.015	0.002 ± 0.005	< 0.011			0.060
Cs-137	-0.005 ± 0.009	< 0.011	0.000 ± 0.007	< 0.013			0.080
Other (Co-60)	-0.001 ± 0.009	< 0.009	0.005 ± 0.006	< 0.009			0.060

Table 10. Radioactivity in vegetation samples
Collection: Tri-annual

Sample Description and Concentration (pCi/g wet)

		MDC		MDC		MDC	
Location	E-01		E-02		E-03		
Collection Date	10-11-16		10-11-16		10-11-16		
Lab Code	EG- 5466		EG- 5467		EG- 5468		Req. LLD
Ratio (wet/dry)	2.57		3.54		2.66		-
Gross Beta	6.47 ± 0.16	< 0.058	7.95 ± 0.18	< 0.068	6.42 ± 0.20	< 0.096	0.25
Be-7	5.57 ± 0.36	-	3.11 ± 0.28	-	3.56 ± 0.33	-	-
K-40	5.33 ± 0.46	-	5.69 ± 0.43	-	5.72 ± 0.50	-	-
I-131	0.005 ± 0.008	< 0.053	-0.018 ± 0.008	< 0.038	0.002 ± 0.008	< 0.051	0.060
Cs-134	-0.008 ± 0.008	< 0.015	0.000 ± 0.007	< 0.012	-0.009 ± 0.008	< 0.014	0.060
Cs-137	-0.003 ± 0.010	< 0.014	-0.001 ± 0.008	< 0.013	0.001 ± 0.008	< 0.012	0.080
Other (Co-60)	-0.003 ± 0.009	< 0.014	0.001 ± 0.008	< 0.011	0.001 ± 0.008	< 0.011	0.060
Location	E-04		E-06		E-08		
Collection Date	10-11-16		10-11-16		10-11-16		
Lab Code	EG- 5469		EG- 5470		EG- 5471		Req. LLD
Ratio (wet/dry)	2.33		3.68		3.04		-
Gross Beta	7.84 ± 0.22	< 0.097	5.34 ± 0.13	< 0.049	6.32 ± 0.16	< 0.059	0.25
Be-7	4.71 ± 0.33	-	3.03 ± 0.26	-	5.58 ± 0.38	-	-
K-40	5.55 ± 0.43	-	3.20 ± 0.32	-	5.56 ± 0.45	-	-
I-131	-0.020 ± 0.008	< 0.040	-0.003 ± 0.006	< 0.036	-0.001 ± 0.008	< 0.042	0.060
Cs-134	-0.006 ± 0.007	< 0.012	0.002 ± 0.007	< 0.012	-0.005 ± 0.009	< 0.017	0.060
Cs-137	0.007 ± 0.008	< 0.009	-0.002 ± 0.007	< 0.008	0.006 ± 0.010	< 0.016	0.080
Other (Co-60)	-0.001 ± 0.009	< 0.013	-0.004 ± 0.006	< 0.007	-0.004 ± 0.010	< 0.009	0.060
Location	E-09		E-20				
Collection Date	10-11-16		10-11-16				
Lab Code	EG- 5472		EG- 5473				Req. LLD
Ratio (wet/dry)	3.78		4.76				-
Gross Beta	6.77 ± 0.16	< 0.066	6.49 ± 0.14	< 0.045			0.25
Be-7	2.04 ± 0.20	-	3.82 ± 0.32	-			-
K-40	5.02 ± 0.38	-	5.98 ± 0.47	-			-
I-131	-0.010 ± 0.006	< 0.044	0.008 ± 0.008	< 0.048			0.060
Cs-134	-0.006 ± 0.007	< 0.012	0.002 ± 0.008	< 0.015			0.060
Cs-137	-0.002 ± 0.008	< 0.014	0.002 ± 0.009	< 0.014			0.080
Other (Co-60)	-0.001 ± 0.008	< 0.012	0.004 ± 0.010	< 0.019			0.060

Beta Annual Mean ± s.d. 5.92 ± 1.55
Be-7 Annual Mean ± s.d. 2.08 ± 1.62
K-40 Annual Mean ± s.d. 5.00 ± 1.00
I-131 Annual Mean ± s.d. -0.001 ± 0.007
Cs-134 Annual Mean ± s.d. -0.001 ± 0.004
Cs-137 Annual Mean ± s.d. 0.001 ± 0.005
Co-60 Annual Mean ± s.d. 0.004 ± 0.004

POINT BEACH NUCLEAR PLANT

Table 12. Ambient Gamma Radiation [a]
LLD/7days: < 1mR/TLD

1st. Quarter, 2016

Date Annealed:	12-08-15	Days in the field	91
Date Placed:	01-05-16	Days from Annealing	
Date Removed:	04-05-16	to Readout:	121
Date Read:	04-07-16		

Location	Days in Field	Total mR	Net mR	mR/Stnd Qtr (91 days)	Net mR per 7 days
Indicator					
E-1	91	17.8 ± 1.0	11.7 ± 1.2	11.7 ± 1.2	0.90 ± 0.09
E-2	91	21.2 ± 0.6	15.1 ± 0.7	15.1 ± 0.7	1.16 ± 0.06
E-3	91	21.1 ± 2.0	15.1 ± 2.0	15.1 ± 2.0	1.16 ± 0.16
E-4	91	17.8 ± 1.5	11.7 ± 1.6	11.7 ± 1.6	0.90 ± 0.12
E-5	91	19.9 ± 1.1	13.8 ± 1.1	13.8 ± 1.1	1.06 ± 0.09
E-6	91	17.4 ± 1.0	11.3 ± 1.0	11.3 ± 1.0	0.87 ± 0.08
E-7	91	16.6 ± 0.8	10.6 ± 0.9	10.6 ± 0.9	0.81 ± 0.07
E-8	91	18.5 ± 1.1	12.4 ± 1.2	12.4 ± 1.2	0.95 ± 0.09
E-9	91	22.1 ± 0.7	16.0 ± 0.8	16.0 ± 0.8	1.23 ± 0.06
E-12	91	15.7 ± 0.8	9.6 ± 0.8	9.6 ± 0.8	0.74 ± 0.06
E-14	91	20.4 ± 0.6	14.3 ± 0.7	14.3 ± 0.7	1.10 ± 0.06
E-15	91	18.7 ± 0.4	12.7 ± 0.5	12.7 ± 0.5	0.98 ± 0.04
E-16B	91	21.6 ± 0.3	15.5 ± 0.5	15.5 ± 0.5	1.19 ± 0.08
E-17	91	19.7 ± 0.9	13.6 ± 1.0	13.6 ± 1.0	1.05 ± 0.07
E-18	91	21.0 ± 0.9	15.0 ± 1.0	15.0 ± 1.0	1.15 ± 0.07
E-22	91	21.1 ± 1.5	15.0 ± 1.6	15.0 ± 1.6	1.15 ± 0.12
E-23	91	19.7 ± 0.5	13.6 ± 0.6	13.6 ± 0.6	1.05 ± 0.05
E-24	91	19.6 ± 0.5	13.5 ± 0.6	13.5 ± 0.6	1.04 ± 0.04
E-25	91	18.9 ± 0.6	12.9 ± 0.7	12.9 ± 0.7	0.99 ± 0.05
E-26B	91	17.8 ± 0.6	11.8 ± 0.7	11.8 ± 0.7	0.91 ± 0.06
E-27	91	20.7 ± 0.3	14.7 ± 0.5	14.7 ± 0.5	1.13 ± 0.04
E-28	91	15.4 ± 1.0	9.4 ± 1.1	9.4 ± 1.1	0.72 ± 0.08
E-29	91	15.3 ± 0.8	9.3 ± 0.9	9.3 ± 0.9	0.71 ± 0.07
E-30	91	18.8 ± 1.2	12.8 ± 1.3	12.8 ± 1.3	0.98 ± 0.10
E-31	91	21.1 ± 0.8	15.1 ± 0.8	15.1 ± 0.8	1.16 ± 0.07
E-32	91	22.2 ± 0.8	16.1 ± 0.9	16.1 ± 0.9	1.24 ± 0.07
E-38	91	20.2 ± 1.5	14.1 ± 1.6	14.1 ± 1.6	1.08 ± 0.12
E-39	91	20.8 ± 1.3	14.7 ± 1.4	14.7 ± 1.4	1.13 ± 0.11
E-41	91	18.9 ± 0.9	12.8 ± 1.0	12.8 ± 1.0	0.98 ± 0.07
E-42	91	23.3 ± 1.0	17.2 ± 1.1	17.2 ± 1.1	1.33 ± 0.08
E-43	91	20.1 ± 1.5	14.1 ± 1.5	14.1 ± 1.5	1.08 ± 0.12
Control					
E-20	91	20.7 ± 1.3	14.7 ± 1.3	14.7 ± 1.3	1.13 ± 0.10
Mean±s.d.		19.5 ± 2.0	13.4 ± 2.0	13.4 ± 2.0	1.03 ± 0.16
In-Transit Exposure		Date Annealed	Date Read	ITC-1	ITC-2
		12-08-15	01-09-16	5.2 ± 0.3	5.2 ± 0.3
		03-14-16	04-08-16	5.9 ± 0.4	6.2 ± 0.3

[a] The $CaSO_4$:Dy dosimeter cards provide four separate readout areas. Values listed represent the mean and standard deviation of the average of the four readings.

POINT BEACH NUCLEAR PLANT

Table 12. Ambient Gamma Radiation [a]
LLD/7days: < 1mR/TLD

2nd Quarter, 2016

Date Annealed:	03-14-16	Days in the field	93
Date Placed:	04-05-16	Days from Annealing	
Date Removed:	07-07-16	to Readout:	116
Date Read:	07-08-16		

Location	Days in Field	Total mR	Net mR	mR/Stnd Qtr (91 days)	Net mR per 7 days
Indicator					
E-1	93	17.6 ± 1.4	12.4 ± 1.5	12.1 ± 1.5	0.93 ± 0.11
E-2	93	22.8 ± 1.4	17.5 ± 1.5	17.1 ± 1.5	1.32 ± 0.11
E-3	93	23.9 ± 2.1	18.7 ± 2.2	18.3 ± 2.2	1.41 ± 0.17
E-4	93	20.7 ± 0.6	15.5 ± 0.8	15.2 ± 0.8	1.17 ± 0.06
E-5	93	20.7 ± 0.4	15.5 ± 0.8	15.2 ± 0.7	1.17 ± 0.06
E-6	93	18.0 ± 0.3	12.8 ± 0.7	12.5 ± 0.7	0.96 ± 0.05
E-7	93	19.9 ± 0.4	14.7 ± 0.7	14.4 ± 0.7	1.10 ± 0.06
E-8	93	20.0 ± 0.9	14.8 ± 1.1	14.5 ± 1.1	1.11 ± 0.08
E-9	93	20.6 ± 0.8	15.4 ± 1.0	15.1 ± 1.0	1.16 ± 0.07
E-12	93	15.3 ± 0.5	10.1 ± 0.8	9.8 ± 0.8	0.76 ± 0.06
E-14	93	22.0 ± 1.6	16.8 ± 1.7	16.4 ± 1.7	1.26 ± 0.13
E-15	93	22.4 ± 0.9	17.2 ± 1.1	16.8 ± 1.1	1.29 ± 0.08
E-16B	93	21.2 ± 0.5	15.9 ± 0.8	15.6 ± 0.8	1.20 ± 0.06
E-17	93	24.0 ± 0.6	18.8 ± 0.8	18.4 ± 0.8	1.41 ± 0.06
E-18	93	24.0 ± 0.7	18.8 ± 0.9	18.4 ± 0.9	1.41 ± 0.07
E-22	93	22.1 ± 0.8	16.9 ± 1.0	16.6 ± 1.0	1.27 ± 0.07
E-23	93	23.8 ± 0.4	18.6 ± 0.8	18.2 ± 0.7	1.40 ± 0.06
E-24	93	21.1 ± 0.8	15.9 ± 1.0	15.6 ± 1.0	1.20 ± 0.08
E-25	93	21.6 ± 0.8	16.4 ± 1.0	16.0 ± 1.0	1.23 ± 0.07
E-26B	93	20.7 ± 0.4	15.5 ± 0.7	15.1 ± 0.7	1.16 ± 0.05
E-27	93	24.7 ± 1.1	19.5 ± 1.2	19.1 ± 1.2	1.47 ± 0.09
E-28	93	16.5 ± 0.3	11.3 ± 0.7	11.1 ± 0.7	0.85 ± 0.05
E-29	93	15.9 ± 0.5	10.7 ± 0.8	10.5 ± 0.8	0.80 ± 0.06
E-30	93	18.9 ± 0.8	13.7 ± 1.0	13.4 ± 1.0	1.03 ± 0.08
E-31	93	21.5 ± 1.6	16.3 ± 1.7	15.9 ± 1.7	1.22 ± 0.13
E-32	93	25.2 ± 0.9	20.0 ± 1.1	19.5 ± 1.0	1.50 ± 0.08
E-38	93	20.9 ± 0.5	15.6 ± 0.8	15.3 ± 0.8	1.18 ± 0.06
E-39	93	20.6 ± 0.6	15.4 ± 0.8	15.1 ± 0.8	1.16 ± 0.06
E-41	93	20.2 ± 0.4	15.0 ± 0.7	14.7 ± 0.7	1.13 ± 0.06
E-42	93	22.4 ± 1.0	17.2 ± 1.1	16.8 ± 1.1	1.29 ± 0.09
E-43	93	22.1 ± 1.2	16.9 ± 1.3	16.5 ± 1.3	1.27 ± 0.10
Control					
E-20	93	21.9 ± 1.5	16.7 ± 1.6	16.3 ± 1.6	1.25 ± 0.12
Mean±s.d.		21.0 ± 2.4	15.8 ± 2.4	15.5 ± 2.4	1.19 ± 0.18

In-Transit Exposure	Date Annealed	Date Read	ITC-1	ITC-2
	03-14-16	04-08-16	5.9 ± 0.4	6.2 ± 0.3
	06-09-16	07-08-16	4.5 ± 0.3	4.3 ± 0.2

[a] The $CaSO_4$:Dy dosimeter cards provide four separate readout areas. Values listed represent the mean and standard deviation of the average of the four readings.

POINT BEACH NUCLEAR PLANT

Table 12. Ambient Gamma Radiation [a]
LLD/7days: < 1mR/TLD

3rd Quarter, 2016

Date Annealed:	06-09-16	Days in the field	90
Date Placed:	07-07-16	Days from Annealing	
Date Removed:	10-05-16	to Readout:	125
Date Read:	10-12-16		

Location	Days in Field	Total mR	Net mR	mR/Stnd Qtr (91 days)	Net mR per 7 days
Indicator					
E-1	90	18.4 ± 1.1	13.2 ± 1.3	13.4 ± 1.3	1.03 ± 0.10
E-2	90	22.6 ± 0.8	17.4 ± 1.1	17.6 ± 1.1	1.35 ± 0.08
E-3	90	23.2 ± 2.0	18.0 ± 2.1	18.2 ± 2.1	1.40 ± 0.16
E-4	90	19.3 ± 1.5	14.1 ± 1.6	14.3 ± 1.6	1.10 ± 0.12
E-5	90	21.9 ± 1.1	16.7 ± 1.3	16.9 ± 1.3	1.30 ± 0.10
E-6	90	18.3 ± 1.0	13.1 ± 1.2	13.3 ± 1.2	1.02 ± 0.09
E-7	90	18.2 ± 1.0	13.0 ± 1.2	13.2 ± 1.2	1.01 ± 0.09
E-8	90	19.1 ± 1.1	13.9 ± 1.3	14.1 ± 1.3	1.08 ± 0.10
E-9	90	24.0 ± 0.8	18.8 ± 1.0	19.1 ± 1.0	1.47 ± 0.08
E-12	90	15.6 ± 0.8	10.4 ± 1.0	10.5 ± 1.1	0.81 ± 0.08
E-14	90	21.2 ± 0.7	16.1 ± 1.0	16.3 ± 1.0	1.25 ± 0.07
E-15	90	20.8 ± 0.8	15.6 ± 1.0	15.8 ± 1.0	1.21 ± 0.08
E-16B	90	21.2 ± 0.6	16.0 ± 0.9	16.2 ± 0.9	1.25 ± 0.07
E-17	90	20.7 ± 1.2	15.6 ± 1.4	15.7 ± 1.4	1.21 ± 0.11
E-18	90	24.0 ± 1.4	18.8 ± 1.5	19.0 ± 1.6	1.47 ± 0.12
E-22	90	22.8 ± 1.6	17.6 ± 1.7	17.8 ± 1.7	1.37 ± 0.13
E-23	90	23.7 ± 0.5	18.5 ± 0.8	18.7 ± 0.8	1.44 ± 0.07
E-24	90	20.2 ± 0.9	15.0 ± 1.1	15.2 ± 1.1	1.17 ± 0.09
E-25	90	20.6 ± 0.6	15.4 ± 0.9	15.6 ± 0.9	1.20 ± 0.07
E-26B	90	19.6 ± 0.8	14.4 ± 1.0	14.6 ± 1.0	1.12 ± 0.08
E-27	90	22.4 ± 0.5	17.2 ± 0.8	17.4 ± 0.9	1.34 ± 0.07
E-28	90	15.6 ± 0.8	10.5 ± 1.0	10.6 ± 1.0	0.81 ± 0.08
E-29	90	15.8 ± 1.0	10.6 ± 1.2	10.7 ± 1.2	0.82 ± 0.09
E-30	90	19.3 ± 1.1	14.1 ± 1.3	14.3 ± 1.3	1.10 ± 0.10
E-31	90	22.7 ± 0.6	17.5 ± 0.9	17.7 ± 0.9	1.36 ± 0.07
E-32	90	25.5 ± 1.0	20.3 ± 1.2	20.5 ± 1.2	1.58 ± 0.09
E-38	90	21.7 ± 1.7	16.6 ± 1.8	16.7 ± 1.8	1.29 ± 0.14
E-39	90	23.3 ± 1.4	18.2 ± 1.6	18.4 ± 1.6	1.41 ± 0.12
E-41	90	22.6 ± 1.7	17.4 ± 1.8	17.6 ± 1.9	1.36 ± 0.14
E-42	90	26.7 ± 1.1	21.6 ± 1.3	21.8 ± 1.3	1.68 ± 0.10
E-43	90	24.0 ± 1.3	18.8 ± 1.5	19.1 ± 1.5	1.47 ± 0.11
Control					
E-20	90	22.0 ± 1.4	16.8 ± 1.5	17.0 ± 1.6	1.31 ± 0.12
Mean±s.d.		21.2 ± 2.7	16.0 ± 2.7	16.2 ± 2.8	1.24 ± 0.22

In-Transit Exposure	Date Annealed	Date Read	ITC-1	ITC-2
	06-09-16	07-08-16	4.5 ± 0.3	4.3 ± 0.2
	09-08-16	10-12-16	5.7 ± 0.2	6.2 ± 0.5

[a] The $CaSO_4$:Dy dosimeter cards provide four separate readout areas. Values listed represent the mean and standard deviation of the average of the four readings.

POINT BEACH NUCLEAR PLANT

Table 12. Ambient Gamma Radiation [a]
LLD/7days: < 1mR/TLD

4th Quarter, 2016

Date Annealed:	09-08-16	Days in the field	85
Date Placed:	10-05-16	Days from Annealing	
Date Removed:	12-29-16	to Readout:	118
Date Read:	01-04-17		

Location	Days in Field	Total mR	Net mR	mR/Stnd Qtr (91 days)	Net mR per 7 days
Indicator					
E-1	85	17.5 ± 1.4	12.1 ± 1.6	12.9 ± 1.7	1.00 ± 0.13
E-2	85	22.3 ± 1.0	16.9 ± 1.3	18.1 ± 1.3	1.39 ± 0.10
E-3	85	23.0 ± 1.4	17.6 ± 1.5	18.9 ± 1.7	1.45 ± 0.13
E-4	85	20.3 ± 0.6	14.9 ± 0.9	15.9 ± 1.0	1.23 ± 0.08
E-5	85	20.3 ± 0.5	14.9 ± 0.8	16.0 ± 0.9	1.23 ± 0.07
E-6	85	17.8 ± 0.5	12.4 ± 0.8	13.2 ± 0.9	1.02 ± 0.07
E-7	85	19.3 ± 0.9	13.9 ± 1.1	14.9 ± 1.2	1.14 ± 0.09
E-8	85	20.0 ± 0.7	14.6 ± 1.0	15.7 ± 1.0	1.20 ± 0.08
E-9	85	19.6 ± 0.6	14.2 ± 0.9	15.2 ± 1.0	1.17 ± 0.08
E-12	85	15.6 ± 0.6	10.2 ± 0.9	10.9 ± 1.0	0.84 ± 0.07
E-14	85	22.4 ± 1.2	17.0 ± 1.4	18.1 ± 1.5	1.40 ± 0.12
E-15	85	21.9 ± 1.2	16.5 ± 1.3	17.7 ± 1.4	1.36 ± 0.11
E-16B	85	21.1 ± 0.7	15.7 ± 1.0	16.8 ± 1.0	1.29 ± 0.08
E-17	85	22.9 ± 0.4	17.5 ± 0.8	18.8 ± 0.9	1.44 ± 0.07
E-18	85	22.6 ± 0.6	17.2 ± 0.9	18.5 ± 1.0	1.42 ± 0.07
E-22	85	22.0 ± 1.2	16.6 ± 1.4	17.7 ± 1.5	1.36 ± 0.11
E-23	85	23.2 ± 0.5	17.8 ± 0.9	19.1 ± 0.9	1.47 ± 0.07
E-24	85	20.5 ± 0.4	15.1 ± 0.8	16.2 ± 0.9	1.25 ± 0.07
E-25	85	21.8 ± 1.2	16.4 ± 1.4	17.5 ± 1.5	1.35 ± 0.11
E-26B	85	21.1 ± 0.2	15.7 ± 0.7	16.8 ± 0.8	1.29 ± 0.06
E-27	85	25.4 ± 0.9	20.0 ± 1.2	21.4 ± 1.2	1.64 ± 0.10
E-28	85	17.6 ± 0.4	12.2 ± 0.8	13.1 ± 0.9	1.01 ± 0.07
E-29	85	16.2 ± 1.6 [b]	10.8 ± 1.7	11.6 ± 1.9	0.89 ± 0.14
E-30	85	19.3 ± 0.7	13.9 ± 1.0	14.9 ± 1.0	1.14 ± 0.08
E-31	85	22.3 ± 2.0	16.9 ± 2.1	18.1 ± 2.2	1.39 ± 0.17
E-32	85	25.7 ± 1.3	20.3 ± 1.4	21.7 ± 1.5	1.67 ± 0.12
E-38	85	21.2 ± 0.4	15.8 ± 0.8	16.9 ± 0.9	1.30 ± 0.07
E-39	85	20.9 ± 0.8	15.5 ± 1.1	16.6 ± 1.1	1.28 ± 0.09
E-41	85	21.1 ± 1.1	15.7 ± 1.3	16.8 ± 1.3	1.29 ± 0.10
E-42	85	22.9 ± 0.9	17.5 ± 1.2	18.7 ± 1.2	1.44 ± 0.10
E-43	85	22.3 ± 1.0	16.9 ± 1.2	18.1 ± 1.3	1.39 ± 0.10
Control					
E-20	85	23.2 ± 1.3	17.8 ± 1.4	19.1 ± 1.5	1.47 ± 0.12
Mean±s.d.		20.1 ± 1.5	15.6 ± 2.3	19.7 ± 1.5	1.29 ± 0.19
In-Transit Exposure		Date Annealed	Date Read	ITC-1	ITC-2
		09-08-16	10-12-16	5.7 ± 0.2	6.2 ± 0.5
		12-07-16	01-04-17	4.8 ± 0.3	4.9 ± 0.3

[a] The $CaSO_4$:Dy dosimeter cards provide four separate readout areas. Values listed represent the mean and standard deviation of the average of the four readings.
[b] Card corrupted; only one reading. No standard deviation; error calculated at 10%.

Annual Indicator Mean±s.d.	20.6 ± 2.5	15.2 ± 2.6	15.4 ± 2.7	1.19 ± 0.21
Annual Control Mean±s.d.	22.0 ± 1.0	16.5 ± 1.3	16.8 ± 1.8	1.29 ± 0.14
Annual Indicator/Control Mean±s.d.	20.7 ± 2.5	15.2 ± 2.6	15.5 ± 2.7	1.19 ± 0.21

Table 13. Groundwater Tritium Monitoring Program
(Monthly Collections)
Units = pCi/L

Intermittent Streams

Sample ID		GW-01				GW-02	
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-27-16		NS[a]		01-27-16		NS[a]	
02-24-16	EWW- 764	27 ± 79	< 155	02-24-16	EWW- 765	186 ± 87	< 155
03-31-16	EWW- 1306	71 ± 76	< 145	03-31-16	EWW- 1307	190 ± 82	< 145
04-27-16	EWW- 1955	83 ± 82	< 147	04-27-16	EWW- 1956	227 ± 89	< 147
05-25-16	EWW- 2686	71 ± 79	< 151	05-25-16	EWW- 2687	194 ± 85	< 151
06-29-16	EWW- 3297	148 ± 80	< 150	06-29-16	EWW- 3298	111 ± 78	< 150
07-27-16	EWW- 3976	166 ± 81	< 145	07-27-16	EWW- 3977	164 ± 81	< 145
08-31-16	EWW- 4630	105 ± 80	< 155	08-31-16	EWW- 4631	114 ± 81	< 155
09-28-16	EWW- 5138	115 ± 82	< 157	09-28-16 [c]	EWW- 5139	689 ± 106	< 148
10-19-16	EWW- 5638	215 ± 104	< 182	10-19-16	EWW- 5639	52 ± 98	< 182
11-30-16	EWW- 6531	6 ± 90	< 180	11-30-16	EWW- 6532	116 ± 94	< 180
12-28-16	EWW- 6934	59 ± 79	< 153	12-28-16		NS[a]	
Mean ± s.d.		97 ± 62		Mean ± s.d.		204 ± 178	

Sample ID		GW-03				GW-17	
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-27-16		NS[a]		01-27-16		NS[a]	
02-24-16	EWW- 766	29 ± 79	< 155	02-24-16	EWW- 768	171 ± 86	< 155
03-31-16	EWW- 1308	42 ± 74	< 145	03-31-16	EWW- 1310	243 ± 85	< 145
04-27-16	EWW- 1958	64 ± 81	< 147	04-27-16	EWW- 1960	236 ± 89	< 147
05-25-16	EWW- 2688	65 ± 78	< 151	05-25-16	EWW- 2690	236 ± 87	< 151
06-29-16	EWW- 3300	27 ± 74	< 150	06-29-16	EWW- 3302	129 ± 79	< 150
07-27-16	EWW- 3978	52 ± 75	< 145	07-27-16	EWW- 3980	118 ± 79	< 145
08-31-16	EWW- 4632	16 ± 75	< 155	08-31-16	EWW- 4634	152 ± 83	< 155
09-28-16	EWW- 5140	57 ± 78	< 157	09-28-16		NS[b]	
10-19-16	EWW- 5641	17 ± 96	< 182	10-19-16	EWW- 5643	199 ± 103	< 182
11-30-16	EWW- 6533	-12 ± 89	< 180	11-30-16	EWW- 6535	109 ± 94	< 180
12-28-16		NS[a]		12-28-16	EWW- 6936	207 ± 87	< 153
Mean ± s.d.		36 ± 25		Mean ± s.d.		180 ± 51	

Wells

Sample ID		GW-04 (EIC Well)	
Collection Date	Lab Code	Tritium	MDC
01-27-16	EWW- 384	-25 ± 72	< 148
02-24-16	EWW- 767	-30 ± 75	< 155
03-31-16	EWW- 1309	48 ± 74	< 145
04-27-16	EWW- 1959	3 ± 77	< 147
05-25-16	EWW- 2689	-4 ± 75	< 151
06-29-16	EWW- 3301	-17 ± 71	< 150
07-27-16	EWW- 3979	6 ± 72	< 145
08-31-16	EWW- 4633	69 ± 78	< 155
09-28-16	EWW- 5141	47 ± 76	< 148
10-19-16	EWW- 5642	74 ± 99	< 182
11-30-16	EWW- 6534	-34 ± 88	< 180
12-28-16	EWW- 6935	19 ± 77	< 153
Mean ± s.d.		13 ± 38	

[a] "NS" = No sample; water frozen.
[b] "NS" = No sample; see Table 2.0, Listing of Missed Samples.
[c] Sample reanalyzed with a result of 591±130 pCi/L.

Table 13. Groundwater Tritium Monitoring Program
(Monthly Collections)
Units = pCi/L

Beach Drains

Sample ID	S-1			S-3			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-10-16		NF[a]		01-10-16		NF[a]	
02-10-16		NF[a]		02-10-16		NF[a]	
03-09-16	EWW- 1036	181 ± 84	< 142	03-09-16	EWW- 1037	244 ± 87	< 142
04-21-16	EWW- 1806	629 ± 102	< 148	04-21-16		NF[a]	
05-05-16	EWW- 2195	187 ± 84	< 149	05-05-16		NF[a]	
06-09-16	EWW- 2923	267 ± 88	< 150	06-09-16		NF[a]	
07-07-16	EWW- 3435	228 ± 89	< 148	07-07-16		NF[a]	
08-10-16	EWW- 4280	168 ± 80	< 146	08-10-16		NF[a]	
09-08-16	EWW- 4771	176 ± 90	< 155	09-08-16		NF[a]	
10-06-16	EWW- 5348	260 ± 85	< 142	10-06-16		NF[a]	
11-10-16	EWW- 6269	211 ± 93	< 176	11-10-16		NF[a]	
12-07-16	EWW- 6746	241 ± 86	< 152	12-07-16		NF[a]	
Mean ± s.d.		255 ± 136		Mean ± s.d.			

Sample ID	S-7			S-8			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-10-16		NF[a]		01-10-16		NF[a]	
02-10-16		NF[a]		02-10-16		NF[a]	
03-09-16		NF[a]		03-09-16		NF[a]	
04-21-16		NF[a]		04-21-16		NF[a]	
05-05-16		NF[a]		05-05-16		NF[a]	
06-09-16		NF[a]		06-09-16		NF[a]	
07-07-16		NF[a]		07-07-16		NF[a]	
08-10-16		NF[a]		08-10-16		NF[a]	
09-08-16		NF[a]		09-08-16		NF[a]	
10-06-16		NF[a]		10-06-16		NF[a]	
11-10-16		NF[a]		11-10-16		NF[a]	
12-07-16		NF[a]		12-07-16		NF[a]	
Mean ± s.d.				Mean ± s.d.			

Sample ID	S-9			S-10			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-10-16		NF[a]		01-10-16		NF[a]	
02-10-16		NF[a]		02-10-16		NF[a]	
03-09-16		NF[a]		03-09-16		NF[a]	
04-21-16		NF[a]		04-21-16		NF[a]	
05-05-16		NF[a]		05-05-16		NF[a]	
06-09-16		NF[a]		06-09-16		NF[a]	
07-07-16		NF[a]		07-07-16		NF[a]	
08-10-16		NF[a]		08-10-16		NF[a]	
09-08-16		NF[a]		09-08-16		NF[a]	
10-06-16		NF[a]		10-06-16		NF[a]	
11-10-16		NF[a]		11-10-16		NF[a]	
12-07-16		NF[a]		12-07-16		NF[a]	
Mean ± s.d.				Mean ± s.d.			

[a] "NF" = No flow.

Table 13. Groundwater Tritium Monitoring Program
(Monthly Collections)
Units = pCi/L

Beach Drains (cont.)

Sample ID	S-11			S-12[b]			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-10-16		NF[a]					
02-10-16		NF[a]					
03-09-16	EWW- 1038	140 ± 82	< 142				
04-21-16		NF[a]					
05-05-16		NF[a]					
06-09-16		NF[a]					
07-07-16		NF[a]					
08-10-16		NF[a]					
09-08-16		NF[a]		09-08-16	EWW- 4772	236 ± 93	< 155
10-06-16		NF[a]		10-06-16		NF[a]	
11-10-16		NF[a]		11-10-16		NF[a]	
12-07-16		NF[a]		12-07-16		NF[a]	
Mean ± s.d.							

U2 Façade Subsurface Drain Sump

Sample ID							
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-31-16	EW- 1029	499 ± 102	< 150				
02-29-16	EW- 1030	510 ± 102	< 149				
03-31-16	EW- 2204	507 ± 99	< 150				
04-30-16	EW- 2503	572 ± 102	< 152				
05-31-16	EW- 2922	1018 ± 133	< 157				
06-30-16	EW- 3615	1230 ± 125	< 147				
07-31-16	EW- 4285	1333 ± 128	< 146				
08-31-16	EW- 4908	929 ± 116	< 149				
09-30-16	EW- 5524	615 ± 104	< 151				
10-31-16	EW- 6393	966 ± 119	< 177				
11-30-16	EW- 6753	1616 ± 140	< 158				
12-31-16	EW- 7079	1523 ± 136	< 155				
Mean ± s.d.		943 ± 410					

[a] "NF" = No flow.
[b] New location as of 09-08-16.

POINT BEACH NUCLEAR PLANT

Beach Drains

Units: = pCi/L

Gamma isotopic analysis

Location	S-1		S-3		S-7		S-8	
Collection Date	01-10-16		01-10-16		01-10-16		01-10-16	
Lab Code	NF[a]	MDC	NF[a]	MDC	NF[a]	MDC	NF[a]	MDC
Be-7	-		-		-		-	
Mn-54	-		-		-		-	
Fe-59	-		-		-		-	
Co-58	-		-		-		-	
Co-60	-		-		-		-	
Zn-65	-		-		-		-	
Zr-Nb-95	-		-		-		-	
Cs-134	-		-		-		-	
Cs-137	-		-		-		-	
Ba-La-140	-		-		-		-	

Location	S-9	S-10	S-11	S-1
Collection Date	01-10-16	01-10-16	01-10-16	02-10-16
Lab Code	NF[a]	NF[a]	NF[a]	NF[a]
Be-7	-	-	-	-
Mn-54	-	-	-	-
Fe-59	-	-	-	-
Co-58	-	-	-	-
Co-60	-	-	-	-
Zn-65	-	-	-	-
Zr-Nb-95	-	-	-	-
Cs-134	-	-	-	-
Cs-137	-	-	-	-
Ba-La-140	-	-	-	-

Location	S-3	S-7	S-8	S-9
Collection Date	02-10-16	02-10-16	02-10-16	02-10-16
Lab Code	NF[a]	NF[a]	NF[a]	NF[a]
Be-7	-	-	-	-
Mn-54	-	-	-	-
Fe-59	-	-	-	-
Co-58	-	-	-	-
Co-60	-	-	-	-
Zn-65	-	-	-	-
Zr-Nb-95	-	-	-	-
Cs-134	-	-	-	-
Cs-137	-	-	-	-
Ba-La-140	-	-	-	-

[a] "NF" = No flow.

Beach Drains (cont.)

Units: = pCi\L — Gamma isotopic analysis

Location	S-10		S-11		S-1		S-3	
Collection Date	02-10-16		02-10-16		03-09-16		03-09-16	
Lab Code	NF[a]	MDC	NF[a]	MDC	EW- 1036		EW- 1037	
Be-7	-		-		8.6 ± 12.1	< 24.4	4.4 ± 12.1	< 28.2
Mn-54	-		-		0.3 ± 1.7	< 3.1	-0.2 ± 1.3	< 2.4
Fe-59	-		-		0.4 ± 3.0	< 5.5	0.2 ± 2.0	< 5.3
Co-58	-		-		-0.5 ± 1.4	< 1.8	0.5 ± 1.5	< 3.2
Co-60	-		-		-0.7 ± 1.8	< 2.1	-0.8 ± 1.6	< 0.9
Zn-65	-		-		-0.4 ± 3.5	< 5.7	-0.5 ± 2.6	< 2.6
Zr-Nb-95	-		-		0.6 ± 1.5	< 3.4	-0.7 ± 1.6	< 3.6
Cs-134	-		-		-0.1 ± 1.5	< 2.7	-0.2 ± 1.2	< 2.4
Cs-137	-		-		1.6 ± 2.0	< 3.9	-0.6 ± 1.7	< 2.6
Ba-La-140	-		-		0.2 ± 1.7	< 2.6	-2.4 ± 1.4	< 3.4

Location	S-7	S-8	S-9	S-10
Collection Date	03-09-16	03-09-16	03-09-16	03-09-16
Lab Code	NF[a]	NF[a]	NF[a]	NF[a]
Be-7	-	-	-	-
Mn-54	-	-	-	-
Fe-59	-	-	-	-
Co-58	-	-	-	-
Co-60	-	-	-	-
Zn-65	-	-	-	-
Zr-Nb-95	-	-	-	-
Cs-134	-	-	-	-
Cs-137	-	-	-	-
Ba-La-140	-	-	-	-

Location	S-11		S-1		S-3	S-7
Collection Date	03-09-16		04-21-16		04-21-16	04-21-16
Lab Code	EW- 1038		EW- 1806		NF[a]	NF[a]
Be-7	-0.3 ± 10.7	< 24.0	12.4 ± 16.5	< 30.6	-	-
Mn-54	1.3 ± 1.2	< 2.0	-0.9 ± 1.8	< 2.6	-	-
Fe-59	0.7 ± 2.6	< 5.2	-0.2 ± 3.3	< 4.2	-	-
Co-58	1.8 ± 1.2	< 2.3	1.5 ± 1.4	< 2.6	-	-
Co-60	-1.3 ± 1.5	< 1.7	-0.8 ± 2.1	< 3.2	-	-
Zn-65	0.9 ± 2.7	< 4.6	2.4 ± 4.2	< 3.0	-	-
Zr-Nb-95	-1.4 ± 1.7	< 3.8	-2.1 ± 1.7	< 2.2	-	-
Cs-134	-0.6 ± 1.5	< 2.7	0.9 ± 1.8	< 4.2	-	-
Cs-137	-1.4 ± 1.7	< 2.1	-0.9 ± 2.0	< 2.8	-	-
Ba-La-140	-1.4 ± 1.7	< 4.5	-2.5 ± 1.8	< 2.3	-	-

[a] "NF" = No flow.

Beach Drains (cont.)

Units: = pCi\L — Gamma isotopic analysis

Location	S-8		S-9		S-10		S-11	
Collection Date	04-21-16		04-21-16		04-21-16		04-21-16	
Lab Code	NF[a]	MDC	NF[a]	MDC	NF[a]	MDC		MDC
Be-7	-		-		-		-	
Mn-54	-		-		-		-	
Fe-59	-		-		-		-	
Co-58	-		-		-		-	
Co-60	-		-		-		-	
Zn-65	-		-		-		-	
Zr-Nb-95	-		-		-		-	
Cs-134	-		-		-		-	
Cs-137	-		-		-		-	
Ba-La-140	-		-		-		-	

Location	S-1		S-3	S-7	S-8
Collection Date	05-05-16		05-05-16	05-05-16	05-05-16
Lab Code	EW- 2195		NF[a]	NF[a]	NF[a]
Be-7	9.5 ± 10.6	< 23.2	-	-	-
Mn-54	-0.7 ± 1.2	< 1.5	-	-	-
Fe-59	-1.2 ± 2.3	< 5.7	-	-	-
Co-58	-0.4 ± 1.4	< 3.1	-	-	-
Co-60	-0.1 ± 1.6	< 2.3	-	-	-
Zn-65	0.2 ± 2.2	< 3.5	-	-	-
Zr-Nb-95	2.1 ± 1.5	< 4.5	-	-	-
Cs-134	1.2 ± 1.2	< 2.3	-	-	-
Cs-137	-0.1 ± 1.4	< 1.8	-	-	-
Ba-La-140	6.4 ± 1.5	< 10.1	-	-	-

Location	S-9		S-10	S-11	S-1	
Collection Date	05-05-16		05-05-16	05-05-16	06-09-16	
Lab Code	NF[a]		NF[a]		EW- 2923	
Be-7	-		-	-	-11.4 ± 11.9	< 22.0
Mn-54	-		-	-	-0.9 ± 1.5	< 2.0
Fe-59	-		-	-	-1.3 ± 2.7	< 3.4
Co-58	-		-	-	-0.5 ± 1.4	< 2.1
Co-60	-		-	-	0.5 ± 1.5	< 1.9
Zn-65	-		-	-	2.8 ± 3.1	< 4.8
Zr-Nb-95	-		-	-	0.9 ± 1.6	< 3.9
Cs-134	-		-	-	-1.6 ± 1.7	< 2.9
Cs-137	-		-	-	1.9 ± 1.6	< 2.0
Ba-La-140	-		-	-	-2.3 ± 1.6	< 2.1

[a] "NF" = No flow.

POINT BEACH NUCLEAR PLANT

Beach Drains (cont.)

Units: = pCi\L							Gamma isotopic analysis	
Location	S-3		S-7		S-8		S-9	
Collection Date	06-09-16		06-09-16		06-09-16		06-09-16	
Lab Code	NF[a]	MDC	NF[a]	MDC	NF[a]	MDC	NF[a]	MDC
Be-7	-		-		-		-	
Mn-54	-		-		-		-	
Fe-59	-		-		-		-	
Co-58	-		-		-		-	
Co-60	-		-		-		-	
Zn-65	-		-		-		-	
Zr-Nb-95	-		-		-		-	
Cs-134	-		-		-		-	
Cs-137	-		-		-		-	
Ba-La-140	-		-		-		-	
Location	S-10		S-11		S-1		S-3	
Collection Date	06-09-16		06-09-16		07-07-16		07-07-16	
Lab Code	NF[a]		NF[a]		EW- 3435		NF[a]	
Be-7	-		-		-3.1 ± 8.3	< 14.6	-	
Mn-54	-		-		-0.3 ± 1.0	< 1.5	-	
Fe-59	-		-		-2.3 ± 1.7	< 2.3	-	
Co-58	-		-		-0.8 ± 0.9	< 1.4	-	
Co-60	-		-		0.5 ± 1.0	< 0.8	-	
Zn-65	-		-		1.1 ± 1.8	< 2.3	-	
Zr-Nb-95	-		-		0.5 ± 1.0	< 2.0	-	
Cs-134	-		-		0.5 ± 1.0	< 1.9	-	
Cs-137	-		-		-0.6 ± 1.1	< 1.7	-	
Ba-La-140	-		-		-0.1 ± 1.1	< 4.0	-	
Location	S-7		S-8		S-9		S-10	
Collection Date	07-07-16		07-07-16		07-07-16		07-07-16	
Lab Code	NF[a]		NF[a]		NF[a]		NF[a]	
Be-7	-		-		-		-	
Mn-54	-		-		-		-	
Fe-59	-		-		-		-	
Co-58	-		-		-		-	
Co-60	-		-		-		-	
Zn-65	-		-		-		-	
Zr-Nb-95	-		-		-		-	
Cs-134	-		-		-		-	
Cs-137	-		-		-		-	
Ba-La-140	-		-		-		-	

[a] "NF" = No flow.

Beach Drains (cont.)

Units: = pCi\L								Gamma isotopic analysis
Location	S-11		S-1		S-3		S-7	
Collection Date	07-07-16		08-10-16		08-10-16		08-10-16	
Lab Code	NF[a]	MDC	EW- 4280	MDC	NF[a]	MDC	NF[a]	MDC
Be-7	-		2.0 ± 4.6	< 16.1	-		-	
Mn-54	-		0.3 ± 0.6	< 1.1	-		-	
Fe-59	-		-0.8 ± 1.0	< 2.9	-		-	
Co-58	-		1.1 ± 0.6	< 1.5	-		-	
Co-60	-		0.6 ± 0.6	< 1.3	-		-	
Zn-65	-		-0.7 ± 1.1	< 2.5	-		-	
Zr-Nb-95	-		-0.4 ± 0.6	< 1.8	-		-	
Cs-134	-		0.0 ± 0.6	< 1.1	-		-	
Cs-137	-		0.7 ± 0.7	< 1.4	-		-	
Ba-La-140	-		-1.9 ± 0.7	< 4.4	-		-	

Location	S-8	S-9	S-10	S-11
Collection Date	08-10-16	08-10-16	08-10-16	08-10-16
Lab Code	NF[a]	NF[a]	NF[a]	NF[a]
Be-7	-	-	-	-
Mn-54	-	-	-	-
Fe-59	-	-	-	-
Co-58	-	-	-	-
Co-60	-	-	-	-
Zn-65	-	-	-	-
Zr-Nb-95	-	-	-	-
Cs-134	-	-	-	-
Cs-137	-	-	-	-
Ba-La-140	-	-	-	-

Location	S-1		S-3	S-7	S-8
Collection Date	09-08-16		09-08-16	09-08-16	09-08-16
Lab Code	EW- 4771		NF[a]	NF[a]	NF[a]
Be-7	-10.4 ± 9.6	< 17.1	-	-	-
Mn-54	-0.3 ± 1.2	< 2.6	-	-	-
Fe-59	0.1 ± 2.2	< 5.5	-	-	-
Co-58	-2.0 ± 1.2	< 1.6	-	-	-
Co-60	0.7 ± 1.2	< 2.4	-	-	-
Zn-65	-0.7 ± 2.6	< 4.0	-	-	-
Zr-Nb-95	-0.4 ± 1.2	< 2.5	-	-	-
Cs-134	-1.4 ± 1.3	< 2.4	-	-	-
Cs-137	0.1 ± 1.4	< 1.7	-	-	-
Ba-La-140	-0.6 ± 1.3	< 7.7	-	-	-

[a] "NF" = No flow.

Beach Drains (cont.)

Units: = pCi\L							Gamma isotopic analysis	
Location	S-9		S-10		S-11		S-12	
Collection Date	09-08-16		09-08-16		09-08-16		09-08-16	
Lab Code	NF[a]	MDC	NF[a]	MDC	NF[a]	MDC	EW- 4772	MDC
Be-7	-		-		-		-4.5 ± 10.3	< 29.4
Mn-54	-		-		-		-0.2 ± 1.3	< 1.5
Fe-59	-		-		-		-0.8 ± 2.7	< 7.0
Co-58	-		-		-		0.5 ± 1.3	< 2.7
Co-60	-		-		-		0.5 ± 1.2	< 2.0
Zn-65	-		-		-		-0.8 ± 2.4	< 2.5
Zr-Nb-95	-		-		-		-0.9 ± 1.5	< 3.7
Cs-134	-		-		-		-1.0 ± 1.4	< 2.6
Cs-137	-		-		-		0.7 ± 1.4	< 2.8
Ba-La-140	-		-		-		-5.5 ± 1.4	< 7.2
Location	S-1		S-3		S-7		S-8	
Collection Date	10-06-16		10-06-16		10-06-16		10-06-16	
Lab Code	EW- 5348		NF[a]		NF[a]		NF[a]	
Be-7	-0.4 ± 10.5	< 25.5	-		-		-	
Mn-54	0.4 ± 1.4	< 1.9	-		-		-	
Fe-59	2.2 ± 2.0	< 4.2	-		-		-	
Co-58	-0.2 ± 1.3	< 1.7	-		-		-	
Co-60	-0.1 ± 1.1	< 1.3	-		-		-	
Zn-65	2.6 ± 2.9	< 5.1	-		-		-	
Zr-Nb-95	1.1 ± 1.3	< 3.1	-		-		-	
Cs-134	0.0 ± 1.5	< 2.8	-		-		-	
Cs-137	0.3 ± 1.4	< 2.4	-		-		-	
Ba-La-140	-1.4 ± 1.8	< 6.0	-		-		-	
Location	S-9		S-10		S-11		S-12	
Collection Date	10-06-16		10-06-16		10-06-16		10-06-16	
Lab Code	NF[a]		NF[a]		NF[a]		NF[a]	
Be-7	-		-		-		-	
Mn-54	-		-		-		-	
Fe-59	-		-		-		-	
Co-58	-		-		-		-	
Co-60	-		-		-		-	
Zn-65	-		-		-		-	
Zr-Nb-95	-		-		-		-	
Cs-134	-		-		-		-	
Cs-137	-		-		-		-	
Ba-La-140	-		-		-		-	

Beach Drains (cont.)

Units: = pCi\L — Gamma isotopic analysis

Location	S-1		S-3		S-7		S-8	
Collection Date	11-10-16		11-10-16		11-10-16		11-10-16	
Lab Code	EW- 6269	MDC	NF[a]	MDC	NF[a]	MDC	NF[a]	MDC
Be-7	12.8 ± 11.4	< 36.8	-		-		-	
Mn-54	0.6 ± 1.4	< 3.0	-		-		-	
Fe-59	-1.3 ± 2.6	< 4.6	-		-		-	
Co-58	-0.9 ± 1.4	< 2.1	-		-		-	
Co-60	-0.3 ± 1.4	< 1.8	-		-		-	
Zn-65	-1.0 ± 2.9	< 3.3	-		-		-	
Zr-Nb-95	0.2 ± 1.4	< 3.1	-		-		-	
Cs-134	-0.1 ± 1.2	< 2.3	-		-		-	
Cs-137	1.0 ± 1.5	< 2.5	-		-		-	
Ba-La-140	2.6 ± 1.6	< 7.7	-		-		-	

Location	S-9	S-10	S-11	S-12
Collection Date	11-10-16	11-10-16	11-10-16	11-10-16
Lab Code	NF[a]	NF[a]	NF[a]	NF[a]
Be-7	-	-	-	-
Mn-54	-	-	-	-
Fe-59	-	-	-	-
Co-58	-	-	-	-
Co-60	-	-	-	-
Zn-65	-	-	-	-
Zr-Nb-95	-	-	-	-
Cs-134	-	-	-	-
Cs-137	-	-	-	-
Ba-La-140	-	-	-	-

Location	S-1		S-3	S-7	S-8
Collection Date	12-07-16		12-07-16	12-07-16	12-07-16
Lab Code	EW- 6746		NF[a]	NF[a]	NF[a]
Be-7	6.7 ± 4.6	< 12.0	-	-	-
Mn-54	0.0 ± 0.6	< 1.0	-	-	-
Fe-59	-0.4 ± 1.0	< 3.3	-	-	-
Co-58	0.5 ± 0.5	< 1.0	-	-	-
Co-60	0.3 ± 0.6	< 1.3	-	-	-
Zn-65	0.5 ± 1.1	< 1.7	-	-	-
Zr-Nb-95	-0.1 ± 0.6	< 1.3	-	-	-
Cs-134	-0.7 ± 0.6	< 1.2	-	-	-
Cs-137	0.4 ± 0.7	< 0.8	-	-	-
Ba-La-140	-3.3 ± 0.7	< 6.3	-	-	-

[a] "NF" = No flow.

POINT BEACH NUCLEAR PLANT

Beach Drains (cont.)

Units: = pCi\L — Gamma isotopic analysis

Location	S-10	S-11	S-12
Collection Date	12-07-16	12-07-16	12-07-16
Lab Code	NF[a]	NF[a]	NF[a]
Be-7	-	-	-
Mn-54	-	-	-
Fe-59	-	-	-
Co-58	-	-	-
Co-60	-	-	-
Zn-65	-	-	-
Zr-Nb-95	-	-	-
Cs-134	-	-	-
Cs-137	-	-	-
Ba-La-140	-	-	-

Annual

All locations	**Mean ± s.d.**		**Mean ± s.d.**		**Mean ± s.d.**		**Mean ± s.d.**
Be-7	**2.0 ± 8.0**	**Co-58**	**0.0 ± 1.1**	**Zr/Nb-95**	**0.0 ± 1.1**	**Ba/La-140**	**-0.9 ± 0.0**
Mn-54	**0.0 ± 0.6**	**Co-60**	**-0.1 ± 0.7**	**Cs-134**	**-0.2 ± -0.8**		
Fe-59	**-0.4 ± 1.1**	**Zn-65**	**0.5 ± 1.4**	**Cs-137**	**0.2 ± 1.0**		

Table 13. Groundwater Tritium Monitoring Program
(Quarterly Collections)
Units = pCi/L

Quarterly Wells

Sample ID	GW-05 (WH 6 Well)			GW-06 (SBCC Well)			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-15-16	EWW- 253	53 ± 73	< 141	01-15-16	EWW- 254	15 ± 71	< 141
04-12-16	EWW- 1556	6 ± 74	< 148	04-12-16	EWW- 1557	-106 ± 91	< 158 [a]
07-14-16	EWW- 3557	50 ± 80	< 147	07-14-16	EWW- 3558	-1 ± 77	< 147
10-12-16	EWW- 5521	-21 ± 74	< 151	10-12-16	EWW- 5522	-62 ± 71	< 151
Mean ± s.d.		22 ± 36		Mean ± s.d.		-38 ± 56	

Sample ID	GW-11 (MW-1)			GW-12 (MW-2)			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-15-16	EWW- 320	122 ± 76	< 140	01-15-16	EWW- 321	15 ± 70	< 140
04-18-16	EWW- 1899	93 ± 79	< 149	04-18-16	EWW- 1900	1 ± 74	< 149
07-20-16	EWW- 3987	160 ± 81	< 145	07-20-16	EWW- 3988	58 ± 75	< 145
10-20-16	EWW- 5893	56 ± 81	< 156	10-20-16	EWW- 5894	6 ± 78	< 156
Mean ± s.d.		108 ± 44		Mean ± s.d.		20 ± 26	

Sample ID	GW-13 (MW-6)			GW-14A (MW-05A)			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-15-16	EWW- 322	100 ± 75	< 140	01-15-16	EWW- 323	81 ± 74	< 140
04-18-16	EWW- 1901	-1 ± 74	< 149	04-18-16	EWW- 1902	103 ± 79	< 149
07-20-16	EWW- 3989	70 ± 76	< 145	07-20-16	EWW- 3990	236 ± 85	< 145
10-20-16	EWW- 5895	32 ± 79	< 156	10-20-16	EWW- 5896	21 ± 79	< 156
Mean ± s.d.		50 ± 44		Mean ± s.d.		110 ± 91	

Sample ID	GW-15A (MW-4)			GW-15B (MW-4)			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-15-16	EWW- 324	213 ± 81	< 140	01-15-16	EWW- 325	160 ± 78	< 140
04-18-16	EWW- 1903	143 ± 86	< 149	04-18-16	EWW- 1904	72 ± 78	< 149
07-20-16	EWW- 3991	125 ± 79	< 145	07-20-16	EWW- 3992	167 ± 81	< 145
10-20-16	EWW- 5897	171 ± 87	< 156	10-20-16	EWW- 5898	67 ± 81	< 156
Mean ± s.d.		163 ± 38		Mean ± s.d.		116 ± 54	

Sample ID	GW-16 (MW-3)		
Collection Date	Lab Code	Tritium	MDC
01-15-16	EWW- 327	201 ± 80	< 140
04-18-16	EWW- 1905	220 ± 85	< 149
07-20-16	EWW- 3993	181 ± 82	< 145
10-20-16	EWW- 5899	67 ± 81	< 156
Mean ± s.d.		167 ± 69	

[a] Corrected data; sample incorrectly identified as E-06 (LW) in April; resample EWW-2889 result = 4±74, <150 pCi/L.

Table 13. Groundwater Tritium Monitoring Program
(Quarterly Collections)
Units = pCi/L

Quarterly Wells (cont.)

Sample ID	GW-18 (WH 7 Well)		
Collection Date	Lab Code	Tritium	MDC
01-15-16	EWW- 255	-1 ± 70	< 141
04-12-16	EWW- 1558	15 ± 74	< 148
07-14-16	EWW- 3559	41 ± 79	< 147
10-12-16	EWW- 5523	13 ± 75	< 151
Mean ± s.d.		17 ± 18	

Façade Wells

Sample ID	GW-09 1Z-361A			GW-09 1Z-361B			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-22-16	EWW- 334	242 ± 82	< 140	01-22-16	EWW- 335	146 ± 78	< 140
04-19-16	EWW- 2520	295 ± 90	< 152	04-19-16	EWW- 2521	153 ± 83	< 152
05-02-16	EWW- 2522	190 ± 85	< 152	05-02-16	EWW- 2523	45 ± 78	< 152
07-16-16	EWW- 4018	138 ± 80	< 150	07-16-16	EWW- 4019	138 ± 80	< 150
10-15-16	EWW- 5889	211 ± 87	< 156	10-15-16	EWW- 5890	75 ± 79	< 156
Mean ± s.d.		215 ± 58		Mean ± s.d.		112 ± 48	

Sample ID	GW-10 2Z-361A			GW-10 2Z-361B			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
01-22-16	EWW- 336	27 ± 71	< 140	01-22-16	EWW- 337	-25 ± 72	< 148
04-19-16	EWW- 2524	-11 ± 75	< 152	04-20-16	EWW- 2525	43 ± 78	< 152
05-02-16	EWW- 2526	10 ± 76	< 152	07-16-16	EWW- 4021	65 ± 76	< 150
07-16-16	EWW- 4020	29 ± 74	< 150	10-15-16	EWW- 5892	47 ± 78	< 156
10-15-16	EWW- 5891	-50 ± 72	< 156				
Mean ± s.d.		1 ± 33		Mean ± s.d.		32 ± 39	

(Annual Collections)
Units = pCi/L

Bogs

Sample ID	GW-07 (North Bog)			GW-08 EIC Bog			
Collection Date	Lab Code	Tritium	MDC	Collection Date	Lab Code	Tritium	MDC
05-05-16	EWW- 2197	120 ± 81	< 149	05-05-16	EWW- 2198	212 ± 85	< 149

Table 13. Groundwater Tritium Monitoring Program

Units = pCi/L

Manholes

Sample ID		MH Z-065A				MH Z-065B	
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16		NS[a]		04-28-16		NS[a]	
10-28-16		NS[a]		10-28-16		NS[a]	
Mean ± s.d.				Mean ± s.d.			

Sample ID		MH Z-065C				MH Z-065D	
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16		NS[a]		04-28-16		NS[a]	
10-28-16		NS[a]		10-28-16		NS[a]	
Mean ± s.d.				Mean ± s.d.			

Sample ID		MH Z-066A				MH Z-066B	
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-29-16	EW- 2350	234 ± 83	< 146	04-28-16	EW- 2352	218 ± 82	< 146
10-28-16	EW- 6383	227 ± 94	< 177	10-28-16	EW- 6384	102 ± 89	< 177
Mean ± s.d.				Mean ± s.d.			

Sample ID		MH Z-066C				MH Z-066D	
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16	EW- 2353	222 ± 82	< 146	04-28-16	EW- 2354	167 ± 80	< 146
10-28-16	EW- 6385	166 ± 92	< 177	10-28-16	EW- 6387	207 ± 93	< 177
Mean ± s.d.				Mean ± s.d.			

Sample ID		MH Z-067A				MH Z-067B	
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-29-16	EW- 2355	226 ± 83	< 146	04-28-16	EW- 2356	230 ± 83	< 146
10-28-16	EW- 6388	246 ± 95	< 177	10-28-16	EW- 6389	180 ± 92	< 177
Mean ± s.d.				Mean ± s.d.			

[a] "NS" = No sample; not sent.

Manholes (cont.)

Sample ID	MH Z-067C			MH Z-067D			
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16	EW- 2357	192 ± 81	< 146	04-28-16	EW- 2358	190 ± 81	< 146
10-28-16	EW- 6390	126 ± 90	< 177	10-28-16	EW- 6391	224 ± 94	< 177
Mean ± s.d.				Mean ± s.d.			

Sample ID	MH Z-068			MH-1			
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-29-16	EW- 2359	496 ± 95	< 146	04-28-16		NS[a]	
10-28-16	EW- 6392	187 ± 93	< 177	10-28-16		NS[a]	
Mean ± s.d.				Mean ± s.d.			

Sample ID	MH-4			MH-6			
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16		NS[a]		04-28-16		NS[a]	
10-28-16		NS[a]		10-28-16		NS[a]	
Mean ± s.d.				Mean ± s.d.			

Sample ID	MH-7			MH-8			
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16		NS[a]		04-28-16		NS[a]	
10-28-16		NS[a]		10-28-16		NS[a]	
Mean ± s.d.				Mean ± s.d.			

Sample ID	MH-16			MH-2			
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16		NS[a]		04-28-16		NS[a]	
10-28-16		NS[a]		10-28-16		NS[a]	
Mean ± s.d.				Mean ± s.d.			

Sample ID	MH-5A			MH-9			
Collection Date	Lab Code	Tritium	MDC (pCi/L)	Collection Date	Lab Code	Tritium	MDC (pCi/L)
04-28-16		NS[a]		04-28-16		NS[a]	
10-28-16		NS[a]		10-28-16		NS[a]	
Mean ± s.d.				Mean ± s.d.			

[a] "NS" = No sample; not sent.

Table 14. Radioactivity in vegetation samples
Collection: Annual

Sample Description and Concentration (pCi/g wet)

Location	E-F1A	MDC	E-F1B	MDC	E-F2	MDC	
Collection Date	09-15-16		09-15-16		09-15-16		
Lab Code	EVE- 4861		EVE- 4862		EVE- 4863		Req. LLD
Type	Corn		Corn		Corn		
Ratio (wet/dry)	2.24		1.93		2.36		-
Gross Beta	2.82 ± 0.06	< 0.021	2.82 ± 0.06	< 0.018	2.61 ± 0.05	< 0.017	0.25
Be-7	0.010 ± 0.029	< 0.058	-0.006 ± 0.024	< 0.065	0.039 ± 0.029	< 0.064	-
K-40	2.15 ± 0.15	-	1.77 ± 0.14	-	2.00 ± 0.17	-	-
I-131	0.015 ± 0.003	< 0.031	0.002 ± 0.003	< 0.030	-0.011 ± 0.003	< 0.022	0.060
Cs-134	-0.003 ± 0.003	< 0.006	0.001 ± 0.002	< 0.005	0.000 ± 0.003	< 0.006	0.060
Cs-137	0.002 ± 0.003	< 0.005	0.001 ± 0.003	< 0.005	0.000 ± 0.003	< 0.004	0.080
Other (Co-60)	0.000 ± 0.003	< 0.005	0.000 ± 0.003	< 0.005	0.003 ± 0.003	< 0.004	0.060

Location	E-F3		E-F4		E-F5		
Collection Date	09-15-16		09-15-16		09-15-16		
Lab Code	EVE- 4864		EVE- 4865		EVE- 4866		Req. LLD
Type	Corn		Corn		Alfalfa		
Ratio (wet/dry)	2.27		1.75		6.37		-
Gross Beta	3.13 ± 0.06	< 0.021	2.52 ± 0.06	< 0.021	5.65 ± 0.18	< 0.092	0.25
Be-7	0.018 ± 0.017	< 0.043	-0.017 ± 0.021	< 0.043	1.27 ± 0.15	-	-
K-40	2.11 ± 0.13	-	1.79 ± 0.14	-	6.02 ± 0.41	-	-
I-131	-0.008 ± 0.002	< 0.014	-0.002 ± 0.003	< 0.023	0.015 ± 0.006	< 0.033	0.060
Cs-134	-0.001 ± 0.002	< 0.004	0.001 ± 0.002	< 0.004	0.003 ± 0.006	< 0.011	0.060
Cs-137	0.001 ± 0.002	< 0.004	0.000 ± 0.003	< 0.003	0.008 ± 0.006	< 0.011	0.080
Other (Co-60)	0.001 ± 0.002	< 0.004	-0.002 ± 0.003	< 0.003	0.010 ± 0.007	< 0.010	0.060

Location	E-F6		E-F7		E-F8		
Collection Date	09-15-16		09-15-16		09-15-16		
Lab Code	EVE- 4867		EVE- 4868		EVE- 4870		Req. LLD
Type	Alfalfa		Corn		Corn		
Ratio (wet/dry)	7.38		2.40		1.76		-
Gross Beta	4.25 ± 0.11	< 0.041	2.57 ± 0.06	< 0.019	3.05 ± 0.07	< 0.023	0.25
Be-7	1.17 ± 0.17	-	0.066 ± 0.029	< 0.061	-0.018 ± 0.027	< 0.061	-
K-40	5.08 ± 0.38	-	2.31 ± 0.17	-	1.61 ± 0.14	-	-
I-131	-0.005 ± 0.006	< 0.030	-0.002 ± 0.004	< 0.026	-0.010 ± 0.003	< 0.023	0.060
Cs-134	0.000 ± 0.007	< 0.014	0.001 ± 0.003	< 0.006	-0.015 ± 0.003	< 0.006	0.060
Cs-137	0.002 ± 0.007	< 0.012	-0.002 ± 0.004	< 0.006	0.001 ± 0.003	< 0.005	0.080
Other (Co-60)	0.000 ± 0.008	< 0.012	0.001 ± 0.003	< 0.005	0.002 ± 0.003	< 0.005	0.060

Table 14. Radioactivity in vegetation samples
Collection: Annual

Sample Description and Concentration (pCi/g wet)					
		MDC	MDC	MDC	
Location	E-F9				
Collection Date	09-15-16				
Lab Code	EVE- 4871				Req. LLD
Type	Corn				
Ratio (wet/dry)	1.87				-
Gross Beta	3.07 ± 0.07	< 0.026			0.25
Be-7	0.007 ± 0.026	< 0.062			-
K-40	1.77 ± 0.14	-			-
I-131	-0.010 ± 0.003	< 0.020			0.060
Cs-134	0.002 ± 0.003	< 0.005			0.060
Cs-137	0.002 ± 0.003	< 0.006			0.080
Other (Co-60)	0.002 ± 0.003	< 0.004			0.060

Beta Annual Mean ± s.d.	**3.25 ± 0.98**
Be-7 Annual Mean ± s.d.	**0.25 ± 0.51**
K-40 Annual Mean ± s.d.	**2.66 ± 1.55**
I-131 Annual Mean ± s.d.	**-0.001 ± 0.010**
Cs-134 Annual Mean ± s.d.	**-0.001 ± 0.005**
Cs-137 Annual Mean ± s.d.	**0.002 ± 0.003**
Co-60 Annual Mean ± s.d.	**0.002 ± 0.003**

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APPENDIX A

INTERLABORATORY COMPARISON PROGRAM RESULTS

NOTE: Environmental Inc., Midwest Laboratory participates in intercomparison studies administered by Environmental Resources Associates, and serves as a replacement for studies conducted previously by the U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada. Results are reported in Appendix A. TLD Intercomparison results, in-house spikes, blanks, duplicates and mixed analyte performance evaluation program results are also reported. Appendix A is updated four times a year; the complete Appendix is included in March, June, September and December monthly progress reports only.

January, 2016 through December, 2016

Appendix A

Interlaboratory Comparison Program Results

Environmental, Inc., Midwest Laboratory has participated in interlaboratory comparison (crosscheck) programs since the formulation of it's quality control program in December 1971. These programs are operated by agencies which supply environmental type samples containing concentrations of radionuclides known to the issuing agency but not to participant laboratories. The purpose of such a program is to provide an independent check on a laboratory's analytical procedures and to alert it of any possible problems.

Participant laboratories measure the concentration of specified radionuclides and report them to the issuing agency. Several months later, the agency reports the known values to the participant laboratories and specifies control limits. Results consistently higher or lower than the known values or outside the control limits indicate a need to check the instruments or procedures used.

Results in Table A-1 were obtained through participation in the RAD PT Study Proficiency Testing Program administered by Environmental Resources Associates, serving as a replacement for studies conducted previously by the U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

Table A-2 lists results for thermoluminescent dosimeters (TLDs), via irradiation and evaluation by the University of Wisconsin-Madison Radiation Calibration Laboratory at the University of Wisconsin Medical Radiation Research Center.

Table A-3 lists results of the analyses on in-house "spiked" samples for the past twelve months. All samples are prepared using NIST traceable sources. Data for previous years available upon request.

Table A-4 lists results of the analyses on in-house "blank" samples for the past twelve months. Data for previous years available upon request.

Table A-5 lists REMP specific analytical results from the in-house "duplicate" program for the past twelve months. Acceptance is based on the difference of the results being less than the sum of the errors. Complete analytical data for duplicate analyses is available upon request.

The results in Table A-6 were obtained through participation in the Mixed Analyte Performance Evaluation Program.

Results in Table A-7 were obtained through participation in the MRAD PT Study Proficiency Testing Program administered by Environmental Resources Associates, serving as a replacement for studies conducted previously by the Environmental Measurement Laboratory Quality Assessment Program (EML).

Attachment A lists the laboratory precision at the 1 sigma level for various analyses. The acceptance criteria in Table A-3 is set at ± 2 sigma.

Out-of-limit results are explained directly below the result.

Attachment A

ACCEPTANCE CRITERIA FOR "SPIKED" SAMPLES

LABORATORY PRECISION: ONE STANDARD DEVIATION VALUES FOR VARIOUS ANALYSES[a]

Analysis	Level	One standard deviation for single determination
Gamma Emitters	5 to 100 pCi/liter or kg > 100 pCi/liter or kg	5.0 pCi/liter 5% of known value
Strontium-89[b]	5 to 50 pCi/liter or kg > 50 pCi/liter or kg	5.0 pCi/liter 10% of known value
Strontium-90[b]	2 to 30 pCi/liter or kg > 30 pCi/liter or kg	5.0 pCi/liter 10% of known value
Potassium-40	≥ 0.1 g/liter or kg	5% of known value
Gross alpha	≤ 20 pCi/liter > 20 pCi/liter	5.0 pCi/liter 25% of known value
Gross beta	≤ 100 pCi/liter > 100 pCi/liter	5.0 pCi/liter 5% of known value
Tritium	≤ 4,000 pCi/liter > 4,000 pCi/liter	$\pm 1\sigma$ = $169.85 \times (\text{known})^{0.0933}$ 10% of known value
Radium-226,-228	≥ 0.1 pCi/liter	15% of known value
Plutonium	≥ 0.1 pCi/liter, gram, or sample	10% of known value
Iodine-131, Iodine-129[b]	≤ 55 pCi/liter > 55 pCi/liter	6 pCi/liter 10% of known value
Uranium-238, Nickel-63[b] Technetium-99[b]	≤ 35 pCi/liter > 35 pCi/liter	6 pCi/liter 15% of known value
Iron-55[b]	50 to 100 pCi/liter > 100 pCi/liter	10 pCi/liter 10% of known value
Other Analyses [b]	---	20% of known value

[a] From EPA publication, "Environmental Radioactivity Laboratory Intercomparison Studies Program", Fiscal Year, 1981-1982, EPA-600/4-81-004.

[b] Laboratory limit.

TABLE A-1. Interlaboratory Comparison Crosscheck program, Environmental Resource Associates (ERA)[a].
RAD study

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result	ERA Result	Control Limits	Acceptance
ERW-1392	4/4/2016	Sr-89	43.5 ± 4.3	48.2	37.8 - 55.6	Pass
ERW-1392	4/4/2016	Sr-90	27.5 ± 1.9	28.5	20.7 - 33.1	Pass
ERW-1394 [b]	4/4/2016	Ba-133	65.2 ± 3.8	58.8	48.7 - 64.9	Fail
ERW-1394 [c]	4/4/2016	Ba-133	57.8 ± 5.3	58.8	48.7 - 64.9	Pass
ERW-1394	4/4/2016	Cs-134	43.7 ± 3.0	43.3	34.6 - 47.6	Pass
ERW-1394	4/4/2016	Cs-137	86.1 ± 5.3	78.4	70.6 - 88.9	Pass
ERW-1394	4/4/2016	Co-60	108 ± 44	102	91.8 - 114	Pass
ERW-1394	4/4/2016	Zn-65	240 ± 13	214	193 - 251	Pass
ERW-1397	4/4/2016	Gr. Alpha	52.0 ± 2.2	62.7	32.9 - 77.8	Pass
ERW-1397	4/4/2016	Gr. Beta	33.9 ± 1.2	39.2	26.0 - 46.7	Pass
ERW-1400	4/4/2016	I-131	24.7 ± 0.6	26.6	22.1 - 31.3	Pass
ERW-1402	4/4/2016	Ra-226	15.6 ± 0.5	15.2	11.3 - 17.4	Pass
ERW-1402	4/4/2016	Ra-228	5.28 ± 0.76	5.19	3.12 - 6.93	Pass
ERW-1403	4/4/2016	Uranium	4.02 ± 0.42	4.64	3.39 - 5.68	Pass
ERW-1405	4/4/2016	H-3	8,150 ± 270	7,840	6,790 - 8,620	Pass
SPW-2845	7/7/2015	Ba-133	60.3 ± 5.7	64.7	53.9 - 71.2	Pass
SPW-2845	7/7/2015	Cs-134	48.8 ± 9.3	50.1	40.3 - 55.1	Pass
SPW-2845	7/7/2015	Cs-137	101 ± 8	89.8	80.8 - 101	Pass
SPW-2845	7/7/2015	Co-60	65.1 ± 5.8	59.9	53.9 - 68.4	Pass
SPW-2845	7/7/2015	Zn-65	288 ± 29	265	238 - 310	Pass
ERW-3485	7/11/2016	Sr-89	43.3 ± 6.5	53.3	42.3 - 60.9	Pass
ERW-3485	7/11/2016	Sr-90	39.0 ± 2.8	39.2	28.8 - 45.1	Pass
ERW-3487	7/11/2016	Ba-133	83.3 ± 4.9	82.9	69.7 - 91.2	Pass
ERW-3487	7/11/2016	Cs-134	62.5 ± 4.4	65.3	53.1 - 71.8	Pass
ERW-3487	7/11/2016	Cs-137	98.1 ± 5.6	95.2	85.7 - 107	Pass
ERW-3487	7/11/2016	Co-60	122 ± 5	117	105 - 131	Pass
ERW-3487	7/11/2016	Zn-65	124 ± 9	113	102 - 134	Pass
ERW-3490	7/11/2016	Gr. Alpha	46.6 ± 2.2	48.1	25.0 - 60.5	Pass
ERW-3490	7/11/2016	Gr. Beta	26.8 ± 1.1	28.6	18.2 - 36.4	Pass
ERW-3492	7/11/2016	I-131	23.7 ± 1.0	24.9	20.7 - 29.5	Pass
ERW-3493	7/11/2016	Ra-226	12.9 ± 0.4	12.3	9.2 - 14.2	Pass
ERW-3493	7/11/2016	Ra-228	5.8 ± 0.8	5.8	3.5 - 7.6	Pass
ERW-3493	7/11/2016	Uranium	32.8 ± 0.8	25.2	28.4 - 39.3	Pass
ERW-3495	7/11/2016	H-3	12,400 ± 334	12,400	10,800 - 13,600	Pass

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

[b] No reason determined for failure of Ba-133 result.

[c] The result of reanalysis (Compare to original result, footnoted "b" above).

TABLE A-2. Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards). [a b]

			mrem			
Lab Code	Irradiation Date	Description	Delivered Dose	Reported Dose	Performance Quotient (P) [c]	Acceptance [d]
Environmental, Inc.		Group 1				
2016-1	10/7/2016	Spike 1	135.0	148.3	0.10	
2016-1	10/7/2016	Spike 2	135.0	144.3	0.07	
2016-1	10/7/2016	Spike 3	135.0	133.2	-0.01	
2016-1	10/7/2016	Spike 4	135.0	139.6	0.03	
2016-1	10/7/2016	Spike 5	135.0	128.4	-0.05	
2016-1	10/7/2016	Spike 6	135.0	123.9	-0.08	
2016-1	10/7/2016	Spike 7	135.0	124.0	-0.08	
2016-1	10/7/2016	Spike 8	135.0	121.5	-0.10	
2016-1	10/7/2016	Spike 9	135.0	148.3	0.10	
2016-1	10/7/2016	Spike 10	135.0	126.8	-0.06	
2016-1	10/7/2016	Spike 11	135.0	123.3	-0.09	
2016-1	10/7/2016	Spike 12	135.0	137.9	0.02	
2016-1	10/7/2016	Spike 13	135.0	126.0	-0.07	
2016-1	10/7/2016	Spike 14	135.0	127.2	-0.06	
2016-1	10/7/2016	Spike 15	135.0	144.5	0.07	
2016-1	10/7/2016	Spike 16	135.0	140.5	0.04	
2016-1	10/7/2016	Spike 17	135.0	146.0	0.08	
2016-1	10/7/2016	Spike 18	135.0	127.7	-0.05	
2016-1	10/7/2016	Spike 19	135.0	146.8	0.09	
2016-1	10/7/2016	Spike 20	135.0	122.6	-0.09	
2016-1	10/7/2016	Spike 21	135.0	108.6	-0.20	
2016-1	10/7/2016	Spike 22	135.0	119.6	-0.11	
2016-1	10/7/2016	Spike 23	135.0	135.1	0.00	
2016-1	10/7/2016	Spike 24	135.0	116.2	-0.14	
2016-1	10/7/2016	Spike 25	135.0	118.9	-0.12	
2016-1	10/7/2016	Spike 26	135.0	128.5	-0.05	
2016-1	10/7/2016	Spike 27	135.0	115.6	-0.14	
2016-1	10/7/2016	Spike 28	135.0	126.4	-0.06	
2016-1	10/7/2016	Spike 29	135.0	115.0	-0.15	
2016-1	10/7/2016	Spike 30	135.0	147.3	0.09	
Mean (Spike 1-30)				130.4	0.03	Pass
Standard Deviation (Spike 1-30)				11.5	0.09	Pass

[a] Table A-2 assumes 1 roentgen = 1 rem (NRC -Health Physics Questions and Answers 10 CFR Part 20 - Question 96 - Page Last Reviewed/Updated Thursday, October 01, 2015).

[b] TLD's were irradiated by the University of Wisconsin-Madison Radiation Calibration Laboratory following ANSI N13.37 protocol from a known air kerma rate. TLD's were read and the results were submitted by Environmental Inc. to the University of Wisconsin-Madison Radiation Calibration Laboratory for comparison to the delivered dose.

[c] Performance Quotient (P) is calculated as ((reported dose - conventially true value) ÷ conventially true value) where the conventially true value is the delivered dose.

[d] Acceptance is achieved when neither the absolute value of mean of the P values, nor the standard deviation of the P values exceed 0.15.

TABLE A-2 Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards): [a b]

			mrem			
Lab Code	Irradiation Date	Description	Delivered Dose	Reported Dose	Performance Quotient (P) [c]	Acceptance [d]
Environmental, Inc.		Group 2				
2016-2	10/7/2016	Spike 31	87.0	83.0	-0.05	
2016-2	10/7/2016	Spike 32	87.0	88.3	0.01	
2016-2	10/7/2016	Spike 33	87.0	83.1	-0.04	
2016-2	10/7/2016	Spike 34	87.0	81.4	-0.06	
2016-2	10/7/2016	Spike 35	87.0	78.9	-0.09	
2016-2	10/7/2016	Spike 36	87.0	80.3	-0.08	
2016-2	10/7/2016	Spike 37	87.0	101.1	0.16	
2016-2	10/7/2016	Spike 38	87.0	78.3	-0.10	
2016-2	10/7/2016	Spike 39	87.0	86.6	0.00	
2016-2	10/7/2016	Spike 40	87.0	81.8	-0.06	
2016-2	10/7/2016	Spike 41	87.0	84.8	-0.03	
2016-2	10/7/2016	Spike 42	87.0	79.9	-0.08	
2016-2	10/7/2016	Spike 43	87.0	80.8	-0.07	
2016-2	10/7/2016	Spike 44	87.0	80.2	-0.08	
2016-2	10/7/2016	Spike 45	87.0	82.7	-0.05	
2016-2	10/7/2016	Spike 46	87.0	104.0	0.20	
2016-2	10/7/2016	Spike 47	87.0	86.1	-0.01	
2016-2	10/7/2016	Spike 48	87.0	104.0	0.20	
2016-2	10/7/2016	Spike 49	87.0	86.1	-0.01	
2016-2	10/7/2016	Spike 50	87.0	90.8	0.04	
2016-2	10/7/2016	Spike 51	87.0	85.7	-0.01	
2016-2	10/7/2016	Spike 52	87.0	86.5	-0.01	
2016-2	10/7/2016	Spike 53	87.0	86.4	-0.01	
2016-2	10/7/2016	Spike 54	87.0	92.6	0.06	
2016-2	10/7/2016	Spike 55	87.0	88.6	0.02	
2016-2	10/7/2016	Spike 56	87.0	78.9	-0.09	
2016-2	10/7/2016	Spike 57	87.0	82.6	-0.05	
2016-2	10/7/2016	Spike 58	87.0	80.6	-0.07	
2016-2	10/7/2016	Spike 59	87.0	89.9	0.03	
2016-2	10/7/2016	Spike 60	87.0	85.0	-0.02	
Mean (Spike 31-60)				86.0	0.01	Pass
Standard Deviation (Spike 31-60)				6.9	0.08	Pass

[a] Table A-2 assumes 1 roentgen = 1 rem (NRC -Health Physics Questions and Answers 10 CFR Part 20 - Question 96 - Page Last Reviewed/Updated Thursday, October 01, 2015).

[b] TLD's were irradiated by the University of Wisconsin-Madison Radiation Calibration Laboratory following ANSI N13.37 protocol from a known air kerma rate. TLD's were read and the results were submitted by Environmental Inc. to the University of Wisconsin-Madison Radiation Calibration Laboratory for comparison to the delivered dose.

[c] Performance Quotient (P) is calculated as ((reported dose - conventially true value) ÷ conventially true value) where the conventially true value is the delivered dose.

[d] Acceptance is achieved when neither the absolute value of mean of the P values, nor the standard deviation of the P values exceed 0.15.

TABLE A-3. In-House "Spiked" Samples

Lab Code [b]	Date	Concentration [a] Analysis	Laboratory results 2s, n=1 [c]	Known Activity	Control Limits [d]	Acceptance
SPW-290	1/21/2016	Sr-90	38.6 ± 1.5	37.3	22.4 - 52.2	Pass
SPW-292	1/21/2016	Sr-90	35.8 ± 1.6	37.3	22.4 - 52.2	Pass
SPW-294	1/21/2016	C-14	4,689 ± 18	4,735	2,841 - 6,629	Pass
SPW-414	2/1/2016	Ra-228	18.4 ± 2.2	17.7	10.6 - 24.8	Pass
W-020416	2/4/2016	Gr. Alpha	20.8 ± 0.4	20.1	12.0 - 28.1	Pass
W-020416	2/4/2016	Gr. Beta	29.7 ± 0.3	28.9	17.3 - 40.4	Pass
W-021716	2/17/2016	Ra-226	17.9 ± 0.5	16.7	10.0 - 23.4	Pass
W-030716	3/7/2016	Gr. Alpha	16.3 ± 0.8	20.1	12.0 - 28.1	Pass
W-030716	3/7/2016	Gr. Beta	27.0 ± 0.7	28.9	17.3 - 40.4	Pass
SPDW-70046	3/29/2016	Ra-226	13.4 ± 0.4	16.7	10.0 - 23.4	Pass
SPW-1163	3/22/2016	Ra-228	4.2 ± 0.7	4.4	2.6 - 6.2	Pass
SPW-1235	3/29/2016	Gr. Alpha	21.0 ± 0.4	20.1	12.0 - 28.1	Pass
SPW-1235	3/29/2016	Gr. Beta	29.4 ± 0.3	28.9	17.3 - 40.4	Pass
SPW-1739	4/21/2016	Ra-228	16.2 ± 2.0	17.7	10.6 - 24.8	Pass
SPW-2052	4/21/2016	Ra-226	16.0 ± 0.5	16.7	10.0 - 23.4	Pass
W-042616	4/21/2016	Fe-55	1,519 ± 61	1,482	889 - 2,075	Pass
SPW-1823	4/23/2016	Gr. Alpha	21.0 ± 0.4	20.1	12.0 - 28.1	Pass
SPW-1823	4/23/2016	Gr. Beta	26.6 ± 0.3	28.9	17.3 - 40.4	Pass
SPW-1998	4/29/2016	Cs-134	35.9 ± 6.0	36.2	21.7 - 50.6	Pass
SPW-1998	4/29/2016	Cs-137	82.5 ± 7.6	71.9	43.1 - 100.6	Pass
SPW-2097	5/3/2016	H-3	3,349 ± 184	3,280	1,968 - 4,592	Pass
SPW-2132	5/4/2016	H-3	3,174 ± 178	3,280	1,968 - 4,592	Pass
SPW-2229	5/7/2016	H-3	3,182 ± 179	3,280	1,968 - 4,592	Pass
SPW-2313	5/13/2016	H-3	3,183 ± 179	3,280	1,968 - 4,592	Pass
SPW-2341	5/13/2016	H-3	3,201 ± 178	3,280	1,968 - 4,592	Pass
SPW-2374	5/14/2016	H-3	3,037 ± 175	3,280	1,968 - 4,592	Pass
SPW-2411	5/17/2016	Sr-90	37.3 ± 1.6	37.3	22.4 - 52.2	Pass
SPW-2455	5/19/2016	Gr. Alpha	19.3 ± 0.4	20.1	12.0 - 28.1	Pass
SPW-2455	5/19/2016	Gr. Beta	28.6 ± 0.3	28.9	17.3 - 40.4	Pass
SPW-2457	5/19/2016	U-238	48.2 ± 2.4	41.7	25.0 - 58.4	Pass
SPW-2504	5/20/2016	H-3	3,181 ± 178	3,280	1,968 - 4,592	Pass
SPW-2528	5/23/2016	H-3	2,998 ± 175	3,280	1,968 - 4,592	Pass
SPW-2566	5/24/2016	Gr. Alpha	19.8 ± 0.5	20.1	12.0 - 28.1	Pass
SPW-2566	5/24/2016	Gr. Beta	30.4 ± 0.3	28.9	17.3 - 40.4	Pass
W-053116	4/29/2016	Cs-134	34.0 ± 5.0	36.2	21.7 - 50.6	Pass
W-053116	4/29/2016	Cs-137	78.8 ± 7.0	71.9	43.1 - 100.6	Pass
SPW-2704	6/1/2016	Sr-90	38.0 ± 1.6	37.3	22.4 - 52.2	Pass
SPW-2719	6/2/2016	Ra-228	18.1 ± 2.1	17.7	10.6 - 24.8	Pass
SPW-2749	6/3/2016	H-3	3,197 ± 180	3,280	1,968 - 4,592	Pass
SPW-2843	6/7/2016	H-3	3,133 ± 179	3,280	1,968 - 4,592	Pass
SPW-3227	6/17/2016	Ra-226	18.6 ± 0.4	16.7	10.0 - 23.4	Pass
W-061716	4/29/2016	Cs-134	37.3 ± 8.2	36.2	21.7 - 50.6	Pass
W-061716	4/29/2016	Cs-137	79.7 ± 10.8	71.9	43.1 - 100.6	Pass
SPW-3240	6/28/2016	Gr. Alpha	25.3 ± 0.5	20.1	12.0 - 28.1	Pass
SPW-3240	6/28/2016	Gr. Beta	27.1 ± 0.3	28.9	17.3 - 40.4	Pass

TABLE A-3. In-House "Spiked" Samples

Lab Code [b]	Date	Concentration [a] Analysis	Laboratory results 2s, n=1 [c]	Known Activity	Control Limits [d]	Acceptance
SPW-3241	7/1/2016	H-3	8,821 ± 283	8,650	5,190 - 12,110	Pass
SPW-3309	7/1/2016	H-3	8,619 ± 278	8,650	5,190 - 12,110	Pass
SPW-3313	7/1/2016	Ra-228	16.6 ± 2.0	17.7	10.6 - 24.8	Pass
SPW-3328	7/6/2016	Sr-89	13.4 ± 9.2	14.8	8.9 - 20.7	Pass
SPW-3328	7/6/2016	Sr-90	12.3 ± 1.3	11.4	6.8 - 16.0	Pass
SPAP-3365	7/7/2016	Gr. Beta	39.7 ± 0.1	42.2	25.3 - 59.0	Pass
SPAP-3367	7/7/2016	Cs-134	1.2 ± 0.7	1.2	0.7 - 1.7	Pass
SPAP-3367	7/7/2016	Cs-137	94.4 ± 2.8	94.0	56.4 - 131.6	Pass
SPW-3370	7/7/2016	C-14	4,444 ± 17	4,735	2,841 - 6,629	Pass
SPW-3373	7/7/2016	Ni-63	446 ± 5	401	241 - 561	Pass
SPW-3375	7/7/2016	Tc-99	545 ± 9	539	324 - 755	Pass
SPW-3519	7/14/2016	H-3	8,621 ± 279	8650	5,190 - 12,110	Pass
SPW-3688	6/29/2016	Ra-226	17.5 ± 0.4	16.7	10.0 - 23.4	Pass
SPW-3711	7/20/2016	H-3	44,368 ± 612	43,766	26,260 - 61,273	Pass
SPW-3774	7/22/2016	H-3	45,259 ± 619	43,766	26,260 - 61,273	Pass
SPW-3776	7/22/2016	Gr. Alpha	23.3 ± 0.5	20.1	12.0 - 28.1	Pass
SPW-3776	7/22/2016	Gr. Beta	27.5 ± 0.3	28.9	17.3 - 40.4	Pass
SPW-3884	7/26/2016	H-3	45,850 ± 623	43,766	26,260 - 61,273	Pass
SPW-3950	7/28/2016	Ra-228	17.8 ± 1.8	16.7	10 - 23	Pass
SPW-3982	7/29/2016	H-3	45,273 ± 619	43,766	26,260 - 61,273	Pass
W-073016	4/29/2016	Cs-134	36.5 ± 6.1	36.2	21.7 - 50.6	Pass
W-073016	4/29/2016	Cs-137	80.6 ± 7.5	71.9	43.1 - 100.6	Pass
SPW-4134	8/4/2016	Ra-228	5.5 ± 0.8	6.7	4.0 - 9.3	Pass
SPW-4340	8/17/2016	Ra-228	19.9 ± 2.0	16.7	10.0 - 23.4	Pass
SPW-4386	7/15/2016	Ra-226	18.0 ± 0.4	16.7	10.0 - 23.4	Pass
W-082716	4/29/2016	Ra-228	32.5 ± 5.2	36.2	21.7 - 50.6	Pass
W-082716	4/29/2016	Ra-226	78.5 ± 8.3	71.9	43.1 - 100.6	Pass
SPW-4642	9/6/2016	U-238	45.8 ± 2.5	41.7	25.0 - 58.4	Pass
SPW-4999	9/26/2016	Sr-90	35.1 ± 2.2	36.8	22.1 - 51.5	Pass
SPW-5091	9/12/2016	Ra-226	18.2 ± 0.4	16.7	10.0 - 23.4	Pass
W-092716	4/29/2016	Cs-134	37.3 ± 11.8	36.2	21.7 - 50.6	Pass
W-092716	4/29/2016	Cs-137	78.3 ± 11.2	71.9	43.1 - 100.6	Pass
SPW-5165	9/30/2016	Gr. Alpha	22.2 ± 0.4	20.1	12.0 - 28.1	Pass
SPW-5165	9/30/2016	Gr. Beta	27.2 ± 0.3	28.9	17.3 - 40.4	Pass
SPW-5426	9/28/2016	Ra-226	18.2 ± 0.4	16.7	10.0 - 23.4	Pass
SPW-5510	10/18/2016	H-3	44,398 ± 618	43,766	26,260 - 61273	Pass
SPW-5553	10/19/2016	U-238	50.0 ± 2.6	41.7	25.0 - 58.4	Pass
SPW-5555	10/19/2016	Ra-228	17.4 ± 1.9	16.7	10.0 - 23.4	Pass
SPW-5612	10/20/2016	H-3	44,681 ± 622	43,766	26,260 - 61,273	Pass
SPW-5741	10/25/2016	H-3	44,946 ± 624	43,766	26,260 - 61,273	Pass
SPU-5833	10/26/2016	H-3	10,018 ± 946	8,622	5,173 - 12,071	Pass
SPW-5862	10/28/2016	H-3	18,061 ± 374	17,244	10,346 - 24,141	Pass
W-103116	4/29/2016	Cs-134	36.0 ± 4.6	36.2	21.7 - 50.6	Pass
W-103116	4/29/2016	Cs-137	81.1 ± 7.3	71.9	43.1 - 100.6	Pass

TABLE A-3. In-House "Spiked" Samples

Lab Code [b]	Date	Concentration [a] Analysis	Laboratory results 2s, n=1 [c]	Known Activity	Control Limits [d]	Acceptance
SPW-5984	11/2/2016	H-3	17,727 ± 399	17,244	10,346 - 24,141	Pass
SPW-6008	11/4/2016	H-3	17,854 ± 402	17,244	10,346 - 24,141	Pass
SPW-6124	11/8/2016	Ra-228	14.4 ± 1.9	16.0	9.6 - 22.4	Pass
SPW-6132	11/9/2016	H-3	18,135 ± 374	17,243	10,346 - 24,140	Pass
SPW-6135	10/12/2016	Ra-226	18.9 ± 0.4	16.7	10.0 - 23.4	Pass
SPW-6146	11/10/2016	H-3	17,488 ± 398	17,243	10,346 - 24,140	Pass
SPW-6222	11/12/2016	H-3	17,787 ± 408	17,243	10,346 - 24,140	Pass
SPW-6318	11/16/2016	H-3	17,379 ± 408	17,243	10,346 - 24,140	Pass
SPW-6349	11/17/2016	H-3	17,893 ± 371	17,243	10,346 - 24,140	Pass
SPW-6424	11/19/2016	H-3	18,258 ± 379	17,243	10,346 - 24,140	Pass
W-112616	4/29/2016	Cs-134	35.0 ± 6.0	36.2	21.7 - 50.6	Pass
W-112616	4/29/2016	Cs-137	75.0 ± 7.1	71.9	43.1 - 100.6	Pass
SPW-6456	11/28/2016	Sr-90	41.9 ± 2.5	36.8	22.1 - 51.5	Pass
SPW-6486	11/30/2016	Sr-90	35.6 ± 2.2	36.6	21.9 - 51.2	Pass
SPW-6490	11/29/2016	Ra-226	18.8 ± 0.4	16.7	10.0 - 23.4	Pass
SPW-6519	11/30/2016	Ni-63	438 ± 4	400	240 - 560	Pass
SPW-6527	12/1/2016	U-238	49.5 ± 2.5	41.7	25.0 - 58.4	Pass
SPW-6616	12/3/2016	H-3	18,018 ± 374	17,243	10,346 - 24,140	Pass
SPW-6669	12/5/2016	H-3	18,237 ± 377	17,243	10,346 - 24,140	Pass
SPW-6735	12/9/2016	H-3	17,939 ± 396	17,243	10,346 - 24,140	Pass
SPW-6880	12/21/2016	H-3	17,835 ± 396	17,243	10,346 - 24,140	Pass
SPW-6947	12/22/2016	Ni-63	450 ± 4	400	240 - 560	Pass
W-122316	4/29/2016	Cs-134	36.0 ± 2.2	36.2	21.7 - 50.6	Pass
W-122316	4/29/2016	Cs-134	76.1 ± 2.9	71.9	43.1 - 100.6	Pass
SPW-6948	12/30/2016	H-3	17,999 ± 398	17,243	10,346 - 24,140	Pass
SPW-6974	12/29/2016	Ra-226	17.6 ± 0.4	16.7	10.0 - 23.4	Pass

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m3), charcoal (pCi/charcoal canister), and solid samples (pCi/kg).

[b] Laboratory codes : W (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).

[c] Results are based on single determinations.

[d] Control limits are established from the precision values listed in Attachment A of this report, adjusted to ± 2s.

NOTE: For fish, gelatin is used for the spike matrix. For vegetation, cabbage is used for the spike matrix.

TABLE A-4. In-House "Blank" Samples

Lab Code	Sample Type	Date	Analysis[b]	Concentration [a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[c]	Criteria (4.66 σ)
SPW-289	Water	1/21/2016	Sr-90	0.55	0.28 ± 0.29	1
SPW-291	Water	1/21/2016	Sr-90	0.61	0.15 ± 0.30	1
SPW-293	Water	1/21/2016	C-14	147	-12 ± 89	200
SPW-413	Water	2/1/2016	Ra-228	0.86	1.86 ± 0.60	2
W-020416	Water	2/4/2016	Gr. Alpha	0.43	-0.17 ± 0.28	2
W-020416	Water	2/4/2016	Gr. Beta	0.73	0.36 ± 0.53	4
W-020916	Water	2/9/2016	Ra-226	0.02	0.01 ± 0.01	2
W-030716	Water	3/7/2016	Gr. Alpha	0.90	-0.36 ± 0.32	2
W-030716	Water	3/7/2016	Gr. Beta	1.59	-0.62 ± 0.71	4
SPDW-70045	Water	3/29/2016	Ra-226	0.03	0.01 ± 0.02	2
SPDW-1234	Water	3/30/2016	Gr. Alpha	0.44	-0.05 ± 0.30	2
SPDW-1234	Water	3/30/2016	Gr. Beta	0.79	-0.54 ± 0.54	4
SPW-1738	Water	4/21/2016	Ra-228	1.05	0.13 ± 0.50	2
SPW-1822	Water	4/23/2016	Gr. Alpha	0.50	-0.18 ± 0.33	2
SPW-1822	Water	4/23/2016	Gr. Beta	0.08	-0.35 ± 0.51	4
SPW-2051	Water	4/12/2016	Ra-226	0.02	0.03 ± 0.02	2
SPW-2069	Water	5/3/2016	I-131	0.15	0.06 ± 0.09	1
SPW-2133	Water	5/4/2016	H-3	148	55 ± 76	200
SPW-2230	Water	5/7/2016	H-3	149	-11 ± 73	200
SPW-2314	Water	5/13/2016	H-3	150	-29 ± 72	200
SPW-2342	Water	5/13/2016	H-3	143	50 ± 74	200
SPW-2364	Water	5/13/2016	I-131	0.22	-0.03 ± 0.12	1
SPW-2375	Water	5/14/2016	H-3	146	1 ± 70	200
SPW-2410	Water	5/17/2016	Sr-90	0.59	0.10 ± 0.29	1
SPW-2454	Water	5/19/2016	Gr. Alpha	0.47	-0.21 ± 0.31	2
SPW-2454	Water	5/19/2016	Gr. Beta	0.77	-0.49 ± 0.52	4
SPW-2456	Water	5/19/2016	U-238	0.15	0.00 ± 0.09	1
SPW-2485	Water	5/20/2016	I-131	0.18	-0.01 ± 0.10	1
SPW-2505	Water	5/20/2016	H-3	144	64 ± 75	200
SPW-2529	Water	5/23/2016	H-3	152	-3 ± 75	200
SPW-2530	Water	5/23/2016	Ra-228	0.96	-0.12 ± 0.43	2
SPW-2565	Water	5/24/2016	Gr. Alpha	0.47	0.03 ± 0.33	2
SPW-2565	Water	5/24/2016	Gr. Beta	0.77	-0.23 ± 0.53	4
SPW-2703	Water	6/1/2016	Sr-89	0.68	-0.13 ± 0.50	5
SPW-2703	Water	6/1/2016	Sr-90	0.55	0.11 ± 0.27	1
SPW-2718	Water	6/2/2016	Ra-228	0.67	0.23 ± 0.34	2
SPW-2720	Water	6/2/2016	I-131	0.16	0.01 ± 0.09	1
SPW-2750	Water	6/3/2016	H-3	151	-31 ± 73	200
SPW-2844	Water	6/7/2016	H-3	148	-55 ± 75	200
SPMI-2959	Milk	6/14/2016	I-131	0.16	0.09 ± 0.10	1
SPW-3137	Water	6/23/2016	I-131	0.15	-0.03 ± 0.08	1
SPW-3226	Water	6/17/2016	Ra-226	0.02	-0.01 ± 0.04	2
SPW-3239	Water	6/28/2016	Gr. Alpha	0.40	-0.15 ± 0.26	2
SPW-3239	Water	6/28/2016	Gr. Beta	0.73	0.14 ± 0.52	4
SPW-3687	Water	6/29/2016	Ra-226	0.04	0.03 ± 0.03	2

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m^3), charcoal (pCi/charcoal canister), and solid samples (pCi/g).

[b] I-131(G); iodine-131 as analyzed by gamma spectroscopy.

[c] Activity reported is a net activity result.

TABLE A-4. In-House "Blank" Samples

Lab Code	Sample Type	Date	Analysis[b]	Concentration [a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[c]	Criteria (4.66 σ)
SPW-3312	Water	7/1/2016	Ra-228	0.67	0.35 ± 0.35	2
SPW-3327	Water	7/6/2016	Sr-89	0.67	0.51 ± 0.51	5
SPW-3327	Water	7/6/2016	Sr-90	0.60	-0.14 ± 0.26	1
SPAP-3364	AP	7/7/2016	Gr.Beta	0.002	0.005 ± 0.001	0.01
SPW-3370	Water	7/7/2016	C-14	115	49 ± 71	200
SPW-3372	Water	7/7/2016	Ni-63	122	115 ± 76	200
SPW-3374	Water	7/7/2016	Tc-99	6.07	1.00 ± 3.70	10
SPW-3710	Water	7/20/2016	H-3	147	35 ± 75	200
SPW-3775	Water	7/22/2016	Gr. Alpha	0.73	0.41 ± 0.53	2
SPW-3775	Water	7/22/2016	Gr. Beta	0.45	-0.14 ± 0.30	4
SPW-3884	Water	7/26/2016	H-3	151	-1 ± 73	200
SPW-3949	Water	7/28/2016	Ra-228	0.76	0.32 ± 0.39	2
SPW-3982	Water	7/29/2016	H-3	145	49 ± 75	200
SPW-4133	Water	8/4/2016	Ra-228	0.80	0.26 ± 0.40	2
SPW-4257	Water	8/11/2016	I-131	0.17	-0.01 ± 0.10	1
SPW-4339	Water	8/17/2016	Ra-228	0.73	0.36 ± 0.39	2
SPW-4385	Water	7/15/2016	Ra-226	0.09	0.75 ± 0.09	2
SPW-4641	Water	9/6/2016	U-238	0.21	0.00 ± 0.13	1
SPW-4684	Water	9/8/2016	H-3	151	48 ± 78	200
SPW-4872	Water	9/16/2016	I-131	0.21	0.05 ± 0.11	1
SPW-4998	Water	9/26/2016	Sr-89	0.54	0.06 ± 0.39	5
SPW-4998	Water	9/26/2016	Sr-90	0.53	-0.03 ± 0.24	1
SPW-5090	Water	8/19/2016	Ra-226	0.03	0.03 ± 0.02	2
SPW-5164	Water	9/30/2016	Gr. Alpha	0.46	-0.05 ± 0.32	2
SPW-5164	Water	9/30/2016	Gr. Beta	0.74	-0.02 ± 0.52	4
SPW-5425	Water	9/28/2016	Ra-226	0.02	0.07 ± 0.05	2
SPW-5323	Water	10/7/2016	H-3	157	-12 ± 75	200
SPW-5552	Water	10/19/2016	U-238	0.18	0.00 ± 0.11	1
SPW-5554	Water	10/19/2016	Ra-228	0.72	0.22 ± 0.36	2
SPW-5611	Water	10/20/2016	H-3	153	67 ± 80	200
SPW-5613	Water	10/21/2016	Gr. Alpha	0.76	-0.55 ± 0.51	2
SPW-5613	Water	10/21/2016	Gr. Beta	0.42	0.02 ± 0.29	4
SPW-5740	Water	10/25/2016	H-3	154	-2 ± 72	200
SPW-5743	Water	10/25/2016	Sr-90	1.26	0.72 ± 0.67	1
SPW-5861	Water	10/28/2016	H-3	179	129 ± 91	200
SPW-5983	Water	11/2/2016	H-3	156	8 ± 78	200
SPW-6007	Water	11/4/2016	H-3	156	-34 ± 73	200
SPW-6131	Water	11/9/2016	H-3	180	80 ± 92	200
SPW-6134	Water	10/12/2016	Ra-226	0.05	-0.02 ± 0.12	2
SPW-6145	Water	11/10/2016	H-3	171	-46 ± 80	200
SPW-6317	Water	11/16/2016	H-3	180	-43 ± 82	200
SPW-6348	Water	11/17/2016	H-3	182	-45 ± 88	200
SPW-6423	Water	11/19/2016	H-3	181	8 ± 95	200
SPW-6455	Water	11/28/2016	Sr-89	0.58	-0.15 ± 0.46	5
SPW-6455	Water	11/28/2016	Sr-90	0.67	0.09 ± 0.32	1
SPW-6489	Water	11/29/2016	Ra-226	0.03	0.03 ± 0.02	2

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m^3), charcoal (pCi/charcoal canister), and solid samples (pCi/g).

[b] I-131(G); iodine-131 as analyzed by gamma spectroscopy.

[c] Activity reported is a net activity result.

TABLE A-4. In-House "Blank" Samples

Lab Code	Sample Type	Date	Analysis[b]	Concentration [a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[c]	Criteria (4.66 σ)
SPW-6529	Water	12/1/2016	I-131	0.18	-0.03 ± 0.10	1
SPW-6616	Water	12/3/2016	H-3	180	72 ± 92	200
SPW-6670	Water	12/5/2016	H-3	174	28 ± 92	200
SPW-6735	Water	12/9/2016	H-3	152	2 ± 73	200
SPW-6792	Water	12/15/2016	I-131	0.17	0.03 ± 0.12	1
SPW-6819	Water	12/16/2016	H-3	158	14 ± 77	200
SPW-6879	Water	12/21/2016	H-3	147	80 ± 75	200
SPW-6947	Water	12/22/2016	Ni-63	93	26 ± 57	200
SPW-6973	Water	12/29/2016	Ra-226	0.03	0.03 ± 0.02	2

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m^3), charcoal (pCi/charcoal canister), and solid samples (pCi/g).

[b] I-131(G); iodine-131 as analyzed by gamma spectroscopy.

[c] Activity reported is a net activity result.

TABLE A-5. In-House "Duplicate" Samples

			Concentration [a]			
Lab Code	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
AP-010416	1/4/2016	Gr. Beta	0.044 ± 0.006	0.051 ± 0.006	0.047 ± 0.004	Pass
SPS-62, 63	1/7/2016	K-40	21.1 ± 1.9	21.2 ± 2.1	21.2 ± 1.4	Pass
WW-125, 126	1/7/2016	H-3	659 ± 102	748 ± 106	703 ± 74	Pass
SPS-199, 200	1/7/2016	Cs-137	0.09 ± 0.02	0.08 ± 0.03	0.08 ± 0.02	Pass
SPS-199, 200	1/7/2016	K-40	7.60 ± 0.60	8.62 ± 0.62	8.11 ± 0.43	Pass
AP-011116	1/11/2016	Gr. Beta	0.024 ± 0.005	0.027 ± 0.005	0.026 ± 0.003	Pass
AP-011216	1/12/2016	Gr. Beta	0.030 ± 0.004	0.034 ± 0.004	0.032 ± 0.003	Pass
WW-262, 263	1/14/2016	H-3	153 ± 78	141 ± 78	147 ± 55	Pass
WW-346, 347	1/14/2016	H-3	1,036 ± 117	959 ± 115	997 ± 82	Pass
WW-283, 284	1/18/2016	H-3	437 ± 92	427 ± 91	432 ± 65	Pass
AP-011916	1/19/2016	Gr. Beta	0.042 ± 0.005	0.037 ± 0.004	0.040 ± 0.003	Pass
AP-012016	1/20/2016	Gr. Beta	0.023 ± 0.003	0.030 ± 0.004	0.027 ± 0.002	Pass
AP-020116	2/1/2016	Gr. Beta	0.023 ± 0.005	0.023 ± 0.005	0.023 ± 0.004	Pass
SWU-472, 473	2/2/2016	Gr. Beta	4.37 ± 0.47	4.60 ± 0.49	4.49 ± 0.34	Pass
SG-493, 494	2/6/2016	Ac-228	2.10 ± 0.20	2.13 ± 0.20	2.12 ± 0.14	Pass
SG-493, 494	2/6/2016	K-40	5.79 ± 0.57	5.50 ± 0.69	5.65 ± 0.45	Pass
SG-493, 494	2/6/2016	Pb-214	1.84 ± 0.11	1.91 ± 0.11	1.88 ± 0.08	Pass
AP-020816	2/8/2016	Gr. Beta	0.020 ± 0.004	0.019 ± 0.004	0.020 ± 0.003	Pass
AP-020916	2/9/2016	Be-7	0.032 ± 0.005	0.041 ± 0.006	0.036 ± 0.004	Pass
SPS-619, 620	2/18/2016	K-40	20.0 ± 1.8	19.1 ± 1.6	19.5 ± 1.2	Pass
WW-640, 641	2/18/2016	H-3	90.1 ± 75.0	153.6 ± 78.4	121.8 ± 54.2	Pass
AP-021916	2/19/2016	Gr. Beta	0.021 ± 0.003	0.025 ± 0.004	0.023 ± 0.002	Pass
WW-822, 823	2/26/2016	H-3	2,770 ± 173	2,974 ± 178	2,872 ± 124	Pass
DW-70010, 70011	2/29/2016	Ra-226	4.88 ± 0.29	4.93 ± 0.28	4.91 ± 0.20	Pass
DW-70010, 70011	2/29/2016	Ra-228	3.00 ± 0.77	1.90 ± 0.62	2.45 ± 0.49	Pass
SW-934, 935	3/1/2016	Gr. Beta	0.94 ± 0.52	1.36 ± 0.60	1.15 ± 0.40	Pass
SPS-913, 914	3/3/2016	Cs-137	0.08 ± 0.03	0.10 ± 0.03	0.09 ± 0.02	Pass
SPS-913, 914	3/3/2016	K-40	17.45 ± 0.94	16.83 ± 0.95	17.14 ± 0.67	Pass
SPS-913, 914	3/3/2016	Ra-226	1.02 ± 0.08	1.13 ± 0.17	1.07 ± 0.09	Pass
SPS-913, 914	3/3/2016	Ra-228	1.09 ± 0.15	1.13 ± 0.17	1.11 ± 0.11	Pass
AP-030716	3/7/2016	Gr. Beta	0.018 ± 0.005	0.021 ± 0.005	0.019 ± 0.003	Pass
F-1303,1304	3/7/2016	K-40	3.320 ± 0.475	3.508 ± 0.396	3.414 ± 0.309	Pass
SG-976, 977	3/8/2016	Ra-226	6.75 ± 0.25	6.28 ± 0.22	6.52 ± 0.17	Pass
SG-976, 977	3/8/2016	Ra-228	9.21 ± 0.49	9.09 ± 0.49	9.15 ± 0.35	Pass
PM-1094, 1095	3/9/2016	K-40	14.01 ± 0.68	14.47 ± 0.72	14.24 ± 0.49	Pass
MI-1042,1043	3/7/2016	K-40	1,684 ± 124	1,804 ± 119	1,744 ± 86	Pass
DW-70023, 70024	3/7/2016	Ra-226	3.40 ± 0.43	2.68 ± 0.35	3.04 ± 0.28	Pass
DW-70023, 70024	3/7/2016	Ra-228	4.46 ± 0.83	5.74 ± 0.94	5.10 ± 0.63	Pass
DW-70014, 70015	3/7/2016	Gr. Alpha	13.38 ± 1.58	11.40 ± 1.43	12.39 ± 1.07	Pass
DW-70026, 70027	3/7/2016	Gr. Alpha	3.46 ± 0.79	3.08 ± 0.74	3.27 ± 0.54	Pass
DW-70038, 70039	3/8/2016	Gr. Alpha	1.14 ± 0.89	1.73 ± 0.95	1.44 ± 0.65	Pass
DW-70035, 70036	3/8/2016	Ra-226	0.47 ± 0.10	0.45 ± 0.09	0.46 ± 0.07	Pass
DW-70035, 70036	3/8/2016	Ra-228	0.56 ± 0.45	0.47 ± 0.44	0.52 ± 0.31	Pass
AP-031516	3/15/2016	Gr. Beta	0.014 ± 0.003	0.016 ± 0.004	0.015 ± 0.002	Pass
AP-032116	3/21/2016	Gr. Beta	0.014 ± 0.004	0.020 ± 0.004	0.017 ± 0.003	Pass
AP-1218,1219	3/24/2016	Be-7	0.135 ± 0.065	0.167 ± 0.081	0.151 ± 0.052	Pass
AP-1719,1720	3/28/2016	Be-7	0.075 ± 0.008	0.076 ± 0.007	0.076 ± 0.005	Pass
AP-033016	3/30/2016	Gr. Beta	0.023 ± 0.004	0.025 ± 0.004	0.024 ± 0.003	Pass
SPS-1260, 1261	3/30/2016	K-40	18.00 ± 1.92	19.67 ± 1.77	18.84 ± 1.30	Pass
XW-1467, 1468	3/30/2016	H-3	310 ± 87	295 ± 86	303 ± 61	Pass
XWW-1530, 1531	3/30/2016	H-3	198 ± 84	162 ± 82	180 ± 59	Pass
AP-1827, 1828	3/30/2016	Be-7	0.069 ± 0.011	0.072 ± 0.011	0.071 ± 0.008	Pass
AP-1323,1324	3/31/2016	Be-7	0.206 ± 0.120	0.197 ± 0.091	0.202 ± 0.076	Pass
LW-1446,1447	3/31/2016	Gr. Beta	2.36 ± 0.93	2.23 ± 1.01	2.29 ± 0.69	Pass

TABLE A-5. In-House "Duplicate" Samples

			Concentration [a]			
Lab Code	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
WW-1740,1741	4/2/2016	H-3	21,162 ± 120	21,091 ± 427	21,126 ± 222	Pass
SPS-1344, 1345	4/4/2016	K-40	17.98 ± 0.93	17.14 ± 0.96	17.56 ± 0.67	Pass
SPS-1344, 1345	4/4/2016	Pb-214	1.12 ± 0.09	1.04 ± 0.08	1.08 ± 0.06	Pass
SPS-1344, 1345	4/4/2016	Ac-228	1.23 ± 0.15	1.33 ± 0.19	1.28 ± 0.12	Pass
SPS-1344, 1345	4/4/2016	Cs-137	0.13 ± 0.03	0.13 ± 0.03	0.13 ± 0.02	Pass
P-1509,1510	4/8/2016	H-3	1,084 ± 120	1,038 ± 119	1,061 ± 85	Pass
AP-041116	4/11/2016	Gr. Beta	0.020 ± 0.004	0.019 ± 0.004	0.019 ± 0.003	Pass
SS-1551,1552	4/12/2016	Gr. Beta	8.71 ± 1.11	8.88 ± 1.13	8.80 ± 0.79	Pass
SS-1551,1552	4/12/2016	K-40	3.50 ± 0.25	3.06 ± 0.28	3.28 ± 0.19	Pass
SS-1551,1552	4/12/2016	Tl-208	0.05 ± 0.02	0.05 ± 0.02	0.05 ± 0.01	Pass
SS-1551,1552	4/12/2016	Bi-214	0.10 ± 0.02	0.09 ± 0.02	0.10 ± 0.02	Pass
SS-1551,1552	4/12/2016	Pb-212	0.13 ± 0.02	0.11 ± 0.02	0.12 ± 0.01	Pass
SS-1551,1552	4/12/2016	Ra-226	0.35 ± 0.17	0.30 ± 0.17	0.32 ± 0.12	Pass
SS-1551,1552	4/12/2016	Ac-228	0.16 ± 0.05	0.17 ± 0.05	0.17 ± 0.04	Pass
SS-1593,1594	4/12/2016	K-40	14.80 ± 0.73	14.89 ± 0.78	14.85 ± 0.53	Pass
WW-1677, 1678	4/14/2016	Ra-226	0.23 ± 0.13	0.35 ± 0.15	0.29 ± 0.10	Pass
WW-1783,1784	4/14/2016	H-3	768 ± 111	632 ± 107	700 ± 77	Pass
BS-1804,1805	4/18/2016	K-40	0.79 ± 0.02	0.87 ± 0.19	0.83 ± 0.10	Pass
WW-2021,2022	4/18/2016	H-3	5,548 ± 221	5,707 ± 224	5,627 ± 157	Pass
XWW-2240, 2241	4/18/2016	H-3	638 ± 104	543 ± 101	591 ± 72	Pass
XWW-2109, 2110	4/19/2016	H-3	3461 ± 185	3250 ± 180	3356 ± 129	Pass
SPS-2130, 2131	4/25/2016	K-40	7.80 ± 0.84	6.80 ± 0.60	7.30 ± 0.52	Pass
AP-042516	4/25/2016	Gr. Beta	0.020 ± 0.004	0.023 ± 0.004	0.022 ± 0.003	Pass
BS-2065, 2066	4/25/2016	K-40	14.40 ± 1.50	14.72 ± 1.19	14.56 ± 0.96	Pass
AP-042716	4/27/2016	Gr. Beta	0.023 ± 0.003	0.019 ± 0.003	0.021 ± 0.002	Pass
SPS-1999, 2000	4/28/2016	K-40	19.84 ± 1.76	18.963 ± 2.42	19.40 ± 1.50	Pass
SO-2153,2154	5/2/2016	K-40	21.80 ± 0.81	21.17 ± 0.85	21.48 ± 0.59	Pass
SO-2153,2154	5/2/2016	Cs-137	0.11 ± 0.03	0.11 ± 0.07	0.11 ± 0.04	Pass
SO-2153,2154	5/2/2016	Ra-226	1.50 ± 0.29	1.22 ± 0.29	1.36 ± 0.21	Pass
SO-2153,2154	5/2/2016	Pb-214	0.56 ± 0.06	0.57 ± 0.06	0.57 ± 0.04	Pass
W-2394,2395	5/5/2016	H-3	736 ± 106	631 ± 102	683 ± 74	Pass
VE-2284,2285	5/9/2016	K-40	3.50 ± 0.25	3.06 ± 0.28	3.28 ± 0.19	Pass
AP-051016	5/10/2016	Gr. Beta	0.020 ± 0.005	0.018 ± 0.005	0.019 ± 0.003	Pass
SG-2261, 2262	5/10/2016	Ac-228	34.4 ± 1.2	34.4 ± 1.4	34.4 ± 0.9	Pass
SG-2261, 2262	5/10/2016	Pb-214	29.5 ± 3.0	31.9 ± 3.3	30.7 ± 2.2	Pass
BS-2439, 2440	5/12/2016	K-40	9.96 ± 0.91	10.27 ± 0.76	10.11 ± 0.59	Pass
WW-2534,2535	5/16/2016	H-3	14,342 ± 354	14,613 ± 357	14,477 ± 252	Pass
AP-051716	5/17/2016	Gr. Beta	0.014 ± 0.004	0.015 ± 0.004	0.014 ± 0.003	Pass
SPS-2945, 2946	5/19/2016	K-40	30.71 ± 0.74	31.75 ± 0.78	31.23 ± 0.54	Pass
SPS-2945, 2946	5/19/2016	Be-7	1.55 ± 0.24	1.90 ± 0.35	1.73 ± 0.21	Pass
SPS-2578, 2579	5/24/2016	Pb-214	0.96 ± 0.12	0.80 ± 0.14	0.88 ± 0.09	Pass
AP-052516	5/25/2016	Gr. Beta	0.022 ± 0.004	0.022 ± 0.004	0.022 ± 0.003	Pass
G-2642,2643	5/26/2016	Be-7	0.443 ± 0.178	0.247 ± 0.247	0.345 ± 0.152	Pass
SO-2663, 2664	5/26/2016	Cs-137	0.08 ± 0.03	0.07 ± 0.03	0.07 ± 0.02	Pass
SO-2663, 2664	5/26/2016	K-40	12.44 ± 0.68	11.64 ± 0.63	12.04 ± 0.46	Pass
SO-2663, 2664	5/26/2016	Tl-208	0.13 ± 0.02	0.14 ± 0.03	0.14 ± 0.02	Pass
SO-2663, 2664	5/26/2016	Pb-212	0.43 ± 0.04	0.41 ± 0.04	0.42 ± 0.03	Pass
SO-2663, 2664	5/26/2016	Ra-226	1.19 ± 0.34	0.87 ± 0.28	1.03 ± 0.22	Pass
SO-2663, 2664	5/26/2016	Ac-228	0.45 ± 0.09	0.53 ± 0.10	0.49 ± 0.07	Pass
SPS-2817, 2818	5/31/2016	K-40	12.10 ± 0.70	11.05 ± 0.70	11.58 ± 0.49	Pass
DW-70091, 70092	6/1/2016	Ra-226	5.61 ± 0.29	5.53 ± 0.30	5.57 ± 0.21	Pass
DW-70091, 70092	6/1/2016	Ra-228	1.45 ± 0.58	1.91 ± 0.62	1.68 ± 0.42	Pass
BS-2925,2926	6/3/2016	K-40	7.74 ± 0.44	7.86 ± 0.42	7.80 ± 0.30	Pass
SPS-2796, 2797	6/2/2016	K-40	20.91 ± 2.38	21.16 ± 1.82	21.04 ± 1.50	Pass
SPS-2882, 2883	6/7/2016	K-40	14.64 ± 0.52	14.60 ± 0.52	14.62 ± 0.37	Pass
SPS-2882, 2883	6/7/2016	Be-7	2.00 ± 0.25	1.94 ± 0.20	1.97 ± 0.16	Pass
DW-70102, 70103	6/13/2016	Ra-226	0.34 ± 0.09	0.36 ± 0.08	0.35 ± 0.06	Pass

TABLE A-5. In-House "Duplicate" Samples

			Concentration [a]			
Lab Code	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
DW-70102, 70103	6/13/2016	Ra-228	0.93 ± 0.47	1.11 ± 0.53	1.02 ± 0.35	Pass
AP-061416	6/14/2016	Gr. Beta	0.026 ± 0.004	0.023 ± 0.004	0.024 ± 0.003	Pass
SG-3144, 3145	6/17/2016	Be-7	2.23 ± 0.12	2.24 ± 0.12	2.24 ± 0.08	Pass
SG-3144, 3145	6/17/2016	K-40	7.57 ± 0.25	7.09 ± 0.23	7.33 ± 0.17	Pass
SPS-3165, 3166	6/22/2016	K-40	21.14 ± 2.27	22.88 ± 1.60	22.01 ± 1.39	Pass
SPS-3323, 3324	6/24/2016	K-40	18.67 ± 1.57	21.53 ± 1.65	20.10 ± 1.14	Pass
WW-3231, 3232	6/27/2016	H-3	414 ± 104	498 ± 108	456 ± 75	Pass
AP-3830,3831	6/29/2016	Gr. Beta	0.088 ± 0.012	0.093 ± 0.015	0.091 ± 0.010	Pass
AP-070516A	7/5/2016	Gr. Beta	0.018 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	Pass
AP-070516B	7/5/2016	Gr. Beta	0.025 ± 0.005	0.026 ± 0.005	0.025 ± 0.004	Pass
XWW-3605,3606	7/7/2016	H-3	3,316 ± 186	3,316 ± 181	3,316 ± 130	Pass
DW-70135,70136	7/8/2016	Gr. Alpha	3.68 ± 1.01	2.76 ± 0.98	3.22 ± 0.70	Pass
DW-70132,70133	7/8/2016	Ra-226	1.32 ± 0.14	1.11 ± 0.15	1.22 ± 0.10	Pass
DW-70132,70133	7/8/2016	Ra-228	3.92 ± 0.94	2.94 ± 0.90	3.43 ± 0.65	Pass
AP-071216	7/12/2016	Gr. Beta	0.014 ± 0.004	0.018 ± 0.004	0.016 ± 0.003	Pass
DW-70150,70151	7/14/2016	Gr. Alpha	5.00 ± 1.06	4.43 ± 1.04	4.72 ± 0.74	Pass
SPS-3649,3650	7/15/2016	Cs-137	0.12 ± 0.03	0.12 ± 0.03	0.12 ± 0.02	Pass
SPS-3649,3650	7/15/2016	K-40	16.68 ± 0.79	16.52 ± 0.86	16.6 ± 0.58	Pass
SPS-3649,3650	7/15/2016	Pb-214	1.20 ± 0.08	1.17 ± 0.08	1.19 ± 0.06	Pass
SPS-3649,3650	7/15/2016	Ac-228	1.28 ± 0.16	1.28 ± 0.16	1.28 ± 0.11	Pass
AP-071816	7/18/2016	Gr. Beta	0.022 ± 0.005	0.024 ± 0.005	0.023 ± 0.003	Pass
DW-70163,70164	7/19/2016	Gr. Alpha	1.08 ± 0.66	1.36 ± 0.70	1.22 ± 0.48	Pass
WW-3761,3762	7/20/2016	H-3	347 ± 90	466 ± 96	407 ± 66	Pass
SPS-4003,4004	7/23/2016	K-40	7.15 ± 1.59	6.86 ± 1.21	7.00 ± 1.00	Pass
AP-072516	7/25/2016	Gr. Beta	0.023 ± 0.004	0.020 ± 0.004	0.022 ± 0.003	Pass
VE-3936,3937	7/25/2016	Sr-90	0.048 ± 0.007	0.058 ± 0.010	0.053 ± 0.006	Pass
VE-3936,3937	7/25/2016	Be-7	0.49 ± 0.15	0.51 ± 0.15	0.50 ± 0.10	Pass
VE-3936,3937	7/25/2016	K-40	4.70 ± 0.35	4.86 ± 0.37	4.78 ± 0.25	Pass
VE-3959,3960	7/27/2016	Sr-90	0.002 ± 0.002	0.003 ± 0.001	0.003 ± 0.001	Pass
VE-3959,3960	7/27/2016	Be-7	0.30 ± 0.14	0.25 ± 0.12	0.27 ± 0.09	Pass
VE-3959,3960	7/27/2016	K-40	4.01 ± 0.37	4.16 ± 0.34	4.08 ± 0.25	Pass
DW-70169,70170	7/28/2016	Ra-226	0.83 ± 0.11	0.69 ± 0.11	0.76 ± 0.08	Pass
DW-70169,70170	7/28/2016	Ra-228	1.85 ± 0.63	1.31 ± 0.84	1.58 ± 0.53	Pass
AP-080116	8/1/2016	Gr. Beta	0.029 ± 0.003	0.033 ± 0.003	0.031 ± 0.002	Pass
SS-4131,4132	8/1/2016	K-40	12.47 ± 0.71	13.24 ± 0.81	12.86 ± 0.54	Pass
SS-4131,4132	8/1/2016	Cs-137	0.10 ± 0.03	0.13 ± 0.04	0.12 ± 0.02	Pass
SPS-4087,4088	8/2/2016	K-40	17.06 ± 1.58	19.5 ± 1.97	18.28 ± 1.26	Pass
WW-4976,4977	8/4/2016	H-3	17,043 ± 390	16,821 ± 388	16,932 ± 275	Pass
SPS-4266,4267	8/10/2016	K-40	1.06 ± 0.47	1.69 ± 0.52	1.375 ± 0.35	Pass
AP-081616	8/16/2016	Gr. Beta	0.029 ± 0.005	0.025 ± 0.004	0.027 ± 0.003	Pass
VE-4399,4400	8/18/2016	K-40	3.85 ± 0.23	3.27 ± 0.41	3.56 ± 0.24	Pass
VE-4399,4400	8/18/2016	Be-7	0.30 ± 0.08	0.45 ± 0.20	0.37 ± 0.11	Pass
WW-5394,5395	8/18/2016	H-3	947 ± 122	846 ± 119	896 ± 85	Pass
SPS-4441,4442	8/22/2016	K-40	20.55 ± 2.23	19.69 ± 1.74	20.12 ± 1.41	Pass
AP-082216	8/22/2016	Gr. Beta	0.021 ± 0.005	0.015 ± 0.005	0.018 ± 0.003	Pass
VE-4462,4463	8/22/2016	Be-7	0.91 ± 0.09	0.89 ± 0.11	0.90 ± 0.07	Pass
VE-4462,4463	8/22/2016	K-40	7.48 ± 0.26	7.60 ± 0.23	7.54 ± 0.17	Pass
WW-4594,4595	8/26/2016	H-3	675 ± 107	788 ± 111	731 ± 77	Pass
WW-4663,4664	8/26/2016	H-3	607 ± 104	501 ± 100	554 ± 72	Pass
SPS-4529,4530	8/26/2016	K-40	21.98 ± 2.52	21.85 ± 1.56	21.92 ± 1.48	Pass
AP-083016A	8/30/2016	Gr. Beta	0.030 ± 0.003	0.035 ± 0.004	0.033 ± 0.002	Pass
AP-083016B	8/30/2016	Gr. Beta	0.032 ± 0.009	0.026 ± 0.004	0.029 ± 0.005	Pass
VE-4615,4616	8/31/2016	K-40	2.96 ± 0.16	3.11 ± 0.17	3.03 ± 0.11	Pass

TABLE A-5. In-House "Duplicate" Samples

			Concentration [a]			
Lab Code	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
AP-090216	9/2/2016	Gr. Beta	0.022 ± 0.004	0.027 ± 0.004	0.024 ± 0.003	Pass
AP-090616	9/6/2016	Gr. Beta	0.023 ± 0.005	0.023 ± 0.005	0.023 ± 0.003	Pass
MI-4751,4752	9/7/2016	K-40	1,693 ± 112	1,760 ± 99	1,726 ± 75	Pass
MI-4751,4752	9/7/2016	Sr-90	1.23 ± 0.38	1.00 ± 0.33	1.11 ± 0.25	Pass
SW-4772,4773	9/8/2016	H-3	196 ± 91	236 ± 93	216 ± 65	Pass
WW-5285,5286	9/13/2016	H-3	18,010 ± 400	18,686 ± 407	18,348 ± 286	Pass
MI-4826,4827	9/14/2016	K-40	1,372.6 ± 105	1,198.1 ± 97	1,285.4 ± 71	Pass
VE-4868,4869	9/15/2016	Gr. Beta	2.50 ± 0.06	2.57 ± 0.06	2.53 ± 0.04	Pass
VE-4868,4869	9/15/2016	K-40	2.20 ± 0.17	2.30 ± 0.17	2.25 ± 0.12	Pass
CF-4934,4935	9/19/2016	K-40	11.47 ± 0.82	11.76 ± 0.50	11.61 ± 0.48	Pass
CF-4934,4935	9/19/2016	Be-7	0.43 ± 0.22	0.46 ± 0.13	0.45 ± 0.13	Pass
AP-092016	9/20/2016	Gr. Beta	0.021 ± 0.004	0.017 ± 0.004	0.019 ± 0.003	Pass
DW-70196,70197	9/20/2016	Gr. Alpha	13.8 ± 1.36	15.28 ± 1.36	14.54 ± 0.96	Pass
F-4955,4956	9/20/2016	K-40	3.40 ± 0.44	2.86 ± 0.39	3.13 ± 0.30	Pass
VE-5044,5045	9/20/2016	Be-7	0.46 ± 0.05	0.50 ± 0.11	0.48 ± 0.06	Pass
VE-5044,5045	9/20/2016	K-40	4.37 ± 0.12	4.68 ± 0.24	4.53 ± 0.13	Pass
WW-5219,5220	9/20/2016	H-3	63,744 ± 743	64,755 ± 749	64,250 ± 527	Pass
SPS-5087,5088	9/23/2016	K-40	21.04 ± 2.32	18.84 ± 1.88	19.94 ± 1.49	Pass
AP-092716	9/27/2016	Gr. Beta	0.031 ± 0.005	0.032 ± 0.005	0.031 ± 0.003	Pass
AP-5660,5661	9/28/2016	Be-7	0.093 ± 0.014	0.086 ± 0.019	0.089 ± 0.012	Pass
AP-5681,5682	9/27/2016	Be-7	0.079 ± 0.019	0.071 ± 0.015	0.075 ± 0.012	Pass
VE-5110,5111	9/28/2016	K-40	1.82 ± 0.15	2.14 ± 0.18	1.98 ± 0.12	Pass
AP-5154,5155	9/29/2016	Be-7	0.237 ± 0.116	0.195 ± 0.096	0.216 ± 0.075	Pass
AP-5702,5703	9/30/2016	Be-7	0.084 ± 0.015	0.070 ± 0.018	0.077 ± 0.012	Pass
MI-5264,5265	10/4/2016	K-40	1,636 ± 128	1,610 ± 124	1,623 ± 89	Pass
MI-5264,5265	10/4/2016	Sr-90	2.00 ± 0.44	1.28 ± 0.37	1.64 ± 0.29	Pass
SS-5547,5548	10/11/2016	Gr. Beta	11.27 ± 1.19	9.47 ± 1.20	10.37 ± 0.84	Pass
SS-5547,5548	10/11/2016	K-40	8.03 ± 0.45	7.23 ± 0.46	7.63 ± 0.32	Pass
SS-5547,5548	10/11/2016	Tl-208	0.04 ± 0.02	0.04 ± 0.02	0.04 ± 0.01	Pass
SS-5547,5548	10/11/2016	Bi-214	0.14 ± 0.03	0.12 ± 0.03	0.13 ± 0.02	Pass
SS-5547,5548	10/11/2016	Pb-212	0.12 ± 0.02	0.11 ± 0.02	0.11 ± 0.01	Pass
SS-5547,5548	10/11/2016	Ac-228	0.10 ± 0.05	0.16 ± 0.05	0.13 ± 0.04	Pass
AP-101116	10/11/2016	Gr. Beta	0.032 ± 0.004	0.028 ± 0.004	0.030 ± 0.003	Pass
WW-5526.5527	10/11/2016	H-3	18,865 ± 408	18,904 ± 408	18,884 ± 289	Pass
WW-5639,5640	10/19/2016	H-3	192 ± 103	52 ± 98	122 ± 71	Pass
WW-5723,5724	10/18/2016	H-3	36,012 ± 560	36,207 ± 561	36,110 ± 396	Pass
F-5811,5812	10/20/2016	K-40	0.91 ± 0.30	0.75 ± 0.22	0.83 ± 0.19	Pass
SO-5900,5901	10/22/2016	Cs-137	0.05 ± 0.02	0.03 ± 0.02	0.04 ± 0.02	Pass
SO-5900,5901	10/22/2016	K-40	9.82 ± 0.60	10.77 ± 0.61	10.29 ± 0.43	Pass
SO-5900,5901	10/22/2016	Tl-208	0.10 ± 0.02	0.14 ± 0.03	0.12 ± 0.02	Pass
SO-5900,5901	10/22/2016	Pb-212	0.32 ± 0.03	0.33 ± 0.03	0.32 ± 0.02	Pass
SO-5900,5901	10/22/2016	Bi-214	0.20 ± 0.04	0.27 ± 0.04	0.23 ± 0.03	Pass
SO-5900,5901	10/22/2016	Ac-228	0.41 ± 0.08	0.48 ± 0.09	0.44 ± 0.06	Pass
SO-5900,5901	10/22/2016	Ra-226	0.45 ± 0.23	0.61 ± 0.27	0.53 ± 0.18	Pass
SO-5900,5901	10/22/2016	Gr. Beta	16.49 ± 1.01	17.71 ± 1.03	17.10 ± 0.72	Pass
SS-5879,5880	10/25/2016	K-40	14.94 ± 0.83	15.26 ± 0.84	15.10 ± 0.59	Pass
SS-5879,5880	10/25/2016	Cs-137	0.06 ± 0.03	0.09 ± 0.04	0.08 ± 0.02	Pass
LW-6072,6073	10/27/2016	Gr. Beta	0.88 ± 0.49	1.53 ± 0.56	1.21 ± 0.37	Pass
BS-6009, 6010	10/27/2016	Cs-137	0.14 ± 0.08	0.13 ± 0.06	0.13 ± 0.05	Pass
BS-6009, 6010	10/27/2016	K-40	17.04 ± 1.58	18.30 ± 1.42	17.67 ± 1.06	Pass
F-6211,6212	10/28/2016	Gr. Beta	3.25 ± 0.07	3.27 ± 0.07	3.26 ± 0.05	Pass
F-6211,6212	10/28/2016	K-40	2.45 ± 0.33	2.49 ± 0.37	2.47 ± 0.25	Pass
DW-70230, 70231	10/28/2016	Ra-226	4.00 ± 0.20	4.10 ± 0.30	4.05 ± 0.18	Pass
DW-70230, 70231	10/28/2016	Ra-228	5.30 ± 0.80	5.20 ± 0.80	5.25 ± 0.57	Pass
F-6093,6094	10/31/2016	K-40	3.77 ± 0.50	3.51 ± 0.44	3.64 ± 0.33	Pass

TABLE A-5. In-House "Duplicate" Samples

			Concentration [a]			
Lab Code	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
AP-110116	11/1/2016	Gr. Beta	0.021 ± 0.004	0.024 ± 0.004	0.023 ± 0.003	Pass
S-5963, 5964	11/1/2016	K-40	20.35 ± 2.29	18.59 ± 1.90	19.47 ± 1.49	Pass
SG-6119, 6120	11/1/2016	Ac-228	5.70 ± 0.44	6.28 ± 0.57	5.99 ± 0.36	Pass
SG-6119, 6120	11/1/2016	Gr. Alpha	21.59 ± 1.88	24.35 ± 1.93	22.97 ± 1.35	Pass
SG-6119, 6120	11/1/2016	K-40	4.89 ± 1.10	5.90 ± 1.08	5.40 ± 0.77	Pass
SG-6119, 6120	11/1/2016	Pb-214	3.99 ± 0.21	4.35 ± 0.32	4.17 ± 0.19	Pass
S-6051, 6052	11/4/2016	K-40	7.05 ± 0.60	7.56 ± 0.53	7.31 ± 0.40	Pass
WW-6297, 6298	11/8/2016	H-3	207 ± 98	165 ± 97	186 ± 69	Pass
WW-6341,6342	11/8/2016	H-3	1,356 ± 140	1,404 ± 141	1,380 ± 99	Pass
SO-6406,6407	11/9/2016	Cs-137	0.36 ± 0.04	0.43 ± 0.05	0.40 ± 0.03	Pass
SO-6406,6407	11/9/2016	K-40	10.90 ± 0.68	11.29 ± 0.74	11.09 ± 0.50	Pass
AP-111416	11/14/2016	Gr. Beta	0.024 ± 0.005	0.021 ± 0.006	0.022 ± 0.004	Pass
WW-6829,6830	11/15/2016	H-3	39,982 ± 589	40,315 ± 591	40,149 ± 417	Pass
DW-70239, 70240	11/17/2016	Gr. Alpha	7.99 ± 1.15	6.41 ± 1.05	7.20 ± 0.78	Pass
AP-112216	11/22/2016	Gr. Beta	0.049 ± 0.005	0.045 ± 0.005	0.047 ± 0.003	Pass
S-6473, 6474	11/24/2016	K-40	19.37 ± 1.97	23.80 ± 3.54	21.58 ± 2.02	Pass
SG-6938, 6939	11/28/2016	Ac-228	18.99 ± 0.59	19.92 ± 0.79	19.46 ± 0.49	Pass
SG-6938, 6939	11/28/2016	Pb-214	15.28 ± 0.34	14.96 ± 0.43	15.12 ± 0.27	Pass
AP-120116	12/1/2016	Gr. Beta	0.029 ± 0.003	0.030 ± 0.003	0.030 ± 0.002	Pass
F-6567,6568	12/1/2016	K-40	3.76 ± 0.40	3.83 ± 0.46	3.80 ± 0.30	Pass
S-6522, 6523	12/1/2016	Ac-228	1.08 ± 0.13	1.29 ± 0.16	1.19 ± 0.10	Pass
S-6522, 6523	12/1/2016	Pb-214	1.00 ± 0.08	1.01 ± 0.09	1.01 ± 0.06	Pass
S-6609, 6610	12/1/2016	K-40	15.57 ± 1.01	15.99 ± 0.78	15.78 ± 0.64	Pass
S-6718, 6719	12/7/2016	K-40	18.19 ± 2.13	18.76 ± 1.80	18.48 ± 1.39	Pass
WW-6784, 6785	12/7/2016	H-3	922 ± 117	905 ± 116	914 ± 82	Pass
AP-121216	12/12/2016	Gr. Beta	0.026 ± 0.005	0.028 ± 0.005	0.027 ± 0.003	Pass
AP-7178,7179	1/3/2017	Be-7	0.047 ± 0.015	0.062 ± 0.017	0.054 ± 0.012	Pass

Note: Duplicate analyses are performed on every twentieth sample received in-house. Results are not listed for those analyses with activities that measure below the LLD.

[a] Results are reported in units of pCi/L, except for air filters (pCi/Filter or pCi/m3), food products, vegetation, soil and sediment (pCi/g).

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration [a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MASO-1053	2/1/2016	Ni-63	1,206 ± 20	1250	875 - 1625	Pass
MASO-1053	2/1/2016	Sr-90	0.65 ± 1.27	0.00	NA [c]	Pass
MASO-1053	2/1/2016	Tc-99	0.1 ± 5.5	0.0	NA [c]	Pass
MASO-1053	2/1/2016	Cs-134	908 ± 26	1030	721 - 1339	Pass
MASO-1053	2/1/2016	Cs-137	0.10 ± 6.20	0.00	NA [c]	Pass
MASO-1053	2/1/2016	Co-57	1058 ± 26	992	694 - 1290	Pass
MASO-1053	2/1/2016	Co-60	1229 ± 28	1190	833 - 1547	Pass
MASO-1053	2/1/2016	Mn-54	1235 ± 43	1160	812 - 1508	Pass
MASO-1053	2/1/2016	Zn-65	753 ± 64	692	484 - 900	Pass
MASO-1053	2/1/2016	K-40	753 ± 140	607	425 - 789	Pass
MASO-1053	2/1/2016	Am-241	79 ± 6	103	72 - 134	Pass
MASO-1053	2/1/2016	Pu-238	73.9 ± 9.2	63.6	44.5 - 82.7	Pass
MASO-1053	2/1/2016	Pu-239/240	0.76 ± 1.34	0.21	NA [d]	Pass
MASO-1053	2/1/2016	U-234/233	45.0 ± 5.1	45.9	32.1 - 59.7	Pass
MASO-1053	2/1/2016	U-238	129 ± 9	146	102 - 190	Pass
MAW-989	2/1/2016	Am-241	0.018 ± 0.015	0.00	NA [c]	Pass
MAW-989	2/1/2016	H-3	0.2 ± 2.8	0.0	NA [c]	Pass
MAW-989	2/1/2016	Ni-63	12.8 ± 2.7	12.3	8.6 - 16.0	Pass
MAW-989	2/1/2016	Sr-90	8.70 ± 1.20	8.74	6.12 - 11.36	Pass
MAW-989	2/1/2016	Tc-99	-1.1 ± 0.6	0.0	NA [c]	Pass
MAW-989	2/1/2016	Cs-134	15.5 ± 0.3	16.1	11.3 ± 20.9	Pass
MAW-989	2/1/2016	Cs-137	23.7 ± 0.5	21.2	14.8 - 27.6	Pass
MAW-989[e]	2/1/2016	Co-57	1.38 ± 0.12	0.00	NA [c]	Fail
MAW-989	2/1/2016	Co-60	12.5 ± 0.3	11.8	8.3 - 15.3	Pass
MAW-989	2/1/2016	Mn-54	12.2 ± 0.4	11.1	7.8 - 14.4	Pass
MAW-989	2/1/2016	Zn-65	15.7 ± 0.7	13.6	9.5 - 17.7	Pass
MAW-989	2/1/2016	K-40	288 ± 5	251	176 - 326	Pass
MAW-989	2/1/2016	Fe-55	17.3 ± 7.0	16.2	11.3 - 21.1	Pass
MAW-989	2/1/2016	Ra-226	0.710 ± 0.070	0.718	0.503 - 0.933	Pass
MAW-989	2/1/2016	Pu-238	1.280 ± 0.110	1.244	0.871 ± 1.617	Pass
MAW-989	2/1/2016	Pu-239/240	0.640 ± 0.080	0.641	0.449 - 0.833	Pass
MAW-989	2/1/2016	U-234/233	1.39 ± 0.12	1.48	1.04 - 1.92	Pass
MAW-989	2/1/2016	U-238	1.43 ± 0.12	1.53	1.07 - 1.99	Pass
MAW-893	2/1/2016	Gross Alpha	0.600 ± 0.050	0.673	0.202 - 1.144	Pass
MAW-893	2/1/2016	Gross Beta	2.10 ± 0.06	2.15	1.08 - 3.23	Pass
MAW-896	2/1/2016	I-129	3.67 ± 0.20	3.85	2.70 - 5.01	Pass
MAAP-1056	2/1/2016	Gross Alpha	0.39 ± 0.05	1.20	0.36 - 2.04	Pass
MAAP-1056	2/1/2016	Gross Beta	1.03 ± 0.07	0.79	0.40 - 1.19	Pass

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration [a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MAAP-1057	2/1/2016	Sr-90	1.34 ± 0.15	1.38	0.97 ± 1.79	Pass
MAAP-1057	2/1/2016	Cs-134	-0.01 ± 0.03	0.00	NA [c]	Pass
MAAP-1057	2/1/2016	Cs-137	2.57 ± 0.10	2.30	1.61 - 2.99	Pass
MAAP-1057	2/1/2016	Co-57	3.01 ± 0.06	2.94	2.06 - 3.82	Pass
MAAP-1057	2/1/2016	Co-60	4.28 ± 0.10	4.02	2.81 - 5.23	Pass
MAAP-1057	2/1/2016	Mn-54	4.90 ± 0.13	4.53	3.17 - 5.89	Pass
MAAP-1057	2/1/2016	Zn-65	4.09 ± 0.18	3.57	2.50 - 4.64	Pass
MAAP-1057	2/1/2016	Am-241	0.059 ± 0.015	0.0805	0.0564 - 0.1047	Pass
MAAP-1057	2/1/2016	Pu-238	0.066 ± 0.020	0.0637	0.0446 - 0.0828	Pass
MAAP-1057	2/1/2016	Pu-239/240	0.074 ± 0.020	0.099	NA [d]	Pass
MAAP-1057	2/1/2016	U-234/233	0.151 ± 0.026	0.165	0.116 - 0.215	Pass
MAAP-1057	2/1/2016	U-238	0.160 ± 0.026	0.172	0.120 - 0.224	Pass
MAVE-1050	2/1/2016	Cs-134	9.83 ± 0.19	10.62	7.43 - 13.81	Pass
MAVE-1050	2/1/2016	Cs-137	6.06 ± 0.19	5.62	3.93 - 7.31	Pass
MAVE-1050	2/1/2016	Co-57	13.8 ± 0.2	11.8	8.3 - 15.3	Pass
MAVE-1050	2/1/2016	Co-60	0.022 ± 0.040	0.00	NA [c]	Pass
MAVE-1050	2/1/2016	Mn-54	0.009 ± 0.044	0.000	NA [c]	Pass
MAVE-1050	2/1/2016	Zn-65	10.67 ± 0.39	9.60	6.70 - 12.50	Pass
MASO-4780[f]	8/1/2016	Ni-63	648 ± 14	990	693 - 1287	Fail
MASO-4780[g]	8/1/2016	Ni-63	902 ± 46	990	693 - 1287	Pass
MASO-4780	8/1/2016	Sr-90	757 ± 16	894	626 - 1162	Pass
MASO-4780	8/1/2016	Tc-99	559 ± 12	556	389 - 723	Pass
MASO-4780	8/1/2016	Cs-134	0.93 ± 2.92	0.00	NA [c]	Pass
MASO-4780	8/1/2016	Cs-137	1061 ± 12	1067	747 - 1387	Pass
MASO-4780	8/1/2016	Co-57	1178 ± 8	1190	833 - 1547	Pass
MASO-4780	8/1/2016	Co-60	841 ± 9	851	596 - 1106	Pass
MASO-4780	8/1/2016	Mn-54	0.69 ± 2.53	0.00	NA [c]	Pass
MASO-4780	8/1/2016	Zn-65	724 ± 19	695	487 - 904	Pass
MASO-4780	8/1/2016	K-40	566 ± 52	588	412 - 764	Pass
MASO-4780	8/1/2016	Am-241	0.494 ± 0.698	0.000	NA [c]	Pass
MASO-4780	8/1/2016	Pu-238	69.7 ± 7.4	70.4	49.3 - 91.5	Pass
MASO-4780	8/1/2016	Pu-239/240	53.9 ± 6.3	53.8	37.7 - 69.9	Pass
MASO-4780[h]	8/1/2016	U-233/234	46.8 ± 3.9	122	85 - 159	Fail
MASO-4780[h]	8/1/2016	U-238	46.6 ± 3.9	121	85 - 157	Fail
MAW-4776	8/1/2016	I-129	4.40 ± 0.20	4.54	3.18 - 5.90	Pass
MAVE-4782	8/1/2016	Cs-134	-0.01 ± 0.05	0.00	NA [c]	Pass
MAVE-4782	8/1/2016	Cs-137	6.18 ± 0.20	5.54	3.88 - 7.20	Pass
MAVE-4782	8/1/2016	Co-57	8.13 ± 0.16	6.81	4.77 - 8.85	Pass
MAVE-4782	8/1/2016	Co-60	5.30 ± 0.15	4.86	3.40 - 6.32	Pass
MAVE-4782	8/1/2016	Mn-54	8.08 ± 0.24	7.27	5.09 - 9.45	Pass
MAVE-4782	8/1/2016	Zn-65	6.24 ± 0.36	5.40	3.78 - 7.02	Pass

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration [a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	NA [c] Limits [c]	Acceptance
MAAP-4784	8/1/2016	Sr-90	1.18 ± 0.10	1.03	0.72 - 1.34	Pass
MAAP-4784	8/1/2016	Cs-134	1.58 ± 0.08	2.04	1.43 - 2.65	Pass
MAAP-4784	8/1/2016	Cs-137	1.85 ± 0.09	1.78	1.25 - 2.31	Pass
MAAP-4784	8/1/2016	Co-57	2.39 ± 0.52	2.48	1.74 - 3.22	Pass
MAAP-4784	8/1/2016	Co-60	3.22 ± 0.08	3.26	2.28 - 4.24	Pass
MAAP-4784	8/1/2016	Mn-54	2.82 ± 0.12	2.75	1.93 - 3.58	Pass
MAAP-4784	8/1/2016	Zn-65	-0.015 ± 0.062	0.00	NA [c]	Pass
MAAP-4784	8/1/2016	Am-241	-0.001 ± 0.006	0.00	NA [c]	Pass
MAAP-4784	8/1/2016	Pu-238	0.075 ± 0.022	0.069	0.049 - 0.090	Pass
MAAP-4784	8/1/2016	Pu-239/240	0.048 ± 0.015	0.054	0.038 - 0.070	Pass
MAAP-4784	8/1/2016	U-234/233	0.151 ± 0.036	0.150	0.105 - 0.195	Pass
MAAP-4784	8/1/2016	U-238	0.147 ± 0.034	0.156	0.109 - 0.203	Pass
MAW-4778	8/1/2016	H-3	365 ± 11	334	234 - 434	Pass
MAW-4778	8/1/2016	Fe-55	23.6 ± 16.3	21.5	15.1 ± 28.0	Pass
MAW-4778	8/1/2016	Ni-63	17.0 ± 2.8	17.2	12.0 ± 22.4	Pass
MAW-4778	8/1/2016	Sr-90	0.17 ± 0.28	0.00	NA [c]	Pass
MAW-4778	8/1/2016	Tc-99	9.50 ± 0.41	11.60	8.10 - 15.10	Pass
MAW-4778	8/1/2016	Cs-134	22.6 ± 0.4	23.9	16.7 - 31.1	Pass
MAW-4778	8/1/2016	Cs-137	0.018 ± 0.117	0.00	NA [c]	Pass
MAW-4778	8/1/2016	Co-57	27.6 ± 0.2	27.3	19.1 ± 35.5	Pass
MAW-4778	8/1/2016	Co-60	0.018 ± 0.090	0.00	NA [c]	Pass
MAW-4778	8/1/2016	Mn-54	16.2 ± 0.4	14.8	10.4 - 19.2	Pass
MAW-4778	8/1/2016	Zn-65	19.3 ± 0.7	17.4	12.2 - 22.6	Pass
MAW-4778	8/1/2016	K-40	286 ± 6	252	176 - 328	Pass
MAW-4778	8/1/2016	Ra-226	1.48 ± 0.09	1.33	0.93 - 1.73	Pass
MAW-4778	8/1/2016	Pu-238	1.09 ± 0.13	1.13	0.79 - 1.47	Pass
MAW-4778	8/1/2016	Pu-239/240	0.003 ± 0.011	0.016	NA [d]	Pass
MAW-4778	8/1/2016	U-234/233	1.80 ± 0.13	1.86	1.30 - 2.42	Pass
MAW-4778	8/1/2016	U-238	1.77 ± 0.13	1.92	1.34 - 2.50	Pass
MAW-4778	8/1/2016	Am-241	0.678 ± 0.086	0.814	0.570 ± 1.058	Pass

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

[b] Laboratory codes as follows: MAW (water), MAAP (air filter), MASO (soil), MAVE (vegetation).

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

[d] Provided in the series for "sensitivity evaluation". MAPEP does not provide control limits.

[e] The laboratory properly identified the Sn-75 interfering peak in the vicinity of Co-57 and stated so in the comment field. MAPEP requires results to be reported as an activity with an uncertainty. Since the calculated uncertainty was less than the activity MAPEP interpreted the submitted result as a "false positive" resulting in a failure.

[f] Original analysis for Ni-63 failed.

[g] Reanalysis with a smaller aliquot resulted in acceptable results. An investigation is in process to identify better techniques for analyzing samples with complex matrices.

[h] MAPEP states that samples contain two fractions of Uranium; one that is soluble in concentrated HNO^3 and HCl acid and one that is "fundamentally insoluble in these acids". They also state that HF treatment can not assure complete dissolution. Results are consistent with measuring the soluble form.

TABLE A-7. Interlaboratory Comparison Crosscheck Program, Environmental Resource Associates (ERA)[a].

MRAD Study

Lab Code [b]	Date	Analysis	Concentration [a] Laboratory Result	ERA Result	Control Limits	Acceptance
ERAP-1101	3/14/2016	Am-241	37.3	45.9	28.3 - 62.1	Pass
ERAP-1101	3/14/2016	Co-60	637	623	482 - 778	Pass
ERAP-1101	3/14/2016	Cs-134	251	304	193 - 377	Pass
ERAP-1101	3/14/2016	Cs-137	1,273	1,150	864 - 1,510	Pass
ERAP-1101	3/14/2016	Fe-55	< 162	126	39.1 - 246	Pass
ERAP-1101	3/14/2016	Mn-54	< 2.64	< 50.0	0.00 - 50.0	Pass
ERAP-1101	3/14/2016	Pu-238	68.0	70.5	48.3 - 92.7	Pass
ERAP-1101	3/14/2016	Pu-239/240	54.1	54.8	39.70 - 71.60	Pass
ERAP-1101	3/14/2016	Sr-90	139	150	73.3 - 225.0	Pass
ERAP-1101	3/14/2016	U-233/234	59.3	64.8	40.2 - 97.7	Pass
ERAP-1101	3/14/2016	U-238	55.5	64.2	41.5 - 88.8	Pass
ERAP-1101	3/14/2016	Zn-65	428	356	255 - 492	Pass
ERAP-1101	3/14/2016	Gr. Alpha	98.0	70.1	23.5 - 109	Pass
ERAP-1101	3/14/2016	Gr. Beta	78.6	54.4	34.4 - 79.3	Pass
ERSO-1105	3/14/2016	Am-241	1,030	1,360	796 - 1,770	Pass
ERSO-1105	3/14/2016	Ac-228	1,540	1,240	795 - 1,720	Pass
ERSO-1105	3/14/2016	Bi-212	1,550	1,240	330 - 1,820	Pass
ERSO-1105	3/14/2016	Bi-214	3,100	3,530	2,130 - 5,080	Pass
ERSO-1105	3/14/2016	Co-60	5,600	5,490	3,710 - 7,560	Pass
ERSO-1105	3/14/2016	Cs-134	3,030	3,450	2,260 - 4,140	Pass
ERSO-1105	3/14/2016	Cs-137	4,440	4,310	3,300 - 5,550	Pass
ERSO-1105	3/14/2016	K-40	10,300	10,600	7,740 - 14,200	Pass
ERSO-1105	3/14/2016	Mn-54	< 50.8	< 1000	0.0 - 1,000	Pass
ERSO-1105	3/14/2016	Pb-212	1,140	1,240	812 - 1,730	Pass
ERSO-1105	3/14/2016	Pb-214	3,190	3,710	2,170 - 5,530	Pass
ERSO-1105	3/14/2016	Pu-238	680	658	396 - 908	Pass
ERSO-1105	3/14/2016	Pu-239/240	460	496	324 - 0,685	Pass
ERSO-1105	3/14/2016	Sr-90	7,740	8,560	3,260 - 13,500	Pass
ERSO-1105	3/14/2016	Th-234	3,630	3,430	1,080 - 6,450	Pass
ERSO-1105	3/14/2016	U-233/234	3,090	3,460	2,110 - 4,430	Pass
ERSO-1105	3/14/2016	U-238	3,280	3,430	2,120 - 4,350	Pass
ERSO-1105	3/14/2016	Zn-65	2,940	2,450	1,950 - 3,260	Pass
ERW-1115	3/14/2016	Gr. Alpha	105.0	117.0	41.5 - 181.0	Pass
ERW-1115	3/14/2016	Gr. Beta	76.2	75.5	43.2 - 112.0	Pass
ERW-1117	3/14/2016	H-3	8,870	8,650	5,800 - 12,300	Pass

TABLE A-7. Interlaboratory Comparison Crosscheck Program, Environmental Resource Associates (ERA)[a]. MRAD Study

Lab Code [b]	Date	Analysis	Concentration [a] Laboratory Result	ERA Result	Control Limits	Acceptance
ERVE-1108	3/14/2016	Am-241	1,930	2,120	1,300 - 2,820	Pass
ERVE-1108	3/14/2016	Cm-244	1,294	1,560	764 - 2,430	Pass
ERVE-1108	3/14/2016	Co-60	1,164	1,100	759 - 1,540	Pass
ERVE-1108	3/14/2016	Cs-134	1,056	1,070	687 - 1,390	Pass
ERVE-1108	3/14/2016	Cs-137	930	838	608 - 1,170	Pass
ERVE-1108	3/14/2016	K-40	32,200	31,000	22,400 - 43,500	Pass
ERVE-1108	3/14/2016	Mn-54	< 24.5	< 300	0.00 - 300	Pass
ERVE-1108	3/14/2016	Zn-65	3,320	2,820	2,030 - 3,960	Pass
ERVE-1108	3/14/2016	Pu-238	3,410	2,810	1,680 - 3,850	Pass
ERVE-1108	3/14/2016	Pu-239/240	4,120	3,640	2,230 - 5,010	Pass
ERVE-1108	3/14/2016	Sr-90	8,120	8,710	4,960 - 11,500	Pass
ERVE-1108	3/14/2016	U-233/234	4,350	4,160	2,740 - 5,340	Pass
ERVE-1108	3/14/2016	U-238	4,220	4,120	2,750 - 5,230	Pass
ERW-1111	3/14/2016	Am-241	113	121	81.5 - 162	Pass
ERW-1111	3/14/2016	Co-60	1,120	1,050	912 - 1,230	Pass
ERW-1111	3/14/2016	Cs-134	806	842	618 - 968	Pass
ERW-1111	3/14/2016	Cs-137	1,190	1,100	934 - 1,320	Pass
ERW-1111	3/14/2016	Mn-54	< 5.89	< 100	0.00 - 100	Pass
ERW-1111	3/14/2016	Pu-238	159	138	102 - 172	Pass
ERW-1111	3/14/2016	Pu-239/240	113	98.7	76.6 - 124	Pass
ERW-1111	3/14/2016	U-233/234	46.9	52.7	39.6 - 68.0	Pass
ERW-1111	3/14/2016	U-238	50.4	52.3	39.9 - 64.2	Pass
ERW-1111	3/14/2016	Zn-65	1,160	1,010	842 - 1,270	Pass
ERW-1111	3/14/2016	Fe-55	1,600	1,650	984 - 2,240	Pass
ERW-1111	3/14/2016	Sr-90	430	434	283 - 574	Pass

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

[b] Laboratory codes as follows: ERW (water), ERAP (air filter), ERSO (soil), ERVE (vegetation). Results are reported in units of pCi/L, except for air filters (pCi/Filter), vegetation and soil (pCi/kg).

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

APPENDIX B

DATA REPORTING CONVENTIONS

Data Reporting Conventions

1.0. All activities, except gross alpha and gross beta, are decay corrected to collection time or the end of the collection period.

2.0. Single Measurements

Each single measurement is reported as follows: $x \pm s$

where: x = value of the measurement;

$s = 2\sigma$ counting uncertainty (corresponding to the 95% confidence level).

In cases where the activity is less than the lower limit of detection L, it is reported as: $< L$, where L = the lower limit of detection based on 4.66σ uncertainty for a background sample.

3.0. Duplicate analyses

If duplicate analyses are reported, the convention is as follows. :

3.1 Individual results: For two analysis results; $x_1 \pm s_1$ and $x_2 \pm s_2$

Reported result: $x \pm s$; where $x = (1/2)(x_1 + x_2)$ and $s = (1/2)\sqrt{s_1^2 + s_2^2}$

3.2. Individual results: $< L_1$, $< L_2$ Reported result: $< L$, where L = lower of L_1 and L_2

3.3. Individual results: $x \pm s$, $< L$ Reported result: $x \pm s$ if $x \geq L$; $< L$ otherwise.

4.0. Computation of Averages and Standard Deviations

4.1 Averages and standard deviations listed in the tables are computed from all of the individual measurements over the period averaged; for example, an annual standard deviation would not be the average of quarterly standard deviations. The average $\bar{x}$ and standard deviation "s" of a set of n numbers $x_1, x_2 \ldots x_n$ are defined as follows:

$$\bar{x} = \frac{1}{n} \sum x \qquad s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

4.2 Values below the highest lower limit of detection are not included in the average.

4.3 If all values in the averaging group are less than the highest LLD, the highest LLD is reported.

4.4 If all but one of the values are less than the highest LLD, the single value x and associated two sigma error is reported.

4.5 In rounding off, the following rules are followed:

4.5.1. If the number following those to be retained is less than 5, the number is dropped, and the retained numbers are kept unchanged. As an example, 11.443 is rounded off to 11.44.

4.5.2. If the number following those to be retained is equal to or greater than 5, the number is dropped and the last retained number is raised by 1. As an example, 11.445 is rounded off to 11.45.

APPENDIX C

Sampling Program and Locations

POINT BEACH NUCLEAR PLANT

Sample Type	Locations No.	Locations Codes (and Type)[a]	Collection Type (and Frequency)[b]	Analysis (and Frequency)[b]
Airborne Filters	6	E-1-4, 8, 20	Weekly	GB, GS, on QC for each location
Airborne Iodine	6	E-1-4, 8, 20	Weekly	I-131
Ambient Radiation (TLD's)	22	E-1-9, 12, 14-18, 20, 22-32, 34-36, 38,39	Quarterly	Ambient Gamma
Lake Water	5	E-1, 5, 6, 33	Monthly	GB, GS, I-131 on MC H-3, Sr-89-90 on QC
Well Water	1	E-10	Quarterly	GB, GS, H-3, Sr-89-90, I-131
Vegetation	8	E-1-4, 6, 9, 20	3x / year as available	GB, GS
Shoreline Silt	5	E-1, 5, 6, 12, 33	2x / year	GB, GS
Soil	8	E-1-4, 6, 8, 9, 20	2x / year	GB, GS
Milk	3	E-11, 40, 21	Monthly	GS, I-131, Sr-89-90
Algae	2	E-5, 12	3x / year as available	GB, GS
Fish	1	E-13	2x / year as available	GB, GS (in edible portions)

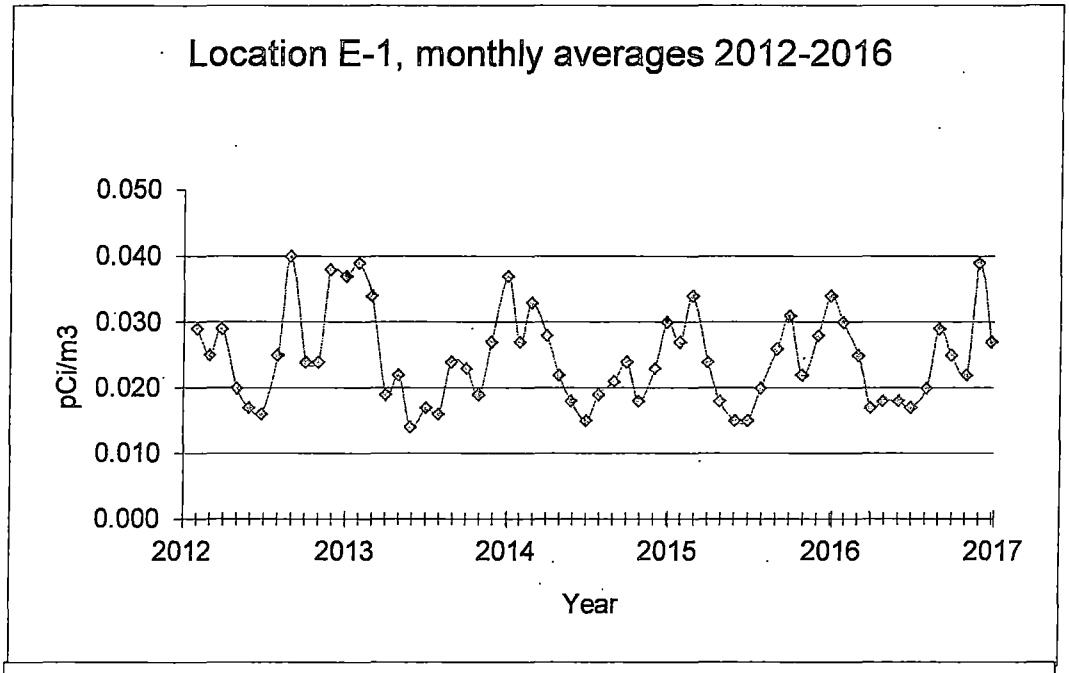
[a] Locations codes are defined in Table 2. Control Stations are indicated by (C). All other stations are indicators.

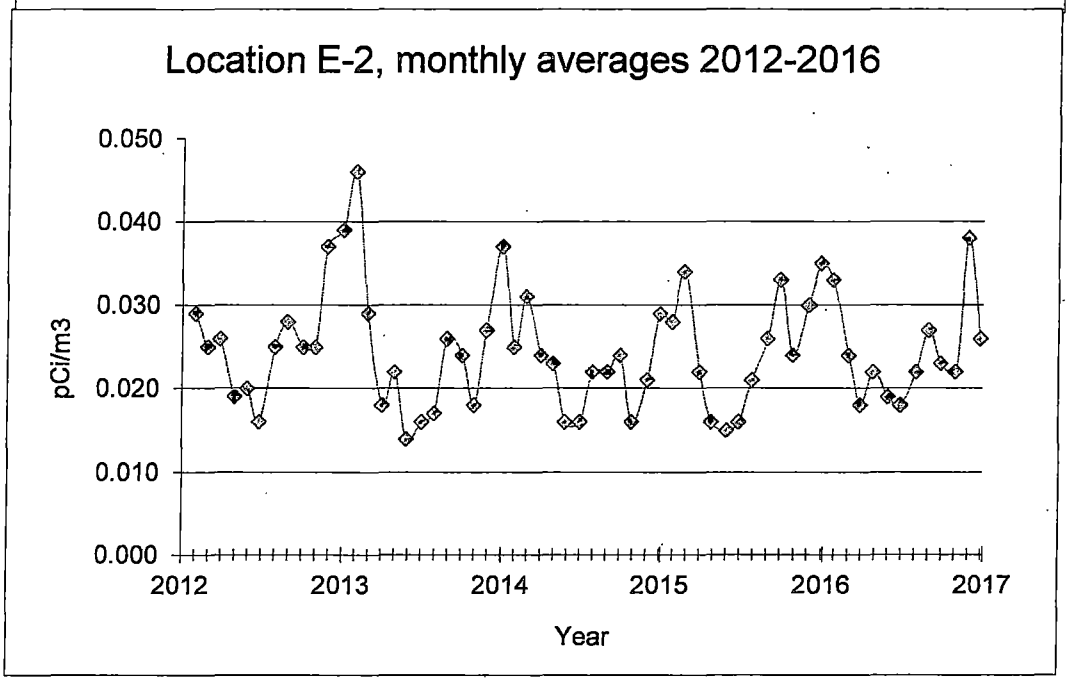
[b] Analysis type is coded as follows: GB = gross beta, GA = gross alpha, GS = gamma spectroscopy, H-3 = tritium, Sr-89 = strontium-89, Sr-90 = strontium-90, I-131 = iodine-131. Analysis frequency is coded as follows: MC = monthly composite, QC = quarterly composite.

APPENDIX D

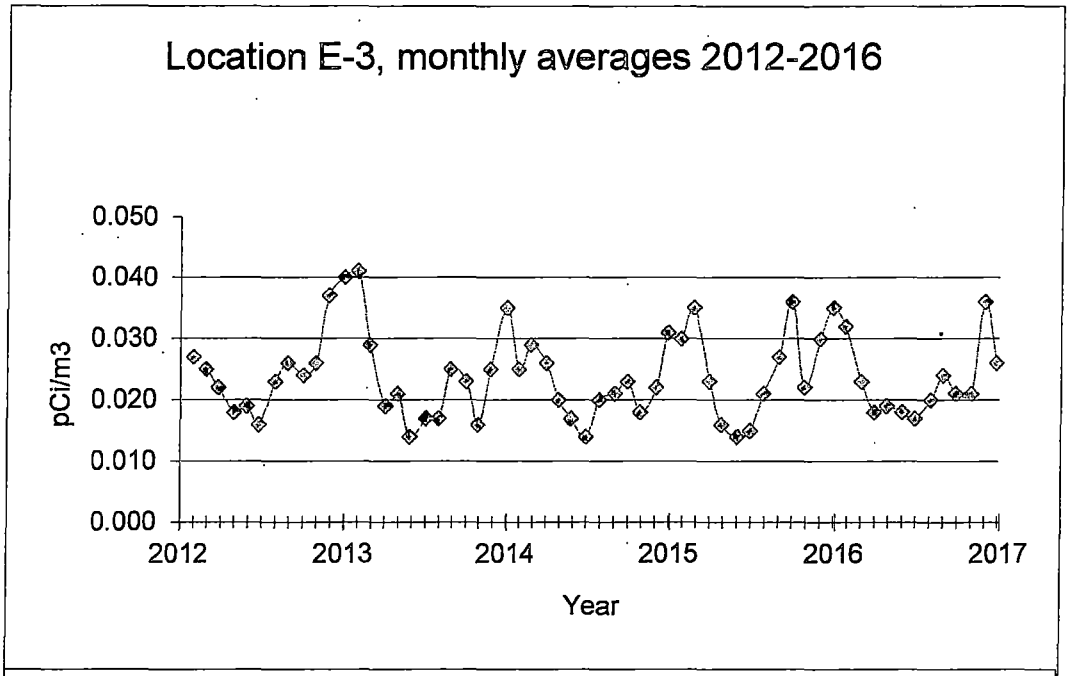
Graphs of Data Trends

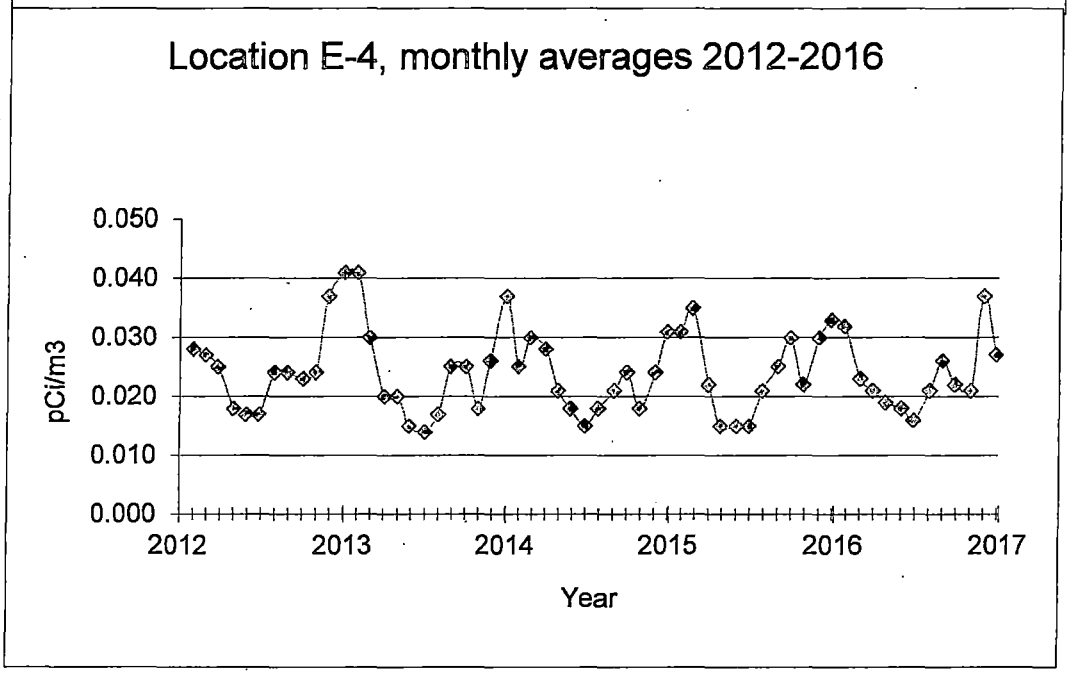
Air Particulates - Gross Beta



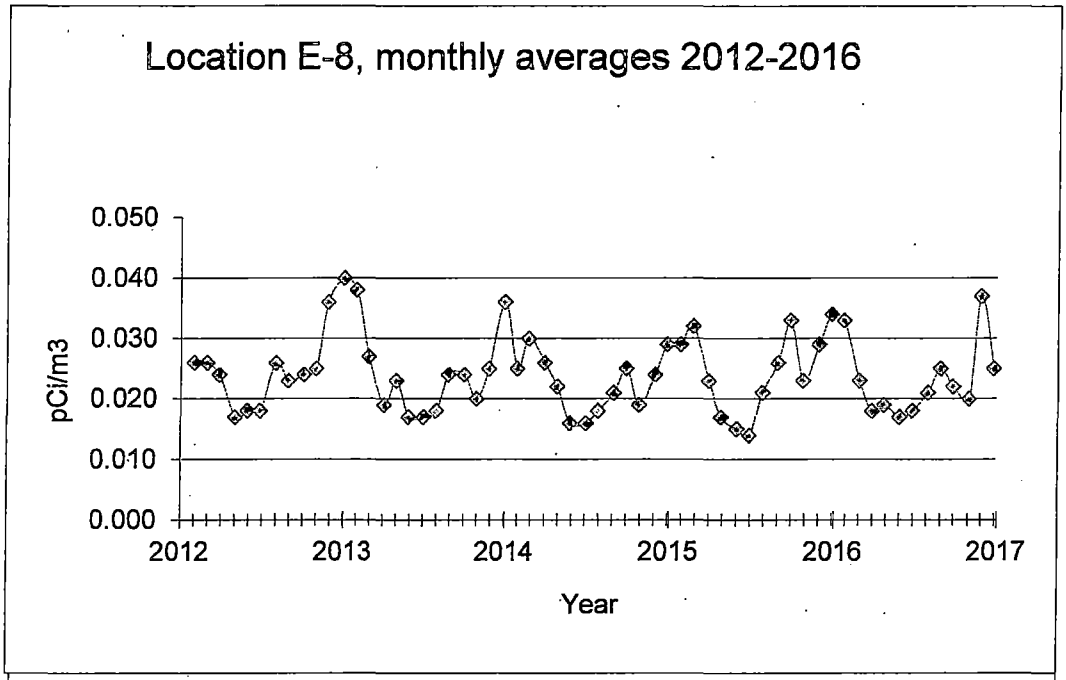


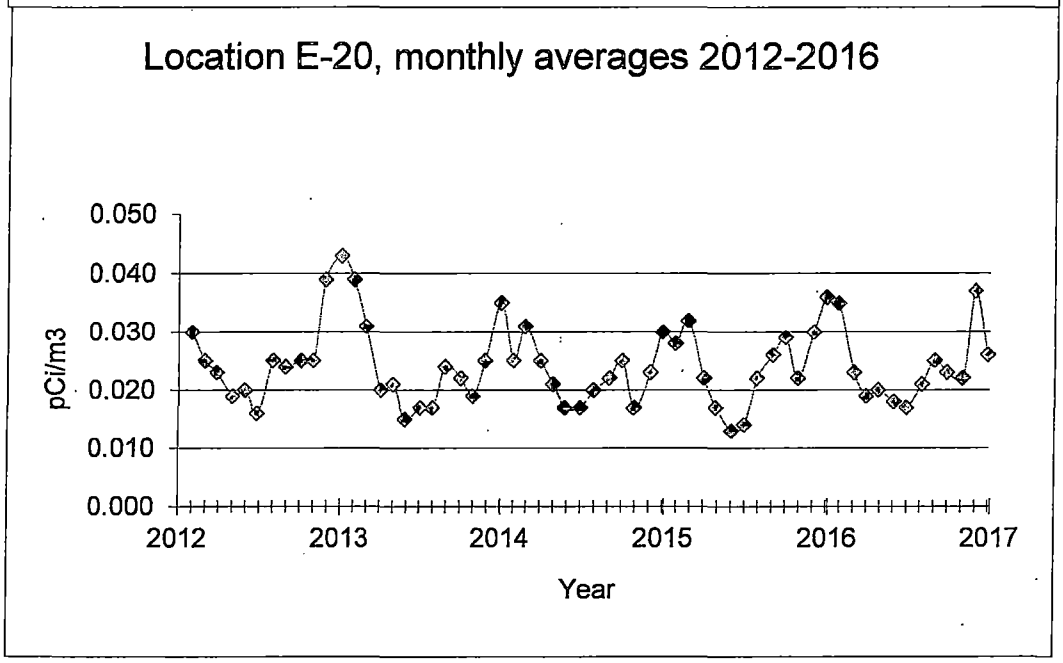
Air Particulates - Gross Beta





Air Particulates - Gross Beta





APPENDIX E

Supplemental Analyses

POINT BEACH NUCLEAR PLANT

Facade Wells

Units: = pCi\L — Gamma isotopic analysis

Location	GW-09 1Z-361A		GW-09 1Z-361B		GW-10 2Z-361A		GW-10 2Z-361B	
Collection Date	01-22-16		01-22-16		01-22-16		01-22-16	
Lab Code	EWW- 334	MDC	EWW- 335	MDC	EWW- 336	MDC	EWW- 337	MDC
Be-7	5.1 ± 10.2	< 28.8	-9.1 ± 12.3	< 26.4	6.4 ± 11.1	< 33.5	-3.2 ± 10.0	< 23.6
Mn-54	-0.4 ± 1.2	< 2.1	-0.6 ± 1.2	< 1.9	0.0 ± 1.4	< 2.3	0.8 ± 1.3	< 2.7
Fe-59	2.8 ± 2.2	< 6.5	-1.1 ± 2.5	< 4.6	-0.6 ± 2.4	< 5.9	-2.2 ± 2.3	< 4.8
Co-58	-0.2 ± 1.3	< 2.8	0.4 ± 1.2	< 2.3	0.5 ± 1.3	< 3.0	1.2 ± 1.3	< 3.0
Co-60	0.2 ± 1.3	< 1.7	0.7 ± 1.2	< 2.0	0.5 ± 1.4	< 2.7	-0.2 ± 1.4	< 1.9
Zn-65	1.6 ± 2.4	< 4.7	-5.6 ± 3.1	< 4.2	-1.9 ± 2.7	< 4.9	1.5 ± 2.6	< 4.8
Zr-Nb-95	-0.3 ± 1.3	< 2.9	-0.6 ± 1.3	< 3.3	-4.3 ± 1.5	< 4.2	-2.2 ± 1.4	< 2.8
Cs-134	-0.6 ± 1.2	< 2.4	-0.5 ± 1.3	< 2.6	-2.7 ± 1.5	< 2.6	-0.8 ± 1.3	< 2.5
Cs-137	0.3 ± 1.5	< 2.7	0.2 ± 1.5	< 2.7	-0.9 ± 1.5	< 2.5	2.6 ± 1.5	< 2.9
Ba-La-140	2.1 ± 1.4	< 5.9	0.1 ± 1.4	< 6.2	-1.9 ± 1.7	< 6.0	-5.3 ± 1.5	< 6.2
Location	GW-09 1Z-361A		GW-09 1Z-361B		GW-10 2Z-361A		GW-10 2Z-361B	
Collection Date	04-19-16		04-19-16		04-19-16		04-20-16	
Lab Code	EWW- 2520		EWW- 2521		EWW- 2524		EWW- 2525	
Be-7	-9.7 ± 11.1	< 28.5	0.4 ± 10.8	< 39.0	-6.3 ± 11.2	< 34.7	-0.7 ± 13.3	< 36.2
Mn-54	-1.8 ± 1.4	< 2.3	-0.2 ± 1.4	< 2.0	0.8 ± 1.4	< 3.2	1.1 ± 1.7	< 3.6
Fe-59	-1.0 ± 2.5	< 6.0	-0.9 ± 2.6	< 7.6	7.0 ± 2.7	< 11.0	1.2 ± 3.0	< 10.0
Co-58	0.2 ± 1.4	< 2.5	0.1 ± 1.4	< 3.8	-0.1 ± 1.4	< 3.7	1.7 ± 1.6	< 5.0
Co-60	-0.4 ± 1.5	< 2.7	-0.8 ± 1.5	< 2.6	1.0 ± 1.6	< 3.3	1.9 ± 1.8	< 3.3
Zn-65	0.0 ± 2.7	< 5.9	0.9 ± 2.4	< 4.5	1.5 ± 2.7	< 5.2	1.1 ± 3.3	< 7.4
Zr-Nb-95	-1.1 ± 1.5	< 5.9	-0.1 ± 1.4	< 5.5	-2.3 ± 1.5	< 4.8	2.3 ± 1.7	< 6.1
Cs-134	0.0 ± 1.5	< 2.8	-0.2 ± 1.4	< 2.6	0.0 ± 1.4	< 2.6	0.6 ± 1.7	< 3.2
Cs-137	2.2 ± 1.5	< 2.9	0.9 ± 1.6	< 3.0	1.2 ± 1.6	< 3.1	-0.3 ± 1.9	< 2.9
Ba-La-140	-6.2 ± 1.6	< 15.1 [a]	-4.4 ± 1.6	< 19.0 [a]	-5.0 ± 1.6	< 20.6 [a]	-0.7 ± 2.0	< 31.7 [a]
Location	GW-09 1Z-361A		GW-09 1Z-361B		GW-10 2Z-361A		GW-09 1Z-361A	
Collection Date	05-02-16		05-02-16		05-02-16		07-16-16	
Lab Code	EWW- 2522		EWW- 2523		EWW- 2526		EWW- 4018	
Be-7	16.5 ± 13.5	< 36.3	9.5 ± 12.1	< 26.3	4.1 ± 10.8	< 29.5	3.4 ± 13.6	< 33.5
Mn-54	-0.4 ± 1.4	< 2.2	0.6 ± 1.3	< 2.3	-0.6 ± 1.3	< 1.8	-1.1 ± 1.5	< 1.8
Fe-59	-2.5 ± 3.0	< 7.0	0.1 ± 2.5	< 6.9	-3.0 ± 2.4	< 7.1	1.8 ± 2.8	< 5.3
Co-58	0.1 ± 1.4	< 3.4	-0.3 ± 1.2	< 3.1	1.7 ± 1.3	< 3.7	-0.4 ± 1.4	< 2.8
Co-60	1.0 ± 1.4	< 2.3	-0.7 ± 1.5	< 1.8	0.9 ± 1.4	< 2.7	-0.8 ± 1.4	< 2.8
Zn-65	-2.2 ± 3.1	< 6.0	-1.1 ± 2.3	< 4.1	-1.1 ± 2.6	< 4.4	0.6 ± 3.0	< 5.4
Zr-Nb-95	-2.6 ± 1.5	< 3.1	0.7 ± 1.4	< 4.8	-0.5 ± 1.4	< 4.6	0.1 ± 1.5	< 3.6
Cs-134	-0.3 ± 1.5	< 3.1	-0.7 ± 1.3	< 2.6	-0.7 ± 1.4	< 2.5	0.1 ± 1.5	< 3.2
Cs-137	1.4 ± 1.6	< 3.1	1.6 ± 1.5	< 2.8	0.1 ± 1.5	< 3.1	0.7 ± 1.6	< 3.0
Ba-La-140	-1.5 ± 1.5	< 6.4	5.4 ± 1.6	< 12.6	-3.4 ± 1.4	< 8.2	-3.9 ± 1.6	< 6.1

[a] LLD for La-140 nor reached due to age of sample and smaller sample size; samples counted for 60,000 seconds.

POINT BEACH NUCLEAR PLANT

Facade Wells

Units: = pCi\L

Gamma isotopic analysis

Location	GW-09 1Z-361B		GW-10 2Z-361A		GW-10 2Z-361B		GW-09 1Z-361A	
Collection Date	07-16-16		07-16-16		07-16-16		10-15-16	
Lab Code	EWW- 4019	MDC	EWW- 4020	MDC	EWW- 4021	MDC	EWW- 5889	MDC
Be-7	10.3 ± 10.5	< 24.9	10.8 ± 12.1	< 34.0	0.1 ± 10.2	< 24.5	8.0 ± 10.5	< 24.7
Mn-54	0.6 ± 1.3	< 2.9	0.4 ± 1.3	< 2.8	0.7 ± 1.2	< 2.3	0.5 ± 1.4	< 2.7
Fe-59	-1.7 ± 2.4	< 5.9	-1.0 ± 2.3	< 5.2	-2.3 ± 2.2	< 4.2	-1.9 ± 2.3	< 6.1
Co-58	-1.1 ± 1.3	< 1.8	0.6 ± 1.2	< 2.7	-0.5 ± 1.2	< 1.9	0.3 ± 1.3	< 1.7
Co-60	0.7 ± 1.4	< 2.8	-0.7 ± 1.3	< 1.8	-0.5 ± 1.4	< 1.6	0.4 ± 1.4	< 2.1
Zn-65	0.9 ± 2.5	< 5.0	1.6 ± 2.5	< 5.3	1.4 ± 2.3	< 3.9	-0.1 ± 2.7	< 5.5
Zr-Nb-95	0.0 ± 1.5	< 3.7	-0.3 ± 1.3	< 3.1	0.3 ± 1.3	< 3.4	0.8 ± 1.4	< 3.1
Cs-134	-0.3 ± 1.4	< 2.6	0.7 ± 1.4	< 2.6	-0.9 ± 1.3	< 2.4	-0.5 ± 1.3	< 2.4
Cs-137	0.2 ± 1.5	< 3.0	-0.6 ± 1.4	< 2.4	-0.5 ± 1.5	< 2.6	0.8 ± 1.5	< 2.8
Ba-La-140	-2.8 ± 1.6	< 7.3	-2.3 ± 1.6	< 8.2	-5.4 ± 1.3	< 4.1	-2.7 ± 1.5	< 4.5

Location	GW-09 1Z-361B		GW-10 2Z-361A		GW-10 2Z-361B	
Collection Date	10-15-16		10-15-16		10-15-16	
Lab Code	EWW- 5890		EWW- 5891		EWW- 5892	
Be-7	-4.9 ± 13.1	< 20.5	-3.8 ± 11.7	< 26.5	10.6 ± 10.0	< 22.6
Mn-54	0.0 ± 1.4	< 2.9	1.2 ± 1.1	< 2.1	0.3 ± 1.3	< 2.5
Fe-59	-0.7 ± 2.7	< 6.2	-0.1 ± 2.2	< 5.5	-0.8 ± 2.2	< 6.1
Co-58	-0.1 ± 1.3	< 3.3	0.1 ± 1.2	< 2.6	0.4 ± 1.2	< 3.2
Co-60	3.1 ± 1.4	< 2.4	-0.2 ± 1.4	< 2.2	-1.5 ± 1.4	< 2.0
Zn-65	-0.8 ± 2.9	< 4.9	-2.0 ± 2.4	< 3.5	-0.4 ± 2.7	< 5.3
Zr-Nb-95	0.3 ± 1.4	< 4.5	-0.8 ± 1.3	< 3.7	1.8 ± 1.3	< 4.0
Cs-134	1.3 ± 1.4	< 3.0	0.4 ± 1.3	< 2.4	-0.7 ± 1.2	< 2.3
Cs-137	0.6 ± 1.6	< 2.8	0.0 ± 1.5	< 2.5	0.5 ± 1.4	< 2.9
Ba-La-140	-1.9 ± 1.5	< 7.6	1.6 ± 1.4	< 6.6	-3.1 ± 1.4	< 5.2

POINT BEACH NUCLEAR PLANT

Supplemental Analyses

Units: = pCi\L

Gamma isotopic analysis

Location	U2FSSDS		U2FSSDS		U2FSSDS	
Collection Date	01-31-16		02-29-16		04-01-16	
Lab Code	EW- 1029	MDC	EW- 1030	MDC	EW- 2204	MDC
Be-7	-12.2 ± 11.8	< 26.8	13.6 ± 13.9	< 35.0	-3.3 ± 9.8	< 34.4
Mn-54	0.8 ± 1.3	< 2.5	0.6 ± 1.3	< 2.9	0.0 ± 1.3	< 2.8
Fe-59	0.6 ± 2.2	< 6.2	-2.2 ± 2.8	< 4.5	-0.1 ± 2.2	< 8.8
Co-58	0.6 ± 1.2	< 2.8	0.4 ± 1.3	< 2.7	-0.1 ± 1.2	< 2.3
Co-60	0.3 ± 1.4	< 2.3	0.3 ± 1.4	< 3.3	0.7 ± 1.4	< 3.1
Zn-65	-0.8 ± 2.5	< 4.8	2.0 ± 2.9	< 5.7	1.0 ± 2.5	< 4.5
Zr-Nb-95	-0.5 ± 1.3	< 5.8	0.0 ± 1.4	< 3.0	1.8 ± 1.3	< 5.8
Cs-134	-1.1 ± 1.3	< 2.6	0.4 ± 1.4	< 2.9	0.2 ± 1.3	< 2.4
Cs-137	0.1 ± 1.4	< 2.7	0.6 ± 1.5	< 2.6	-0.7 ± 1.5	< 2.4
Ba-La-140	7.4 ± 1.4	< 26.0 [a]	-1.1 ± 1.5	< 2.7	0.6 ± 1.6	< 17.2

Location	U2FSSDS		U2FSSDS		U2FSSDS	
Collection Date	04-25-16		05-31-16		06-30-16	
Lab Code	EW- 2503		EW- 2922		EW- 3615	
Be-7	-7.1 ± 13.3	< 19.0	-1.3 ± 13.6	< 28.9	0.3 ± 11.0	< 21.6
Mn-54	0.6 ± 1.4	< 2.8	-1.2 ± 1.3	< 1.8	1.0 ± 1.3	< 2.5
Fe-59	-0.3 ± 2.7	< 4.7	-1.3 ± 2.8	< 5.5	0.6 ± 2.4	< 4.8
Co-58	-1.7 ± 1.4	< 1.8	1.6 ± 1.3	< 2.5	-0.2 ± 1.3	< 1.9
Co-60	-1.0 ± 1.5	< 1.8	0.6 ± 1.4	< 2.8	0.9 ± 1.4	< 2.7
Zn-65	2.3 ± 3.0	< 5.7	1.3 ± 3.0	< 4.7	-1.1 ± 2.7	< 4.3
Zr-Nb-95	-1.5 ± 1.5	< 2.6	-0.6 ± 1.5	< 3.5	-1.6 ± 1.4	< 3.4
Cs-134	-0.7 ± 1.5	< 3.1	-0.3 ± 1.4	< 3.0	-1.4 ± 1.4	< 2.6
Cs-137	1.1 ± 1.5	< 2.6	1.6 ± 1.5	< 3.0	0.4 ± 1.5	< 3.1
Ba-La-140	-3.5 ± 1.6	< 5.1	-1.4 ± 1.5	< 2.4	-2.7 ± 1.5	< 4.7

Location	U2FSSDS		U2FSSDS		U2FSSDS	
Collection Date	07-31-16		08-31-16		09-30-16	
Lab Code	EW- 4285		EW- 4908		EWW- 5524	
Be-7	-7.5 ± 9.9	< 21.9	-0.9 ± 10.2	< 27.8	2.6 ± 10.0	< 27.7
Mn-54	-0.4 ± 1.3	< 1.9	0.3 ± 1.3	< 3.0	0.5 ± 1.2	< 2.4
Fe-59	-0.3 ± 2.1	< 4.7	-1.4 ± 2.2	< 4.9	-2.2 ± 2.1	< 3.1
Co-58	0.2 ± 1.2	< 2.9	0.2 ± 1.2	< 2.8	0.1 ± 1.3	< 2.3
Co-60	0.5 ± 1.3	< 2.3	0.1 ± 1.3	< 2.0	0.5 ± 1.4	< 2.7
Zn-65	1.3 ± 2.5	< 5.2	-0.6 ± 2.5	< 4.7	0.2 ± 2.3	< 3.7
Zr-Nb-95	0.4 ± 1.3	< 3.3	0.9 ± 1.3	< 4.4	-0.6 ± 1.3	< 3.5
Cs-134	-1.0 ± 1.3	< 2.4	0.4 ± 1.3	< 2.5	-0.5 ± 1.3	< 2.3
Cs-137	1.8 ± 1.5	< 3.1	0.7 ± 1.5	< 2.8	1.9 ± 1.5	< 3.1
Ba-La-140	3.8 ± 1.4	< 6.3	-9.0 ± 1.6	< 11.5	-0.7 ± 1.5	< 6.2

[a] LLD not reached due to age of sample; sample received 03-11-16.

POINT BEACH NUCLEAR PLANT

Supplemental Analyses

Units: = pCi\L

Gamma isotopic analysis

Location	U2FSSDS		U2FSSDS		U2FSSDS	
Collection Date	10-31-16		11-30-16		12-31-16	
Lab Code	EW- 6393	MDC	EW- 6753	MDC	EW- 7079	MDC
Be-7	-5.2 ± 10.6	< 27.2	1.4 ± 10.3	< 29.2	7.8 ± 14.2	< 28.8
Mn-54	-0.2 ± 1.4	< 3.1	0.7 ± 1.2	< 2.6	0.3 ± 1.5	< 2.3
Fe-59	-2.1 ± 2.3	< 2.9	2.2 ± 2.1	< 5.0	0.6 ± 3.0	< 6.0
Co-58	-0.2 ± 1.2	< 2.3	0.5 ± 1.3	< 2.9	0.5 ± 1.4	< 2.5
Co-60	-0.6 ± 1.4	< 2.8	-1.1 ± 1.4	< 2.0	0.9 ± 1.5	< 2.1
Zn-65	-0.9 ± 2.6	< 3.5	0.5 ± 2.3	< 3.5	-2.1 ± 3.2	< 5.0
Zr-Nb-95	0.7 ± 1.4	< 2.8	0.7 ± 1.3	< 3.4	1.2 ± 1.5	< 4.1
Cs-134	-0.6 ± 1.4	< 2.8	-0.7 ± 1.3	< 2.3	0.4 ± 1.4	< 3.0
Cs-137	1.0 ± 1.5	< 2.1	0.2 ± 1.5	< 2.5	-1.0 ± 1.7	< 3.6
Ba-La-140	3.1 ± 1.5	< 8.6	-5.8 ± 1.5	< 3.9	-2.0 ± 1.4	< 3.7

Annual	**Mean ± s.d.**
Be-7	**-1.0 ± 7.0**
Mn-54	**0.3 ± 0.6**
Fe-59	**-0.5 ± 1.4**
Co-58	**0.2 ± 0.8**
Co-60	**0.2 ± 0.7**
Zn-65	**0.3 ± 1.4**
Zr-Nb-95	**0.0 ± 1.1**
Cs-134	**-0.4 ± 0.6**
Cs-137	**-0.2 ± 3.1**
Ba-La-140	**-0.8 ± 4.4**

APPENDIX F

Special Analyses

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Dr. Kjell Johansen
Point Beach Nuclear Plant
6610 Nuclear Road
Two Rivers, Wisconsin 54241

LABORATORY REPORT NO.: 8006-100 -1178
DATE: 03-31-16
SAMPLES RECEIVED: 03-11-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-1031
Date Collected	01-07-16
Location	West Digester

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 150	65 ± 82	200
K-40	---	81.2 ± 18.5	
Mn-54	< 1.2	-0.4 ± 0.6	10
Co-58	< 2.0	0.4 ± 0.6	10
Co-60	---	1.9 ± 0.9 [b]	10
Fe-59	< 4.1	-0.6 ± 1.1	30
Zn-65	< 2.2	-0.4 ± 1.2	
Zr-Nb-95	< 3.6	0.2 ± 0.6	15
Ru-103	< 3.4	0.1 ± 0.5	
I-131	< 277.0	-66.7 ± 0.6	
Cs-134	< 0.9	0.1 ± 0.6	10
Cs-137	< 1.0	0.5 ± 0.7	10
Ba-La-140	< 24.3 [a]	-12.9 ± 0.6	15
Ce-141	< 7.9	-2.9 ± 4.6	
Ce-144	< 10.2	-1.7 ± 1.0	
Tl-208	< 1.7	2.2 ± 0.7	
Bi-212	< 18.7	-4.2 ± 8.3	
Bi-214	< 3.1	7.5 ± 1.5	
Pb-212	< 2.4	3.7 ± 1.0	
Pb-214	< 3.4	5.0 ± 1.4	
Ra-226	< 29.8	87.3 ± 14.0	
Ac-228	< 5.2	8.3 ± 2.4	
U-235	< 1.5	-4.2 ± 0.8	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.
[a] Required LLD not met due to the sample age. The sample was counted on the day received for 60,000 sec.
[b] re-count on the diffferent detector: 3.7 ± 1.3 pCi/L.

Approved: 4/1/16
Forrest G. Shaw III
Quality Assurance

Eronia Grob
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LABORATORY REPORT NO.: 8006-100 -1176
DATE: 03-08-16
SAMPLES RECEIVED: 02-26-16

Analyses for tritium and re-analysis for gamma emitting isotopes.

Lab Code	EXW-763
Date Collected	02-17-16.
Location	Sewage Digester East

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 172	99 ± 87	200
K-40	< 69.6	286.8 ± 28.7	
Mn-54	< 3.2	-0.4 ± 1.6	10
Co-58	< 2.4	-1.9 ± 1.6	10
Co-60	< 4.3	1.1 ± 2.0	10
Fe-59	< 8.2	0.9 ± 3.0	30
Zn-65	< 5.2	-1.5 ± 3.2	30
Zr-Nb-95	< 5.2	-1.3 ± 1.8	15
Ru-103	< 4.7	1.6 ± 1.4	
I-131	< 20.0	1.2 ± 1.6	
Cs-134	< 2.4	-0.8 ± 1.6	10
Cs-137	< 3.2	1.2 ± 1.9	10
Ba-La-140	< 10.8	-4.9 ± 1.9	15
Ce-141	< 7.2	-4.4 ± 2.4	
Ce-144	< 17.5	0.9 ± 1.1	
Tl-208	< 4.2	5.0 ± 2.1	
Bi-212	< 6.5	19.7 ± 23.2	
Bi-214	---	14.0 ± 5.2	
Pb-212	< 6.5	11.6 ± 3.0	
Pb-214	---	14.2 ± 8.0	
Ra-226	< 79.9	224.9 ± 36.0	
Ac-228	< 12.0	7.9 ± 6.6	
U-235	< 4.1	-11.8 ± 2.1	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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LABORATORY REPORT NO.: 8006-100 -1177
DATE: 04-12-16
SAMPLES RECEIVED: 03-28-16

CORRECTED REPORT

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-1214
Date Collected	03-22-16
Location	Sewage Digester West [a]

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 145	107 ± 78	200
K-40	—	104.4 ± 49.1	
Mn-54	< 3.5	0.2 ± 1.6	10
Co-58	< 2.2	-1.6 ± 1.9	10
Co-60	< 2.9	0.6 ± 2.2	10
Fe-59	< 3.5	0.4 ± 3.5	30
Zn-65	< 4.7	-0.6 ± 3.3	30
Zr-Nb-95	< 3.4	0.1 ± 2.0	15
Ru-103	< 3.9	0.1 ± 2.1	
I-131	< 7.6	-0.7 ± 1.8	
Cs-134	< 3.6	0.7 ± 1.8	10
Cs-137	< 3.5	0.3 ± 2.0	10
Ba-La-140	< 1.8	-4.8 ± 2.1	15
Ce-141	< 8.0	0.9 ± 3.2	
Ce-144	< 26.1	-1.5 ± 14.6	
Tl-208	< 4.4	3.1 ± 2.3	
Bi-212	< 3.4	7.0 ± 19.8	
Bi-214	< 10.8	8.0 ± 5.0	
Pb-212	< 8.2	9.1 ± 3.6	
Pb-214	< 11.3	8.9 ± 4.8	
Ra-226	< 100.6	14.7 ± 42.9	
Ac-228	< 14.6	4.9 ± 6.0	
U-235	< 4.8	0.0 ± 2.8	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

[a] Corrected Sample Location

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LABORATORY REPORT NO.: 8006-100 -1179
DATE: 04-13-16
SAMPLES RECEIVED: 04-01-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-1305
Date Collected	03-28-16
Location	Equalization Tank

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 152	223 ± 87	200
K-40	< 77.6	213.7 ± 38.5	
Mn-54	< 4.1	-0.4 ± 2.1	10
Co-58	< 3.5	-0.2 ± 1.8	10
Co-60	< 3.0	-0.6 ± 2.3	10
Fe-59	< 8.4	1.6 ± 3.6	30
Zn-65	< 6.1	0.2 ± 4.0	
Zr-Nb-95	< 4.9	1.8 ± 2.2	15
Ru-103	< 4.4	0.4 ± 1.9	
I-131	< 8.2	-0.7 ± 1.9	
Cs-134	< 2.6	-2.1 ± 2.1	10
Cs-137	< 3.6	-0.6 ± 2.4	10
Ba-La-140	< 4.6	-1.4 ± 2.2	15
Ce-141	< 7.9	-3.5 ± 3.3	
Ce-144	< 27.4	-1.6 ± 1.5	
Tl-208	< 5.3	2.6 ± 2.3	
Bi-212	< 52.2	41.8 ± 26.8	
Bi-214	< 11.9	23.2 ± 5.6	
Pb-212	< 8.5	10.6 ± 3.8	
Pb-214	< 12.5	19.4 ± 5.4	
Ra-226	< 109.4	191.1 ± 49.7	
Ac-228	< 17.7	7.1 ± 8.1	
U-235	< 5.6	-11.6 ± 3.2	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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LABORATORY REPORT NO.: 8006-100 -1180
DATE: 04-22-16
SAMPLES RECEIVED: 04-07-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-1467
Date Collected	03-30-16
Location	Equalization Basin

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 142	295 ± 86	200
K-40	< 111.0	155.3 ± 55.9	
Mn-54	< 4.7	0.8 ± 2.6	10
Co-58	< 4.5	-0.2 ± 2.6	10
Co-60	< 2.6	-2.1 ± 2.9	10
Fe-59	< 8.9	0.5 ± 5.2	30
Zn-65	< 10.2	6.2 ± 5.9	
Zr-Nb-95	< 6.2	0.8 ± 3.0	15
Ru-103	< 4.9	-1.5 ± 2.4	
I-131	< 16.2	9.9 ± 2.9	
Cs-134	< 4.9	1.0 ± 3.2	10
Cs-137	< 5.5	3.6 ± 3.3	10
Ba-La-140	< 6.8	-4.6 ± 4.0	15
Ce-141	< 12.4	2.3 ± 4.8	
Ce-144	< 31.5	-9.4 ± 22.7	
Tl-208	< 7.8	5.2 ± 3.4	
Bi-212	< 80.4	19.8 ± 41.1	
Bi-214	< 18.3	29.9 ± 9.0	
Pb-212	< 12.8	12.4 ± 5.9	
Pb-214	< 19.1	23.9 ± 8.6	
Ra-226	< 161.1	215.2 ± 73.2	
Ac-228	< 24.1	14.3 ± 11.4	
U-235	< 7.6	-11.5 ± 4.6	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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LABORATORY REPORT NO.: 8006-100 -1181
DATE: 04-22-16
SAMPLES RECEIVED: 04-07-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-1469
Date Collected	04-01-16
Location	Equalization Basin

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 142	218 ± 82	200
K-40	< 112.1	180.0 ± 57.6	
Mn-54	< 6.2	-1.0 ± 2.9	10
Co-58	< 3.4	-2.1 ± 2.9	10
Co-60	< 4.7	1.2 ± 3.3	10
Fe-59	< 5.6	-1.2 ± 5.0	30
Zn-65	< 10.0	1.9 ± 6.6	
Zr-Nb-95	< 4.6	-1.6 ± 3.0	15
Ru-103	< 6.2	-0.2 ± 2.6	
I-131	< 16.1	0.3 ± 2.9	
Cs-134	< 4.0	1.7 ± 2.7	10
Cs-137	< 6.2	2.8 ± 3.3	10
Ba-La-140	< 7.2	-4.9 ± 3.6	15
Ce-141	< 10.5	-1.2 ± 5.0	
Ce-144	< 37.3	-5.5 ± 21.2	
Tl-208	< 7.9	5.2 ± 3.6	
Bi-212	< 73.0	21.9 ± 38.6	
Bi-214	< 18.6	23.7 ± 8.1	
Pb-212	< 11.6	14.9 ± 5.9	
Pb-214	< 17.5	9.2 ± 7.9	
Ra-226	< 163.8	264.7 ± 68.8	
Ac-228	< 25.6	9.2 ± 11.2	
U-235	< 7.0	-11.2 ± 4.5	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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LABORATORY REPORT NO.: 8006-100 -1183
DATE: 04-26-16
SAMPLES RECEIVED: 04-14-16

Analyses for tritium and for gamma emitting isotopes.

Lab Code	EXW-1548
Date Collected	04-12-16
Location	Sewage Digester East

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 147	289 ± 88	200
K-40	< 122.7	240.7 ± 67.4	
Mn-54	< 7.2	3.5 ± 3.1	10
Co-58	< 4.9	5.2 ± 3.1	10
Co-60	< 5.3	-1.0 ± 4.2	10
Fe-59	< 4.9	-14.5 ± 6.3	30
Zn-65	< 8.2	-0.4 ± 5.5	30
Zr-Nb-95	< 6.8	0.2 ± 3.8	15
Ru-103	< 4.1	-0.2 ± 2.9	
I-131	< 5.7	-3.3 ± 3.0	
Cs-134	< 4.5	-0.3 ± 3.3	10
Cs-137	< 6.3	0.3 ± 3.8	10
Ba-La-140	< 3.5	-3.4 ± 3.3	15
Ce-141	< 10.0	3.0 ± 5.2	
Ce-144	< 30.7	2.7 ± 2.2	
Tl-208	< 7.5	4.3 ± 3.6	
Bi-212	< 76.1	24.3 ± 40.8	
Bi-214	< 18.2	25.7 ± 9.2	
Pb-212	< 13.5	11.3 ± 6.3	
Pb-214	< 18.7	19.8 ± 8.7	
Ra-226	< 157.3	198.5 ± 75.4	
Ac-228	< 27.8	16.1 ± 13.8	
U-235	< 6.7	-11.3 ± 4.7	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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LABORATORY REPORT NO.: 8006-100 -1189
DATE: 05-31-16
SAMPLES RECEIVED: 05-20-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-2491
Date Collected	05-06-16
Location	Equalization Tank

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 145	87 ± 77	200
K-40	< 52.2	163.1 ± 22.8	
Mn-54	< 2.4	-0.6 ± 1.2	10
Co-58	< 2.8	-2.4 ± 1.2	10
Co-60	< 2.2	-0.7 ± 1.3	10
Fe-59	< 5.4	-0.5 ± 2.3	30
Zn-65	< 4.3	-1.5 ± 2.5	
Zr-Nb-95	< 3.2	1.1 ± 1.3	15
Ru-103	< 3.2	0.2 ± 1.1	
I-131	< 9.6	-1.9 ± 1.2	
Cs-134	< 2.1	0.1 ± 1.2	10
Cs-137	< 2.5	1.3 ± 1.4	10
Ba-La-140	< 6.0	-1.5 ± 1.5	15
Ce-141	< 5.6	-0.2 ± 2.1	
Ce-144	< 15.2	-11.7 ± 8.8	
Tl-208	< 3.5	3.3 ± 1.5	
Bi-212	< 38.9	13.8 ± 18.4	
Bi-214	< 7.6	12.0 ± 3.1	
Pb-212	< 5.5	8.3 ± 2.3	
Pb-214	< 7.4	11.9 ± 3.1	
Ra-226	< 70.7	220.6 ± 30.9	
Ac-228	< 10.3	14.9 ± 4.7	
U-235	< 3.8	-10.1 ± 2.0	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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LABORATORY REPORT NO.: 8006-100 -1192
DATE: 06-15-16
SAMPLES RECEIVED: 06-10-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-2921
Date Collected	05-18-16
Location	West Digester

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 157	192 ± 103	200
K-40	---	83.9 ± 39.0	
Mn-54	< 2.8	1.7 ± 1.3	10
Co-58	< 3.6	2.1 ± 1.4	10
Co-60	< 2.9	0.6 ± 1.6	10
Fe-59	< 5.7	-1.6 ± 2.4	30
Zn-65	< 5.1	1.5 ± 2.6	
Zr-Nb-95	< 4.4	-0.5 ± 1.4	15
Ru-103	< 2.3	-1.1 ± 1.2	
I-131	< 16.3	-4.5 ± 1.3	
Cs-134	< 1.7	-1.8 ± 1.4	10
Cs-137	< 2.3	0.6 ± 1.4	10
Ba-La-140	< 10.3	0.9 ± 1.6	15
Ce-141	< 7.1	-1.7 ± 2.1	
Ce-144	< 15.0	0.8 ± 9.5	
Tl-208	< 3.4	6.9 ± 1.6	
Bi-212	< 44.0	13.6 ± 19.4	
Bi-214	---	12.5 ± 4.5	
Pb-212	< 6.2	11.8 ± 2.5	
Pb-214	< 8.3	27.7 ± 3.9	
Ra-226	< 72.4	205.8 ± 32.9	
Ac-228	< 13.5	11.0 ± 5.7	
U-235	< 3.5	-8.3 ± 2.0	

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LABORATORY REPORT NO.: 8006-100 -1194
DATE: 07-27-16
SAMPLES RECEIVED: 07-15-16

Analyses for tritium and for gamma emitting isotopes.

Lab Code	EXW-3614
Date Collected	06-20-16
Location	Sewage Digester East

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 144	151 ± 80	200
K-40	----	166.5 ± 39.1	
Mn-54	< 2.6	-0.3 ± 1.4	10
Co-58	< 3.5	0.0 ± 1.4	10
Co-60	< 2.5	0.0 ± 1.4	10
Fe-59	< 5.6	-0.3 ± 2.4	30
Zn-65	< 4.1	1.1 ± 2.4	30
Zr-Nb-95	< 3.9	-2.6 ± 1.4	15
Ru-103	< 4.2	-0.3 ± 1.2	
I-131	< 30.0	7.3 ± 1.3	
Cs-134	< 1.8	-0.6 ± 1.4	10
Cs-137	< 2.8	0.2 ± 1.6	10
Ba-La-140	< 6.9	1.9 ± 1.4	15
Ce-141	< 6.8	-2.7 ± 2.1	
Ce-144	< 20.7	6.3 ± 9.4	
Tl-208	< 3.5	4.4 ± 1.7	
Bi-212	< 38.3	20.8 ± 18.3	
Bi-214	< 12.8	31.9 ± 3.8	
Pb-212	< 5.9	15.1 ± 2.6	
Pb-214	< 13.2	30.9 ± 3.7	
Ra-226	< 69.1	193.7 ± 31.0	
Ac-228	< 13.1	13.1 ± 5.7	
U-235	< 4.3	-8.5 ± 2.0	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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LABORATORY REPORT NO.: 8006-100 -1200
DATE: 09-07-16
SAMPLES RECEIVED: 09-01-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-4539
Date Collected	08-25-16
Location	West Digester

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 192	64 ± 118	200
K-40	< 123.5	223.6 ± 62.6	
Mn-54	< 7.0	1.3 ± 3.2	10
Co-58	< 6.5	3.2 ± 3.1	10
Co-60	< 4.6	0.9 ± 4.3	10
Fe-59	< 12.0	7.1 ± 6.2	30
Zn-65	< 10.9	0.8 ± 6.1	
Zr-Nb-95	< 4.9	1.6 ± 3.3	15
Ru-103	< 3.4	-4.2 ± 2.4	
I-131	< 7.5	0.8 ± 3.0	
Cs-134	< 4.8	1.6 ± 3.2	10
Cs-137	< 6.2	-3.9 ± 3.9	10
Ba-La-140	< 4.7	0.7 ± 3.8	15
Ce-141	< 11.0	-4.5 ± 5.4	
Ce-144	< 43.8	3.6 ± 22.8	
Tl-208	< 7.8	4.0 ± 3.8	
Bi-212	< 74.2	16.5 ± 42.5	
Bi-214	< 17.7	17.0 ± 8.2	
Pb-212	< 11.4	11.1 ± 6.2	
Pb-214	< 19.4	20.8 ± 8.3	
Ra-226	< 168.0	185.4 ± 81.6	
Ac-228	< 25.7	16.7 ± 14.0	
U-235	< 10.2	-8.2 ± 5.4	

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LABORATORY REPORT NO.: 8006-100 -1201
DATE: 10-20-16
SAMPLES RECEIVED: 09-22-16

Analyses for tritium and for gamma emitting isotopes.

Lab Code	EXW-4953
Date Collected	09-20-16
Location	Sewage Digester East

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 183	143 ± 92	200
K-40	——	193.5 ± 93.7	
Mn-54	< 4.9	-0.4 ± 3.5	10
Co-58	< 6.4	1.6 ± 3.2	10
Co-60	< 5.8	1.7 ± 3.8	10
Fe-59	< 6.0	-1.2 ± 5.7	30
Zn-65	< 12.8	-5.9 ± 7.2	30
Zr-Nb-95	< 5.1	-1.1 ± 2.9	15
Ru-103	< 5.5	-1.6 ± 3.2	
I-131	< 13.2	2.0 ± 3.3	
Cs-134	< 5.3	1.0 ± 3.0	10
Cs-137	< 7.3	4.5 ± 4.1	10
Ba-La-140	< 5.4	-3.2 ± 4.9	15
Ce-141	< 11.6	-4.7 ± 5.1	
Ce-144	< 41.8	-1.4 ± 2.4	
Tl-208	< 8.3	4.0 ± 4.3	
Bi-212	< 79.1	13.5 ± 45.6	
Bi-214	< 19.3	6.1 ± 8.1	
Pb-212	< 12.2	14.8 ± 6.5	
Pb-214	< 20.6	15.6 ± 8.8	
Ra-226	< 186.3	208.0 ± 83.2	
Ac-228	< 22.7	9.9 ± 14.4	
U-235	< 9.2	-11.0 ± 5.5	

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LABORATORY REPORT NO.: 8006-100 -1213
DATE: 01-03-17
SAMPLES RECEIVED: 12-29-16

Analyses for tritium and gamma emitting isotopes.

Lab Code	EXW-6937
Date Collected	12-15-16
Location	West Digester

Isotope	MDC / Concentration (pCi/L)		Required LLD
H-3	< 154	89 ± 81	200
K-40	---	83.8 ± 45.7	
Mn-54	< 2.5	0.2 ± 1.3	10
Co-58	< 2.3	-1.0 ± 1.2	10
Co-60	< 2.6	0.9 ± 1.5	10
Fe-59	< 3.0	-1.9 ± 2.4	30
Zn-65	< 5.2	0.8 ± 6.1	
Zr-Nb-95	< 3.7	0.1 ± 1.4	15
Ru-103	< 2.7	-1.1 ± 1.2	
I-131	< 9.3	-3.3 ± 1.3	
Cs-134	< 1.8	0.2 ± 1.4	10
Cs-137	< 2.4	0.3 ± 1.5	10
Ba-La-140	< 4.7	0.2 ± 1.5	15
Ce-141	< 6.1	0.1 ± 2.2	
Ce-144	< 15.5	-1.7 ± 9.3	
Tl-208	< 3.9	3.9 ± 1.6	
Bi-212	< 39.4	17.9 ± 18.3	
Bi-214	< 9.3	17.5 ± 3.5	
Pb-212	< 5.6	10.9 ± 2.4	
Pb-214	< 8.6	16.2 ± 3.2	
Ra-226	< 69.7	222.7 ± 31.2	
Ac-228	< 12.8	20.6 ± 5.3	
U-235	< 3.6	-8.5 ± 2.0	

Less than (<), value is based on a 4.66 sigma counting error for the background sample and it's the MDC value for this measurement. The error given is the probable counting error at 95% confidence level.

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Approved: 1/3/17

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LABORATORY REPORT NO.: 8006-100-1188
DATE: 06-10-16
SAMPLES RECEIVED: 04-07-16
PURCHASE ORDER NO.:

Below are the corrected results of the readout of supplemental TLDs deployed during the first quarter, 2016.

Period:	1st Quarter, 2016
Date Annealed:	12/08/15
Date Placed:	See note below
Date Removed:	04/05/16
Date Read:	04/07/16
Days in the Field:	See note below
Days from Annealing to Readout:	121
In-transit exposure:	6.37 ± 0.53

Location		Total mR	Net mR[a]	Net mR[a] Std Qtr	Net mR[a] per 7 days
SGSF-North	90 days in field	19.8 ± 0.8	13.5 ± 0.9	13.6 ± 1.0	1.05 ± 0.07
SGSF-East	90 days in field	16.8 ± 0.7	10.5 ± 0.9	10.6 ± 0.9	0.81 ± 0.07
SGSF-South	90 days in field	18.4 ± 0.6	12.0 ± 0.8	12.2 ± 0.8	0.94 ± 0.06
SGSF-West	90 days in field	18.0 ± 0.4	11.7 ± 0.7	11.8 ± 0.7	0.91 ± 0.05
ISFSI-North	91 days in field	38.4 ± 0.9	32.0 ± 1.0	32.0 ± 1.0	2.46 ± 0.08
ISFSI-East	91 days in field	47.3 ± 0.8	40.9 ± 0.9	40.9 ± 0.9	3.15 ± 0.07
ISFSI-South	91 days in field	20.5 ± 0.6	14.1 ± 0.8	14.1 ± 0.8	1.09 ± 0.06
ISFSI-West	91 days in field	59.9 ± 2.9	53.6 ± 2.9	53.6 ± 2.9	4.12 ± 0.22
Control	91 days in field	25.4 ± 1.0	19.0 ± 1.1	19.0 ± 1.1	1.46 ± 0.09

Note: SGSF locations placed 1/6/16 (90 days in field) IFSFI and control locations placed 1/5/16 (91 days in field)

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LABORATORY REPORT NO.: 8006-100-1198
DATE: 08-04-16
SAMPLES RECEIVED: 07-08-16
PURCHASE ORDER NO.:

Below are the results of the readout of supplemental TLDs deployed during the second quarter, 2016.

Period:	2nd Quarter, 2016
Date Annealed:	03/14/16
Date Placed:	04/05/16
Date Removed:	07/05/16
Date Read:	07/08/16
Days in the Field:	91
Days from Annealing to Readout:	116
In-transit exposure:	5.09 ± 0.40

Location	Total mR	Net mR	Net mR Std Qtr	Net mR per 7 days
SGSF-North	18.6 ± 0.6	13.5 ± 0.7	13.5 ± 0.7	1.04 ± 0.06
SGSF-East	18.9 ± 0.9	13.8 ± 1.0	13.8 ± 1.0	1.06 ± 0.08
SGSF-South	18.4 ± 0.6	13.3 ± 0.7	13.3 ± 0.7	1.03 ± 0.05
SGSF-West	19.5 ± 1.1	14.4 ± 1.2	14.4 ± 1.2	1.11 ± 0.09
ISFSI-North	31.7 ± 1.4	26.6 ± 1.5	26.6 ± 1.5	2.05 ± 0.11
ISFSI-East	44.3 ± 0.2	39.2 ± 0.5	39.2 ± 0.5	3.02 ± 0.04
ISFSI-South	23.0 ± 1.0	17.9 ± 1.1	17.9 ± 1.1	1.38 ± 0.08
ISFSI-West	63.3 ± 2.8	58.2 ± 2.8	58.2 ± 2.8	4.48 ± 0.22
Control	22.8 ± 0.6	17.7 ± 0.7	17.7 ± 0.7	1.36 ± 0.05

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LABORATORY REPORT NO.: 8006-100-1207
DATE: 11-07-16
SAMPLES RECEIVED: 10-06-16
PURCHASE ORDER NO.:

Below are the results of the readout of supplemental TLDs deployed during the third quarter, 2016.

Period:	3rd Quarter, 2016
Date Annealed:	06/09/16
Date Placed:	07/05/16
Date Removed:	10/05/16
Date Read:	10/12/16
Days in the Field:	92
Days from Annealing to Readout:	125
In-transit exposure:	5.27 ± 0.32

Location	Total mR	Net mR	Net mR Std Qtr	Net mR per 7 days
SGSF-North	19.7 ± 1.0	14.4 ± 1.0	14.3 ± 1.0	1.10 ± 0.08
SGSF-East	17.8 ± 0.8	12.5 ± 0.8	12.4 ± 0.8	0.95 ± 0.06
SGSF-South	19.4 ± 0.5	14.1 ± 0.6	13.9 ± 0.6	1.07 ± 0.05
SGSF-West	18.0 ± 1.0	12.7 ± 1.0	12.6 ± 1.0	0.97 ± 0.08
ISFSI-North	38.8 ± 1.2	33.5 ± 1.3	33.1 ± 1.3	2.55 ± 0.10
ISFSI-East	51.3 ± 1.9	46.1 ± 1.9	45.6 ± 1.9	3.50 ± 0.14
ISFSI-South	22.4 ± 1.2	17.1 ± 1.3	17.0 ± 1.3	1.30 ± 0.10
ISFSI-West	62.8 ± 3.0	57.5 ± 3.1	56.9 ± 3.0	4.38 ± 0.23
Control	25.4 ± 0.9	20.1 ± 0.9	19.9 ± 0.9	1.53 ± 0.07

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LABORATORY REPORT NO.: 8006-100-1218
DATE: 02-15-17
SAMPLES RECEIVED: 12-30-16
PURCHASE ORDER NO.:

Below are the results of the readout of supplemental TLDs deployed during the fourth quarter, 2016.

Period:	4th Quarter, 2016
Date Annealed:	09/08/16
Date Placed:	10/05/16
Date Removed:	12/29/16
Date Read:	01/05/17
Days in the Field:	85
Days from Annealing to Readout:	119
In-transit exposure:	5.31 ± 0.36

Location	Total mR	Net mR	Net mR Std Qtr	Net mR per 7 days
SGSF-North	18.1 ± 0.9	12.8 ± 1.0	13.7 ± 1.1	1.05 ± 0.08
SGSF-East	18.8 ± 0.8	13.5 ± 0.8	14.5 ± 0.9	1.11 ± 0.07
SGSF-South	18.4 ± 0.8	13.0 ± 0.9	14.0 ± 1.0	1.07 ± 0.07
SGSF-West	18.8 ± 0.9	13.5 ± 1.0	14.5 ± 1.1	1.11 ± 0.08
ISFSI-North	31.3 ± 2.2	26.0 ± 2.2	27.9 ± 2.4	2.14 ± 0.18
ISFSI-East	50.3 ± 1.7	45.0 ± 1.7	48.1 ± 1.8	3.70 ± 0.14
ISFSI-South	23.8 ± 1.7	18.5 ± 1.7	19.9 ± 1.8	1.53 ± 0.14
ISFSI-West	58.8 ± 3.8	53.5 ± 3.8	57.2 ± 4.0	4.40 ± 0.31
Control	20.6 ± 1.1	15.3 ± 1.1	16.3 ± 1.2	1.26 ± 0.09

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LABORATORY REPORT NO.: 8006-100-1206
DATE: 11-03-2016
SAMPLES RECEIVED: 10-17-2016
PURCHASE ORDER NO.:

Below are the results of the analyses for tritium in four AC condensate samples.

Sample Location	Collection Date	Lab Code	Concentration / MDC (pCi/L) H-3
Training Building	10-10-16	EW-5517	21 ± 76 / < 151
South Service Building	10-10-16	EW-5518	2,911 ± 174 / < 151
U2 TB Control Room-AC	10-10-16	EW-5519	6,096 ± 240 / < 151
South Gate	10-16-16	EW-5520	171 ± 85 / < 153

The error given is the probable counting error at the 95% confidence level. The less than (<) value, is based on 4.66 sigma counting error for the background sample.

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Sincerely,

Bronia Grob,
Laboratory Manager

APPROVED BY: 11/3/16
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