



MONTHLY PROGRESS REPORT  
to  
FIRST ENERGY CORPORATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)  
FOR THE  
PERRY NUCLEAR POWER PLANT

Reporting Period: January-December, 2015

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## 1.0 INTRODUCTION

The following constitutes the current 2015 Monthly Progress Report for the Radiological Environmental Monitoring Program conducted at the Perry Nuclear Power Plant in Perry, Ohio. Results of completed analyses are presented in the attached tables.

The data obtained in the program were within ranges previously encountered and to be expected in the environmental media sampled.

All concentrations, except gross beta, are decay corrected to the time of collection. Airborne iodine is decay corrected to the midpoint of the collection period.

Table 1. Direct Radiation (TLDs), Quarterly Exposure.  
Units: mR/91 days

|              | <u>1st Qtr.</u> | <u>2nd Qtr.</u> | <u>3rd Qtr.</u> | <u>4th Qtr.</u> |
|--------------|-----------------|-----------------|-----------------|-----------------|
| Date Placed  | 01-12-15        | 04-03-15        | 07-02-15        | 10-02-15        |
| Date Removed | 04-03-15        | 07-02-15        | 10-02-15        | 01-05-16        |
| E-1          | 9.7 ± 1.2       | 13.1 ± 0.9      | 12.0 ± 1.2      | 10.7 ± 1.5      |
| E-3          | 10.5 ± 0.8      | 12.6 ± 0.9      | 11.6 ± 0.8      | 10.7 ± 1.0      |
| E-4          | 12.5 ± 0.7      | 13.5 ± 0.9      | 13.0 ± 0.9      | 11.0 ± 0.9      |
| E-5          | 9.7 ± 1.2       | 8.7 ± 0.5       | 10.0 ± 0.9      | 10.9 ± 0.6      |
| E-6          | 12.5 ± 1.2      | 10.0 ± 0.7      | 12.8 ± 1.1      | 8.0 ± 0.7       |
| E-7          | 11.8 ± 0.7      | 11.2 ± 0.7      | 10.0 ± 0.7      | 9.5 ± 1.0       |
| E-8          | 11.6 ± 0.7      | 10.0 ± 0.9      | 11.6 ± 0.9      | 9.0 ± 0.9       |
| E-9          | 10.1 ± 0.6      | 11.3 ± 0.7      | 9.2 ± 0.6       | 10.6 ± 0.7      |
| E-10         | 9.0 ± 0.8       | 11.1 ± 0.7      | 10.9 ± 0.7      | 9.8 ± 1.1       |
| E-11         | 13.9 ± 1.0      | 10.1 ± 0.6      | 14.7 ± 0.9      | 13.1 ± 1.0      |
| E-12         | 10.7 ± 0.8      | 14.4 ± 1.3      | 13.0 ± 0.8      | 13.5 ± 1.2      |
| E-13         | 11.1 ± 1.0      | 11.3 ± 0.7      | 10.7 ± 0.9      | 9.6 ± 0.8       |
| E-14         | 8.3 ± 0.7       | 13.2 ± 0.5      | 9.0 ± 0.7       | 11.3 ± 0.9      |
| E-15         | 5.9 ± 0.6       | 12.2 ± 0.5      | 6.7 ± 0.6       | 10.1 ± 0.7      |
| E-21         | 14.7 ± 0.7      | 16.0 ± 0.5      | 15.6 ± 0.8      | 14.7 ± 0.9      |
| E-23         | 12.5 ± 0.9      | 16.5 ± 0.6      | 13.8 ± 0.8      | 15.1 ± 0.9      |
| E-24         | 13.0 ± 0.9      | 10.8 ± 0.9      | 12.8 ± 0.7      | 11.1 ± 1.1      |
| E-29         | 13.1 ± 0.8      | 17.0 ± 0.8      | 14.8 ± 0.7      | 15.1 ± 1.0      |
| E-30         | 12.0 ± 0.6      | 16.1 ± 0.7      | 14.2 ± 0.7      | 14.5 ± 0.8      |
| E-31         | 12.5 ± 1.0      | 12.5 ± 0.7      | 14.7 ± 0.9      | 10.4 ± 0.9      |
| E-33         | 17.7 ± 1.0      | 12.1 ± 0.7      | 19.0 ± 0.8      | 16.3 ± 0.9      |
| E-35         | 10.8 ± 0.6      | 15.0 ± 0.5      | 11.7 ± 0.7      | 10.9 ± 0.7      |
| E-36         | 14.7 ± 0.7      | 11.7 ± 0.5      | 14.5 ± 1.7      | 10.4 ± 0.6      |
| E-53         | 12.3 ± 0.7      | 10.9 ± 0.7      | 14.2 ± 0.9      | 9.8 ± 1.0       |
| E-54         | 11.7 ± 1.1      | 10.8 ± 0.4      | 12.2 ± 0.9      | 8.2 ± 0.7       |
| E-55         | 12.5 ± 1.6      | 13.3 ± 1.0      | 13.2 ± 1.4      | 11.8 ± 1.1      |
| E-56         | 11.2 ± 0.6      | 13.3 ± 0.6      | 11.7 ± 0.5      | 11.0 ± 0.8      |
| E-57         | 11.6 ± 0.7      | 13.7 ± 0.9      | 13.2 ± 0.8      | 11.2 ± 1.1      |
| E-58         | 8.7 ± 0.6       | 11.5 ± 0.6      | 10.4 ± 0.6      | 9.1 ± 0.6       |
| Mean ± s.d.  | 11.6 ± 2.3      | 12.5 ± 2.1      | 12.5 ± 2.4      | 11.3 ± 2.2      |
| E-Control 1  | 5.5 ± 1.0       | 6.9 ± 0.7       | 6.6 ± 0.9       | 5.1 ± 0.9       |
| E-Control 2  | 6.8 ± 0.6       | 6.8 ± 0.4       | 7.1 ± 0.7       | 5.0 ± 0.7       |

Table 1. Direct Radiation (TLDs), Quarterly Exposure.  
Units: mR/91 days

|              | <u>1st Qtr.</u> | <u>2nd Qtr.</u> | <u>3rd Qtr.</u> | <u>4th Qtr.</u> |
|--------------|-----------------|-----------------|-----------------|-----------------|
| Date Placed  | 01-12-15        | 04-03-15        | 07-02-15        | 10-02-15        |
| Date Removed | 04-03-15        | 07-02-15        | 10-02-15        | 01-05-16        |
| Q-1          | 9.1 ± 1.1       | 12.6 ± 1.2      | 13.2 ± 1.6      | 12.7 ± 1.0      |
| Q-3          | 12.7 ± 0.5      | 8.3 ± 1.1       | 11.3 ± 0.6      | 8.5 ± 1.2       |
| Q-4          | 14.1 ± 0.7      | 12.4 ± 1.1      | 13.6 ± 0.6      | 12.6 ± 1.1      |
| Q-5          | 9.4 ± 0.6       | 12.4 ± 1.1      | 9.0 ± 0.8       | 12.5 ± 1.0      |
| Q-6          | 13.7 ± 1.0      | 14.0 ± 1.0      | 12.0 ± 0.7      | 14.1 ± 0.9      |
| Q-7          | 15.0 ± 0.5      | 14.7 ± 1.0      | 14.4 ± 0.6      | 14.7 ± 0.9      |
| Q-8          | 10.5 ± 0.5      | 10.3 ± 1.0      | 10.1 ± 0.6      | 10.2 ± 0.8      |
| Q-9          | 14.3 ± 0.9      | 9.4 ± 1.1       | 13.5 ± 0.8      | 10.1 ± 0.8      |
| Q-10         | 12.2 ± 0.8      | 12.1 ± 1.4      | 12.7 ± 0.7      | 12.0 ± 1.1      |
| Q-11         | 13.1 ± 1.2      | 13.3 ± 1.0      | 13.2 ± 1.1      | 14.3 ± 0.9      |
| Q-12         | 13.1 ± 0.4      | 11.2 ± 1.2      | 13.1 ± 0.7      | 12.0 ± 0.9      |
| Q-13         | 10.4 ± 0.3      | 10.9 ± 1.1      | 10.3 ± 0.5      | 11.0 ± 1.1      |
| Q-14         | 12.8 ± 1.1      | 15.3 ± 1.1      | 12.6 ± 0.6      | 14.9 ± 1.1      |
| Q-15         | 12.9 ± 0.8      | 10.1 ± 1.0      | 12.7 ± 0.5      | 9.3 ± 0.8       |
| Q-21         | 11.3 ± 0.4      | 11.4 ± 1.2      | 12.4 ± 0.6      | 11.5 ± 1.2      |
| Q-23         | 12.0 ± 1.2      | 15.4 ± 1.5      | 12.9 ± 0.9      | 15.7 ± 1.8      |
| Q-24         | 13.5 ± 1.4      | 12.3 ± 1.0      | 13.2 ± 1.3      | 12.3 ± 0.8      |
| Q-29         | 18.1 ± 0.7      | 15.6 ± 1.3      | 18.5 ± 0.7      | 15.7 ± 1.2      |
| Q-30         | 15.1 ± 0.6      | 11.5 ± 1.0      | 15.3 ± 0.6      | 12.7 ± 0.8      |
| Q-31         | 15.9 ± 0.8      | 15.1 ± 1.0      | 17.5 ± 0.9      | 15.4 ± 0.8      |
| Q-33         | 14.0 ± 0.6      | 19.8 ± 1.3      | 14.9 ± 0.8      | 19.3 ± 1.3      |
| Q-35         | 13.2 ± 0.4      | 9.3 ± 1.0       | 12.9 ± 0.5      | 9.6 ± 0.9       |
| Q-36         | 16.8 ± 0.6      | 13.8 ± 0.9      | 17.2 ± 0.8      | 15.9 ± 0.9      |
| Q-53         | 13.5 ± 0.5      | 11.9 ± 1.0      | 15.1 ± 0.5      | 12.5 ± 1.1      |
| Q-54         | 14.0 ± 1.0      | 13.4 ± 1.0      | 13.6 ± 0.6      | 13.2 ± 0.8      |
| Q-55         | 13.5 ± 1.0      | 10.4 ± 1.1      | 14.9 ± 0.6      | 10.9 ± 1.1      |
| Q-56         | 13.7 ± 0.8      | 14.7 ± 1.1      | 14.0 ± 0.7      | 14.6 ± 1.1      |
| Q-57         | 13.4 ± 1.6      | 11.1 ± 1.0      | 14.5 ± 1.3      | 11.4 ± 0.8      |
| Q-58         | 8.0 ± 0.6       | 11.5 ± 1.0      | 9.3 ± 0.6       | 11.0 ± 1.0      |
| Mean ± s.d.  | 13.1 ± 2.2      | 12.6 ± 2.4      | 13.4 ± 2.2      | 12.8 ± 2.4      |
| Q-Control 1  | 6.6 ± 0.3       | 5.8 ± 0.9       | 7.3 ± 0.5       | 5.3 ± 0.8       |
| Q-Control 2  | 6.5 ± 0.6       | 7.1 ± 1.0       | 6.8 ± 0.6       | 6.8 ± 0.8       |

Table 1. Direct Radiation (TLDs), Annual Exposure.  
Units: mR/365 days

|              | <u>2015</u> |
|--------------|-------------|
| Date Placed  | 10-02-15    |
| Date Removed | 01-05-16    |
| A-1          | 53.8 ± 2.9  |
| A-3          | 53.7 ± 2.0  |
| A-4          | 60.8 ± 2.3  |
| A-5          | 52.8 ± 1.9  |
| A-6          | 54.8 ± 2.0  |
| A-7          | 48.4 ± 2.1  |
| A-8          | 50.4 ± 1.9  |
| A-9          | 50.3 ± 3.3  |
| A-10         | 50.1 ± 1.7  |
| A-11         | 62.1 ± 5.1  |
| A-12         | 54.8 ± 1.6  |
| A-13         | 54.7 ± 2.7  |
| A-14         | 51.1 ± 2.4  |
| A-15         | 58.3 ± 3.4  |
| A-21         | 63.4 ± 3.5  |
| A-23         | 59.3 ± 2.0  |
| A-24         | 53.8 ± 2.9  |
| A-29         | 68.6 ± 2.9  |
| A-30         | 60.9 ± 2.0  |
| A-31         | 66.6 ± 2.2  |
| A-33         | 71.2 ± 3.8  |
| A-35         | 49.5 ± 2.2  |
| A-36         | 62.9 ± 4.2  |
| A-53         | 52.1 ± 3.4  |
| A-54         | 58.4 ± 4.1  |
| A-55         | 57.1 ± 4.1  |
| A-56         | 53.6 ± 3.0  |
| A-57         | 70.8 ± 5.7  |
| A-58         | 55.5 ± 1.9  |
| Mean ± s.d.  | 57.2 ± 6.4  |
| A-Control 1  | 22.7 ± 1.4  |
| A-Control 2  | 27.3 ± 1.6  |

Table 2. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: P-1

Units: pCi/m<sup>3</sup>

Collection: Continuous, weekly exchange.

| Date Collected      | Volume (m <sup>3</sup> ) | Gross Beta    | I-131        | Date Collected | Volume (m <sup>3</sup> ) | Gross Beta         | I-131        |
|---------------------|--------------------------|---------------|--------------|----------------|--------------------------|--------------------|--------------|
| <u>Required LLD</u> |                          | <u>0.0075</u> | <u>0.050</u> |                |                          | <u>0.0075</u>      | <u>0.050</u> |
| 01-09-15            | 725                      | 0.030 ± 0.002 | < 0.005      | 07-08-15       | 485                      | 0.023 ± 0.003      | < 0.009      |
| 01-15-15            | 525                      | 0.036 ± 0.003 | < 0.009      | 07-15-15       | 485                      | 0.023 ± 0.003      | < 0.012      |
| 01-22-15            | 581                      | 0.030 ± 0.003 | < 0.012      | 07-22-15       | 485                      | 0.023 ± 0.004      | < 0.011      |
| 01-29-15            | 589                      | 0.022 ± 0.003 | < 0.004      | 07-29-15       | 485                      | 0.026 ± 0.004      | < 0.013      |
| 02-06-15            | 646                      | 0.022 ± 0.003 | < 0.006      | 08-05-15       | 492                      | 0.026 ± 0.004      | < 0.009      |
| 02-12-15            | 502                      | 0.034 ± 0.003 | < 0.008      | 08-13-15       | 518                      | 0.019 ± 0.003      | < 0.005      |
| 02-19-15            | 589                      | 0.029 ± 0.003 | < 0.008      | 08-19-15       | 424                      | 0.043 ± 0.004      | < 0.010      |
| 02-26-15            | 566                      | 0.048 ± 0.003 | < 0.007      | 08-26-15       | 464                      | 0.014 ± 0.003      | < 0.012      |
|                     |                          |               |              | 09-02-15       | 480                      | 0.046 ± 0.004      | < 0.012      |
| 03-04-15            | 529                      | 0.039 ± 0.004 | < 0.012      |                |                          |                    |              |
| 03-12-15            | 650                      | 0.028 ± 0.003 | < 0.008      | 09-09-15       | 536                      | 0.059 ± 0.004      | < 0.007      |
| 03-19-15            | 628                      | 0.021 ± 0.003 | < 0.009      | 09-16-15       | 485                      | 0.029 ± 0.004      | < 0.014      |
| 03-26-15            | 580                      | 0.026 ± 0.003 | < 0.008      | 09-23-15       | 477                      | 0.041 ± 0.004      | < 0.006      |
| 04-02-15            | 589                      | 0.020 ± 0.003 | < 0.010      | 09-30-15       | 467                      | 0.034 ± 0.004      | < 0.008      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 1Q 2015             | Mean ± s.d.              | 0.030 ± 0.008 | < 0.012      | 3Q 2015        | Mean ± s.d.              | 0.031 ± 0.013      | < 0.014      |
| 04-09-15            | 582                      | 0.020 ± 0.003 | < 0.005      | 10-07-15       | 467                      | 0.018 ± 0.003      | < 0.008      |
| 04-16-15            | 541                      | 0.025 ± 0.003 | < 0.010      | 10-15-15       | 657                      | 0.026 ± 0.003      | < 0.006      |
| 04-22-15            | 464                      | 0.021 ± 0.004 | < 0.006      | 10-21-15       | 502                      | 0.023 ± 0.003      | < 0.006      |
| 04-29-15            | 542                      | 0.010 ± 0.002 | < 0.005      | 10-28-15       | 578                      | 0.024 ± 0.003      | < 0.004      |
| 05-06-15            | 534                      | 0.018 ± 0.003 | < 0.008      | 11-04-15       | 593                      | 0.026 ± 0.003      | < 0.011      |
| 05-13-15            | 532                      | 0.028 ± 0.004 | < 0.012      | 11-11-15       | 566                      | 0.027 ± 0.003      | < 0.004      |
| 05-21-15            | 609                      | 0.022 ± 0.003 | < 0.004      | 11-18-15       | 579                      | 0.047 ± 0.004      | < 0.006      |
| 05-28-15            | 538                      | 0.022 ± 0.003 | < 0.007      | 11-25-15       | 570                      | 0.021 ± 0.003      | < 0.008      |
| 06-03-15            | 471                      | 0.014 ± 0.003 | < 0.006      | 12-02-15       | 581                      | 0.028 ± 0.003      | < 0.006      |
| 06-10-15            | 523                      | 0.019 ± 0.003 | < 0.009      | 12-09-15       | 574                      | 0.057 ± 0.004      | < 0.005      |
| 06-18-15            | 586                      | 0.019 ± 0.003 | < 0.004      | 12-16-15       | 587                      | 0.042 ± 0.003      | < 0.008      |
| 06-24-15            | 419                      | 0.023 ± 0.004 | < 0.009      | 12-23-15       | 563                      | 0.027 ± 0.003      | < 0.019      |
| 07-01-15            | 504                      | 0.018 ± 0.003 | < 0.005      | 12-30-15       | 572                      | 0.020 ± 0.003      | < 0.011      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 2Q 2015             | Mean ± s.d.              | 0.020 ± 0.005 | < 0.012      | 4Q 2015        | Mean ± s.d.              | 0.030 ± 0.012      | < 0.019      |
|                     |                          |               |              |                |                          | Cumulative Average | 0.028        |

Table 2. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: P-3

Units: pCi/m<sup>3</sup>

Collection: Continuous, weekly exchange.

| Date Collected      | Volume (m <sup>3</sup> ) | Gross Beta      | I-131        | Date Collected | Volume (m <sup>3</sup> ) | Gross Beta         | I-131                |
|---------------------|--------------------------|-----------------|--------------|----------------|--------------------------|--------------------|----------------------|
| <u>Required LLD</u> |                          | <u>0.0075</u>   | <u>0.050</u> |                |                          | <u>0.0075</u>      | <u>0.050</u>         |
| 01-09-15            | 868                      | 0.031 ± 0.002   | < 0.004      | 07-08-15       | 561                      | 0.020 ± 0.003      | < 0.008              |
| 01-15-15            | 617                      | 0.031 ± 0.003   | < 0.008      | 07-15-15       | 561                      | 0.015 ± 0.003      | < 0.010              |
| 01-22-15            | 678                      | 0.032 ± 0.003   | < 0.010      | 07-22-15       | 561                      | 0.017 ± 0.003      | < 0.009              |
| 01-29-15            | 668                      | 0.021 ± 0.002   | < 0.003      | 07-29-15       | 561                      | 0.017 ± 0.003      | < 0.011              |
| 02-06-15            | 531                      | 0.028 ± 0.003   | < 0.007      | 08-05-15       | 574                      | 0.027 ± 0.003      | < 0.008              |
| 02-12-15            | 662                      | 0.035 ± 0.003   | < 0.006      | 08-13-15       | 576                      | 0.015 ± 0.003      | < 0.005              |
| 02-19-15            |                          | NS <sup>a</sup> |              | 08-19-15       | 568                      | 0.033 ± 0.003      | < 0.008              |
| 02-26-15            | 874                      | 0.064 ± 0.003   | < 0.005      | 08-26-15       | 569                      | 0.012 ± 0.003      | < 0.010              |
|                     |                          |                 |              | 09-03-15       | 643                      | 0.038 ± 0.003      | < 0.009              |
| 03-04-15            | 606                      | 0.038 ± 0.003   | < 0.011      |                |                          |                    |                      |
| 03-12-15            | 742                      | 0.025 ± 0.003   | < 0.007      | 09-09-15       | 522                      | 0.048 ± 0.004      | < 0.007              |
| 03-20-15            | 763                      | 0.021 ± 0.002   | < 0.007      | 09-16-15       | 541                      | 0.024 ± 0.003      | < 0.013              |
| 03-26-15            | 579                      | 0.024 ± 0.003   | < 0.008      | 09-23-15       | 584                      | 0.030 ± 0.003      | < 0.005              |
| 04-02-15            | 662                      | 0.015 ± 0.003   | < 0.009      | 09-30-15       | 540                      | 0.030 ± 0.003      | < 0.007              |
| <hr/>               |                          |                 |              | <hr/>          |                          |                    |                      |
| 1Q 2015             | Mean ± s.d.              | 0.030 ± 0.012   | < 0.011      | 3Q 2015        | Mean ± s.d.              | 0.025 ± 0.011      | < 0.013              |
| 04-09-15            | 663                      | 0.016 ± 0.003   | < 0.004      | 10-07-15       | 493                      | 0.018 ± 0.003      | < 0.008              |
| 04-16-15            | 591                      | 0.017 ± 0.003   | < 0.010      | 10-15-15       | 678                      | 0.026 ± 0.003      | < 0.006              |
| 04-22-15            | 524                      | 0.015 ± 0.003   | < 0.005      | 10-21-15       | 512                      | 0.024 ± 0.003      | < 0.006              |
| 04-29-15            | 565                      | 0.007 ± 0.002   | < 0.004      | 10-28-15       | 610                      | 0.022 ± 0.003      | < 0.004              |
| 05-06-15            | 575                      | 0.016 ± 0.003   | < 0.008      | 11-04-15       | 604                      | 0.022 ± 0.003      | < 0.011              |
| 05-13-15            | 588                      | 0.023 ± 0.003   | < 0.011      | 11-11-15       | 567                      | 0.026 ± 0.003      | < 0.004              |
| 05-20-15            | 559                      | 0.022 ± 0.003   | < 0.004      | 11-18-15       | 124                      | 0.054 ± 0.012      | < 0.030 <sup>b</sup> |
| 05-28-15            | 648                      | 0.018 ± 0.003   | < 0.006      | 11-25-15       | 573                      | 0.023 ± 0.003      | < 0.008              |
| 06-03-15            | 521                      | 0.012 ± 0.003   | < 0.005      | 12-02-15       | 35                       | 0.065 ± 0.037      | < 0.092 <sup>c</sup> |
| 06-10-15            | 558                      | 0.017 ± 0.003   | < 0.008      | 12-09-15       | 560                      | 0.055 ± 0.004      | < 0.005              |
| 06-18-15            | 674                      | 0.018 ± 0.002   | < 0.003      | 12-16-15       | 435                      | 0.041 ± 0.004      | < 0.011              |
| 06-24-15            | 493                      | 0.020 ± 0.003   | < 0.008      | 12-23-15       | 557                      | 0.026 ± 0.003      | < 0.023              |
| 07-01-15            | 549                      | 0.012 ± 0.003   | < 0.005      | 12-30-15       | 584                      | 0.019 ± 0.003      | < 0.011              |
| <hr/>               |                          |                 |              | <hr/>          |                          |                    |                      |
| 2Q 2015             | Mean ± s.d.              | 0.016 ± 0.004   | < 0.011      | 4Q 2015        | Mean ± s.d.              | 0.032 ± 0.016      | < 0.092              |
|                     |                          |                 |              |                |                          | Cumulative Average | 0.026                |

<sup>a</sup>"NS" = No sample; see Table 2.0, Listing of Missed Samples.

<sup>b</sup>No reason given for low volume.

<sup>c</sup>I-131 result above required LLD due to low volume. No reason given for low volume.



Table 2. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: P-4

Units: pCi/m<sup>3</sup>

Collection: Continuous, weekly exchange.

| Date Collected      | Volume (m <sup>3</sup> ) | Gross Beta    | I-131        | Date Collected | Volume (m <sup>3</sup> ) | Gross Beta         | I-131        |
|---------------------|--------------------------|---------------|--------------|----------------|--------------------------|--------------------|--------------|
| <u>Required LLD</u> |                          | <u>0.0075</u> | <u>0.050</u> |                |                          | <u>0.0075</u>      | <u>0.050</u> |
| 01-09-15            | 665                      | 0.031 ± 0.003 | < 0.005      | 07-08-15       | 449                      | 0.027 ± 0.004      | < 0.010      |
| 01-15-15            | 472                      | 0.030 ± 0.003 | < 0.010      | 07-15-15       | 449                      | 0.017 ± 0.003      | < 0.011      |
| 01-22-15            | 532                      | 0.031 ± 0.003 | < 0.013      | 07-22-15       | 449                      | 0.022 ± 0.003      | < 0.010      |
| 01-29-15            | 533                      | 0.020 ± 0.003 | < 0.004      | 07-29-15       | 449                      | 0.026 ± 0.003      | < 0.011      |
| 02-06-15            | 538                      | 0.022 ± 0.003 | < 0.007      | 08-05-15       | 556                      | 0.026 ± 0.003      | < 0.008      |
| 02-12-15            | 543                      | 0.034 ± 0.003 | < 0.007      | 08-13-15       | 522                      | 0.016 ± 0.003      | < 0.005      |
| 02-19-15            | 544                      | 0.034 ± 0.003 | < 0.009      | 08-19-15       | 522                      | 0.035 ± 0.004      | < 0.009      |
| 02-26-15            | 527                      | 0.051 ± 0.004 | < 0.008      | 08-26-15       | 526                      | 0.015 ± 0.003      | < 0.010      |
|                     |                          |               |              | 09-02-15       | 549                      | 0.040 ± 0.004      | < 0.010      |
| 03-04-15            | 480                      | 0.039 ± 0.004 | < 0.014      |                |                          |                    |              |
| 03-12-15            | 583                      | 0.029 ± 0.003 | < 0.009      | 09-09-15       | 538                      | 0.052 ± 0.004      | < 0.007      |
| 03-19-15            | 545                      | 0.022 ± 0.003 | < 0.010      | 09-16-15       | 523                      | 0.027 ± 0.003      | < 0.013      |
| 03-26-15            | 528                      | 0.026 ± 0.003 | < 0.009      | 09-23-15       | 540                      | 0.036 ± 0.004      | < 0.005      |
| 04-02-15            | 537                      | 0.016 ± 0.003 | < 0.011      | 09-30-15       | 526                      | 0.028 ± 0.003      | < 0.007      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 1Q 2015             | Mean ± s.d.              | 0.030 ± 0.009 | < 0.014      | 3Q 2015        | Mean ± s.d.              | 0.028 ± 0.010      | < 0.013      |
| 04-09-15            | 528                      | 0.018 ± 0.003 | < 0.006      | 10-07-15       | 532                      | 0.017 ± 0.003      | < 0.007      |
| 04-16-15            | 549                      | 0.020 ± 0.003 | < 0.010      | 10-15-15       | 681                      | 0.026 ± 0.003      | < 0.006      |
| 04-22-15            | 460                      | 0.018 ± 0.003 | < 0.006      | 10-21-15       | 522                      | 0.023 ± 0.003      | < 0.006      |
| 04-29-15            | 538                      | 0.008 ± 0.002 | < 0.005      | 10-28-15       | 602                      | 0.026 ± 0.003      | < 0.004      |
| 05-06-15            | 541                      | 0.018 ± 0.003 | < 0.008      | 11-04-15       | 596                      | 0.024 ± 0.003      | < 0.011      |
| 05-13-15            | 544                      | 0.025 ± 0.003 | < 0.012      | 11-11-15       | 561                      | 0.027 ± 0.003      | < 0.004      |
| 05-21-15            | 599                      | 0.022 ± 0.003 | < 0.004      | 11-18-15       | 620                      | 0.041 ± 0.003      | < 0.006      |
| 05-28-15            | 467                      | 0.024 ± 0.004 | < 0.009      | 11-25-15       | 585                      | 0.022 ± 0.003      | < 0.008      |
| 06-03-15            | 426                      | 0.014 ± 0.004 | < 0.007      | 12-02-15       | 540                      | 0.028 ± 0.003      | < 0.006      |
| 06-10-15            | 513                      | 0.015 ± 0.003 | < 0.009      | 12-09-15       | 542                      | 0.061 ± 0.004      | < 0.005      |
| 06-18-15            | 630                      | 0.018 ± 0.003 | < 0.004      | 12-16-15       | 548                      | 0.042 ± 0.004      | < 0.008      |
| 06-24-15            | 447                      | 0.023 ± 0.004 | < 0.008      | 12-23-15       | 524                      | 0.032 ± 0.004      | < 0.015      |
| 07-01-15            | 495                      | 0.015 ± 0.003 | < 0.006      | 12-30-15       | 532                      | 0.021 ± 0.003      | < 0.012      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 2Q 2015             | Mean ± s.d.              | 0.018 ± 0.005 | < 0.012      | 4Q 2015        | Mean ± s.d.              | 0.030 ± 0.012      | < 0.015      |
|                     |                          |               |              |                |                          | Cumulative Average | 0.027        |

Table 2. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: P-5

Units: pCi/m<sup>3</sup>

Collection: Continuous, weekly exchange.

| Date Collected      | Volume (m <sup>3</sup> ) | Gross Beta    | I-131        | Date Collected     | Volume (m <sup>3</sup> ) | Gross Beta      | I-131                |
|---------------------|--------------------------|---------------|--------------|--------------------|--------------------------|-----------------|----------------------|
| <u>Required LLD</u> |                          | <u>0.0075</u> | <u>0.050</u> |                    |                          | <u>0.0075</u>   | <u>0.050</u>         |
| 01-09-15            | 718                      | 0.032 ± 0.003 | < 0.005      | 07-08-15           | 563                      | 0.019 ± 0.003   | < 0.008              |
| 01-15-15            | 510                      | 0.034 ± 0.003 | < 0.010      | 07-15-15           | 563                      | 0.017 ± 0.003   | < 0.011              |
| 01-22-15            | 552                      | 0.034 ± 0.003 | < 0.012      | 07-22-15           | 563                      | 0.024 ± 0.003   | < 0.009              |
| 01-29-15            | 573                      | 0.022 ± 0.003 | < 0.004      | 07-29-15           | 563                      | 0.025 ± 0.003   | < 0.011              |
| 02-06-15            | 557                      | 0.024 ± 0.003 | < 0.007      | 08-05-15           | 558                      | 0.027 ± 0.003   | < 0.008              |
| 02-12-15            | 523                      | 0.035 ± 0.003 | < 0.008      | 08-13-15           | 568                      | 0.015 ± 0.003   | < 0.005              |
| 02-19-15            | 577                      | 0.031 ± 0.003 | < 0.008      | 08-19-15           | 538                      | 0.038 ± 0.004   | < 0.008              |
| 02-26-15            | 540                      | 0.049 ± 0.004 | < 0.008      | 08-26-15           | 535                      | 0.014 ± 0.003   | < 0.010              |
|                     |                          |               |              | 09-02-15           | 547                      | 0.044 ± 0.004   | < 0.010              |
| 03-04-15            | 491                      | 0.042 ± 0.004 | < 0.013      |                    |                          |                 |                      |
| 03-12-15            | 603                      | 0.029 ± 0.003 | < 0.009      | 09-09-15           | 542                      | 0.056 ± 0.004   | < 0.007              |
| 03-19-15            | 561                      | 0.019 ± 0.003 | < 0.010      | 09-16-15           | 489                      | 0.026 ± 0.004   | < 0.014              |
| 03-26-15            | 538                      | 0.029 ± 0.003 | < 0.009      | 09-23-15           | 478                      | 0.037 ± 0.004   | < 0.006              |
| 04-02-15            | 547                      | 0.019 ± 0.003 | < 0.011      | 09-30-15           | 470                      | 0.032 ± 0.004   | < 0.008              |
| <hr/>               |                          |               |              | <hr/>              |                          |                 |                      |
| 1Q 2015             | Mean ± s.d.              | 0.031 ± 0.009 | < 0.013      | 3Q 2015            | Mean ± s.d.              | 0.029 ± 0.012   | < 0.014              |
| 04-09-15            | 548                      | 0.019 ± 0.003 | < 0.005      | 10-07-15           | 459                      | 0.020 ± 0.003   | < 0.008              |
| 04-16-15            | 580                      | 0.019 ± 0.003 | < 0.010      | 10-15-15           |                          | NS <sup>a</sup> |                      |
| 04-22-15            | 487                      | 0.017 ± 0.003 | < 0.006      | 10-21-15           | 509                      | 0.024 ± 0.003   | < 0.006              |
| 04-29-15            | 564                      | 0.007 ± 0.002 | < 0.004      | 10-28-15           | 581                      | 0.022 ± 0.003   | < 0.004              |
| 05-06-15            | 578                      | 0.018 ± 0.003 | < 0.008      | 11-04-15           | 568                      | 0.027 ± 0.003   | < 0.011              |
| 05-13-15            | 580                      | 0.026 ± 0.003 | < 0.011      | 11-11-15           | 530                      | 0.023 ± 0.003   | < 0.004              |
| 05-21-15            | 646                      | 0.022 ± 0.003 | < 0.003      | 11-18-15           | 104                      | 0.057 ± 0.014   | < 0.036 <sup>b</sup> |
| 05-28-15            | 579                      | 0.022 ± 0.003 | < 0.007      | 11-25-15           | 519                      | 0.024 ± 0.003   | < 0.009              |
| 06-03-15            | 500                      | 0.014 ± 0.003 | < 0.006      | 12-02-15           | 337                      | 0.028 ± 0.005   | < 0.010              |
| 06-10-15            | 564                      | 0.019 ± 0.003 | < 0.008      | 12-09-15           | 546                      | 0.060 ± 0.004   | < 0.005              |
| 06-18-15            | 655                      | 0.017 ± 0.002 | < 0.003      | 12-16-15           | 405                      | 0.043 ± 0.005   | < 0.011              |
| 06-24-15            | 489                      | 0.022 ± 0.003 | < 0.008      | 12-23-15           | 524                      | 0.031 ± 0.004   | < 0.012              |
| 07-01-15            | 563                      | 0.014 ± 0.003 | < 0.005      | 12-30-15           | 557                      | 0.022 ± 0.003   | < 0.011              |
| <hr/>               |                          |               |              | <hr/>              |                          |                 |                      |
| 2Q 2015             | Mean ± s.d.              | 0.018 ± 0.005 | < 0.011      | 4Q 2015            | Mean ± s.d.              | 0.032 ± 0.014   |                      |
|                     |                          |               |              | Cumulative Average |                          | 0.027           |                      |

<sup>a</sup> "NS" = No sample; see Table 2.0, Listing of Missed Samples.

<sup>b</sup> No reason given for low volume.

Table 2. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: P-6

Units: pCi/m<sup>3</sup>

Collection: Continuous, weekly exchange.

| Date Collected      | Volume (m <sup>3</sup> ) | Gross Beta    | I-131        | Date Collected | Volume (m <sup>3</sup> ) | Gross Beta         | I-131        |
|---------------------|--------------------------|---------------|--------------|----------------|--------------------------|--------------------|--------------|
| <u>Required LLD</u> |                          | <u>0.0075</u> | <u>0.050</u> |                |                          | <u>0.0075</u>      | <u>0.050</u> |
| 01-08-15            | 582                      | 0.038 ± 0.003 | < 0.006      | 07-08-15       | 523                      | 0.021 ± 0.003      | < 0.009      |
| 01-15-15            | 574                      | 0.033 ± 0.003 | < 0.009      | 07-15-15       | 523                      | 0.019 ± 0.003      | < 0.011      |
| 01-22-15            | 570                      | 0.030 ± 0.003 | < 0.012      | 07-22-15       | 523                      | 0.023 ± 0.003      | < 0.010      |
| 01-29-15            | 588                      | 0.023 ± 0.003 | < 0.004      | 07-29-15       | 523                      | 0.028 ± 0.004      | < 0.012      |
| 02-06-15            | 639                      | 0.025 ± 0.003 | < 0.006      | 08-05-15       | 510                      | 0.023 ± 0.003      | < 0.009      |
| 02-12-15            | 506                      | 0.035 ± 0.003 | < 0.008      | 08-13-15       | 536                      | 0.020 ± 0.003      | < 0.005      |
| 02-19-15            | 589                      | 0.033 ± 0.003 | < 0.008      | 08-19-15       | 446                      | 0.048 ± 0.004      | < 0.010      |
| 02-26-15            | 576                      | 0.055 ± 0.004 | < 0.007      | 08-26-15       | 471                      | 0.017 ± 0.003      | < 0.012      |
|                     |                          |               |              | 09-02-15       | 496                      | 0.047 ± 0.004      | < 0.011      |
| 03-04-15            | 518                      | 0.039 ± 0.004 | < 0.013      |                |                          |                    |              |
| 03-12-15            | 626                      | 0.031 ± 0.003 | < 0.008      | 09-09-15       | 562                      | 0.064 ± 0.004      | < 0.006      |
| 03-20-15            | 656                      | 0.022 ± 0.003 | < 0.008      | 09-16-15       | 539                      | 0.029 ± 0.003      | < 0.013      |
| 03-26-15            | 505                      | 0.027 ± 0.003 | < 0.009      | 09-23-15       | 541                      | 0.040 ± 0.004      | < 0.005      |
| 04-02-15            | 556                      | 0.014 ± 0.003 | < 0.011      | 09-30-15       | 548                      | 0.031 ± 0.003      | < 0.007      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 1Q 2015             | Mean ± s.d.              | 0.031 ± 0.010 | < 0.013      | 3Q 2015        | Mean ± s.d.              | 0.032 ± 0.014      | < 0.013      |
| 04-09-15            | 565                      | 0.017 ± 0.003 | < 0.005      | 10-07-15       | 534                      | 0.019 ± 0.003      | < 0.007      |
| 04-16-15            | 609                      | 0.014 ± 0.003 | < 0.009      | 10-15-15       | 628                      | 0.027 ± 0.003      | < 0.007      |
| 04-22-15            | 437                      | 0.018 ± 0.004 | < 0.006      | 10-21-15       | 469                      | 0.023 ± 0.004      | < 0.007      |
| 04-29-15            | 534                      | 0.008 ± 0.002 | < 0.005      | 10-28-15       | 536                      | 0.026 ± 0.003      | < 0.004      |
| 05-06-15            | 540                      | 0.018 ± 0.003 | < 0.008      | 11-04-15       | 554                      | 0.026 ± 0.003      | < 0.012      |
| 05-13-15            | 536                      | 0.027 ± 0.003 | < 0.012      | 11-11-15       | 535                      | 0.026 ± 0.003      | < 0.004      |
| 05-21-15            | 595                      | 0.020 ± 0.003 | < 0.004      | 11-18-15       | 533                      | 0.040 ± 0.004      | < 0.007      |
| 05-28-15            | 514                      | 0.025 ± 0.003 | < 0.008      | 11-25-15       | 551                      | 0.023 ± 0.003      | < 0.008      |
| 06-03-15            | 416                      | 0.020 ± 0.004 | < 0.007      | 12-02-15       | 548                      | 0.028 ± 0.003      | < 0.006      |
| 06-10-15            | 482                      | 0.019 ± 0.003 | < 0.009      | 12-09-15       | 544                      | 0.059 ± 0.004      | < 0.005      |
| 06-18-15            | 595                      | 0.019 ± 0.003 | < 0.004      | 12-16-15       | 551                      | 0.042 ± 0.004      | < 0.008      |
| 06-24-15            | 440                      | 0.020 ± 0.004 | < 0.008      | 12-23-15       | 525                      | 0.031 ± 0.004      | < 0.017      |
| 07-01-15            | 524                      | 0.014 ± 0.003 | < 0.005      | 12-30-15       | 560                      | 0.023 ± 0.003      | < 0.011      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 2Q 2015             | Mean ± s.d.              | 0.018 ± 0.005 | < 0.012      | 4Q 2015        | Mean ± s.d.              | 0.030 ± 0.011      | < 0.017      |
|                     |                          |               |              |                |                          | Cumulative Average | 0.028        |

Table 2. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: P-7

Units: pCi/m<sup>3</sup>

Collection: Continuous, weekly exchange.

| Date Collected      | Volume (m <sup>3</sup> ) | Gross Beta    | I-131        | Date Collected | Volume (m <sup>3</sup> ) | Gross Beta         | I-131        |
|---------------------|--------------------------|---------------|--------------|----------------|--------------------------|--------------------|--------------|
| <u>Required LLD</u> |                          | <u>0.0075</u> | <u>0.050</u> |                |                          | <u>0.0075</u>      | <u>0.050</u> |
| 01-09-15            | 679                      | 0.037 ± 0.003 | < 0.005      | 07-08-15       | 522                      | 0.016 ± 0.003      | < 0.009      |
| 01-15-15            | 478                      | 0.037 ± 0.004 | < 0.010      | 07-15-15       | 522                      | 0.016 ± 0.003      | < 0.011      |
| 01-22-15            | 530                      | 0.035 ± 0.003 | < 0.013      | 07-22-15       | 522                      | 0.013 ± 0.003      | < 0.010      |
| 01-29-15            | 529                      | 0.027 ± 0.003 | < 0.004      | 07-29-15       | 522                      | 0.021 ± 0.003      | < 0.012      |
| 02-06-15            | 558                      | 0.030 ± 0.003 | < 0.007      | 08-05-15       | 449                      | 0.023 ± 0.004      | < 0.010      |
| 02-12-15            | 408                      | 0.045 ± 0.004 | < 0.010      | 08-13-15       | 500                      | 0.014 ± 0.003      | < 0.006      |
| 02-19-15            | 485                      | 0.046 ± 0.004 | < 0.010      | 08-19-15       | 446                      | 0.031 ± 0.004      | < 0.009      |
| 02-26-15            | 577                      | 0.065 ± 0.004 | < 0.007      | 08-26-15       | 463                      | 0.014 ± 0.003      | < 0.012      |
|                     |                          |               |              | 09-02-15       | 474                      | 0.046 ± 0.004      | < 0.012      |
| 03-04-15            | 542                      | 0.049 ± 0.004 | < 0.012      |                |                          |                    |              |
| 03-12-15            | 680                      | 0.035 ± 0.003 | < 0.008      | 09-09-15       | 576                      | 0.054 ± 0.004      | < 0.006      |
| 03-19-15            | 627                      | 0.024 ± 0.003 | < 0.009      | 09-16-15       | 529                      | 0.030 ± 0.004      | < 0.013      |
| 03-26-15            | 609                      | 0.030 ± 0.003 | < 0.008      | 09-23-15       | 538                      | 0.038 ± 0.004      | < 0.005      |
| 04-02-15            | 621                      | 0.025 ± 0.003 | < 0.009      | 09-30-15       | 534                      | 0.028 ± 0.003      | < 0.007      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 1Q 2015             | Mean ± s.d.              | 0.037 ± 0.012 | < 0.013      | 3Q 2015        | Mean ± s.d.              | 0.026 ± 0.013      | < 0.013      |
| 04-09-15            | 618                      | 0.022 ± 0.003 | < 0.005      | 10-07-15       | 532                      | 0.015 ± 0.003      | < 0.007      |
| 04-16-15            | 567                      | 0.015 ± 0.003 | < 0.010      | 10-15-15       | 565                      | 0.035 ± 0.003      | < 0.007      |
| 04-22-15            | 473                      | 0.010 ± 0.003 | < 0.006      | 10-21-15       | 402                      | 0.033 ± 0.004      | < 0.008      |
| 04-29-15            | 545                      | 0.006 ± 0.002 | < 0.005      | 10-28-15       | 565                      | 0.026 ± 0.003      | < 0.004      |
| 05-06-15            | 545                      | 0.016 ± 0.003 | < 0.008      | 11-04-15       | 592                      | 0.024 ± 0.003      | < 0.011      |
| 05-13-15            | 542                      | 0.020 ± 0.003 | < 0.012      | 11-11-15       | 561                      | 0.025 ± 0.003      | < 0.004      |
| 05-21-15            | 623                      | 0.017 ± 0.003 | < 0.003      | 11-18-15       | 579                      | 0.037 ± 0.003      | < 0.006      |
| 05-28-15            | 547                      | 0.016 ± 0.003 | < 0.007      | 11-25-15       | 563                      | 0.026 ± 0.003      | < 0.008      |
| 06-03-15            | 476                      | 0.011 ± 0.003 | < 0.006      | 12-02-15       | 577                      | 0.026 ± 0.003      | < 0.006      |
| 06-10-15            | 532                      | 0.013 ± 0.003 | < 0.008      | 12-09-15       | 574                      | 0.055 ± 0.004      | < 0.005      |
| 06-18-15            | 609                      | 0.017 ± 0.003 | < 0.004      | 12-16-15       | 572                      | 0.041 ± 0.004      | < 0.008      |
| 06-24-15            | 443                      | 0.016 ± 0.003 | < 0.008      | 12-23-15       | 546                      | 0.027 ± 0.003      | < 0.020      |
| 07-01-15            | 544                      | 0.013 ± 0.003 | < 0.005      | 12-30-15       | 566                      | 0.016 ± 0.003      | < 0.011      |
| <hr/>               |                          |               |              | <hr/>          |                          |                    |              |
| 2Q 2015             | Mean ± s.d.              | 0.015 ± 0.004 | < 0.012      | 4Q 2015        | Mean ± s.d.              | 0.030 ± 0.011      | < 0.020      |
|                     |                          |               |              |                |                          | Cumulative Average | 0.027        |

Table 2. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: P-35

Units: pCi/m<sup>3</sup>

Collection: Continuous, weekly exchange.

| Date Collected      | Volume (m <sup>3</sup> ) | Gross Beta      | I-131        | Date Collected | Volume (m <sup>3</sup> ) | Gross Beta         | I-131        |
|---------------------|--------------------------|-----------------|--------------|----------------|--------------------------|--------------------|--------------|
| <u>Required LLD</u> |                          | <u>0.0075</u>   | <u>0.050</u> |                |                          | <u>0.0075</u>      | <u>0.050</u> |
| 01-08-15            | 589                      | 0.036 ± 0.003   | < 0.008      | 07-08-15       | 522                      | 0.021 ± 0.003      | < 0.010      |
| 01-15-15            | 573                      | 0.036 ± 0.003   | < 0.006      | 07-15-15       | 522                      | 0.019 ± 0.003      | < 0.008      |
| 01-22-15            | 565                      | 0.033 ± 0.003   | < 0.013      | 07-22-15       | 522                      | 0.021 ± 0.003      | < 0.009      |
| 01-29-15            | 588                      | 0.023 ± 0.003   | < 0.009      | 07-29-15       | 522                      | 0.025 ± 0.003      | < 0.006      |
| 02-06-15            | 646                      | 0.028 ± 0.003   | < 0.013      | 08-05-15       | 559                      | 0.023 ± 0.003      | < 0.014      |
| 02-12-15            | 497                      | 0.035 ± 0.003   | < 0.026      | 08-13-15       | 535                      | 0.019 ± 0.003      | < 0.000      |
| 02-19-15            |                          | NS <sup>a</sup> |              | 08-19-15       | 446                      | 0.038 ± 0.004      | < 0.014      |
| 02-26-15            | 1122                     | 0.043 ± 0.002   | < 0.007      | 08-26-15       | 528                      | 0.014 ± 0.003      | < 0.008      |
|                     |                          |                 |              | 09-02-15       | 542                      | 0.042 ± 0.004      | < 0.014      |
| 03-04-15            | 528                      | 0.046 ± 0.004   | < 0.010      |                |                          |                    |              |
| 03-12-15            | 627                      | 0.030 ± 0.003   | < 0.008      | 09-09-15       | 537                      | 0.054 ± 0.004      | < 0.008      |
| 03-19-15            | 583                      | 0.023 ± 0.003   | < 0.008      | 09-16-15       | 520                      | 0.026 ± 0.003      | < 0.013      |
| 03-26-15            | 552                      | 0.026 ± 0.003   | < 0.008      | 09-23-15       | 539                      | 0.031 ± 0.003      | < 0.011      |
| 04-02-15            | 547                      | 0.019 ± 0.003   | < 0.010      | 09-30-15       | 531                      | 0.029 ± 0.003      | < 0.008      |
| <hr/>               |                          |                 |              | <hr/>          |                          |                    |              |
| 1Q 2015             | Mean ± s.d.              | 0.032 ± 0.008   | < 0.026      | 3Q 2015        | Mean ± s.d.              | 0.028 ± 0.011      | < 0.014      |
| 04-09-15            | 563                      | 0.018 ± 0.003   | < 0.009      | 10-07-15       | 537                      | 0.018 ± 0.003      | < 0.011      |
| 04-16-15            | 587                      | 0.017 ± 0.003   | < 0.008      | 10-15-15       | 764                      | 0.022 ± 0.002      | < 0.006      |
| 04-22-15            | 472                      | 0.017 ± 0.003   | < 0.008      | 10-21-15       | 601                      | 0.021 ± 0.003      | < 0.006      |
| 04-29-15            | 544                      | 0.007 ± 0.002   | < 0.013      | 10-28-15       | 541                      | 0.018 ± 0.003      | < 0.009      |
| 05-06-15            | 543                      | 0.015 ± 0.003   | < 0.011      | 11-04-15       | 573                      | 0.023 ± 0.003      | < 0.012      |
| 05-13-15            | 543                      | 0.029 ± 0.003   | < 0.015      | 11-11-15       | 557                      | 0.022 ± 0.003      | < 0.012      |
| 05-21-15            | 628                      | 0.020 ± 0.003   | < 0.008      | 11-18-15       | 584                      | 0.029 ± 0.003      | < 0.009      |
| 05-28-15            | 554                      | 0.021 ± 0.003   | < 0.012      | 11-25-15       | 579                      | 0.020 ± 0.003      | < 0.007      |
| 06-03-15            | 484                      | 0.013 ± 0.003   | < 0.008      | 12-02-15       | 545                      | 0.023 ± 0.003      | < 0.012      |
| 06-10-15            | 538                      | 0.016 ± 0.003   | < 0.009      | 12-09-15       | 549                      | 0.048 ± 0.004      | < 0.013      |
| 06-18-15            | 615                      | 0.019 ± 0.003   | < 0.007      | 12-16-15       | 553                      | 0.034 ± 0.003      | < 0.007      |
| 06-24-15            | 456                      | 0.018 ± 0.003   | < 0.021      | 12-23-15       | 527                      | 0.024 ± 0.003      | < 0.017      |
| 07-01-15            | 545                      | 0.014 ± 0.003   | < 0.011      | 12-30-15       | 573                      | 0.019 ± 0.003      | < 0.009      |
| <hr/>               |                          |                 |              | <hr/>          |                          |                    |              |
| 2Q 2015             | Mean ± s.d.              | 0.017 ± 0.005   | < 0.021      | 4Q 2015        | Mean ± s.d.              | 0.025 ± 0.008      | < 0.017      |
|                     |                          |                 |              |                |                          | Cumulative Average | 0.025        |

<sup>a</sup> "NS" = No sample; see Table 2.0, Listing of Missed Samples.

Table 3. Airborne particulates, analyses for gamma-emitting isotopes.

Collection: Quarterly Composite

Units: pCi/m<sup>3</sup>

| Location PE-1          |               |               |               |               |          |
|------------------------|---------------|---------------|---------------|---------------|----------|
| Quarter                | 1st Qtr.      | 2nd Qtr.      | 3rd Qtr.      | 4th Qtr.      | Req. LLD |
| Lab Code               | PEAP- 1985    | PEAP- 3966    | PEAP- 6035    | PEAP- 7438    |          |
| Vol. (m <sup>3</sup> ) | 7697          | 6846          | 6268          | 7389          |          |
| Be-7                   | 0.059 ± 0.010 | 0.057 ± 0.011 | 0.084 ± 0.011 | 0.058 ± 0.008 | -        |
| Co-58                  | < 0.0003      | < 0.0007      | < 0.0005      | < 0.0005      | -        |
| Co-60                  | < 0.0003      | < 0.0005      | < 0.0004      | < 0.0003      | -        |
| Cs-134                 | < 0.0005      | < 0.0006      | < 0.0005      | < 0.0005      | 0.037    |
| Cs-137                 | < 0.0003      | < 0.0005      | < 0.0005      | < 0.0004      | 0.045    |

  

| Location PE-3          |               |               |               |               |       |
|------------------------|---------------|---------------|---------------|---------------|-------|
| Lab Code               | PEAP- 1986    | PEAP- 3967    | PEAP- 6036    | PEAP- 7439    |       |
| Vol. (m <sup>3</sup> ) | 8252          | 7509          | 7386          | 6332          |       |
| Be-7                   | 0.058 ± 0.009 | 0.057 ± 0.008 | 0.064 ± 0.009 | 0.049 ± 0.009 | -     |
| Co-58                  | < 0.0002      | < 0.0004      | < 0.0005      | < 0.0005      | -     |
| Co-60                  | < 0.0004      | < 0.0003      | < 0.0005      | < 0.0003      | -     |
| Cs-134                 | < 0.0004      | < 0.0004      | < 0.0004      | < 0.0005      | 0.037 |
| Cs-137                 | < 0.0004      | < 0.0003      | < 0.0004      | < 0.0003      | 0.045 |

  

| Location PE-4          |               |               |               |               |       |
|------------------------|---------------|---------------|---------------|---------------|-------|
| Lab Code               | PEAP- 1987    | PEAP- 3968    | PEAP- 6037    | PEAP- 7440    |       |
| Vol. (m <sup>3</sup> ) | 7027          | 6739          | 6598          | 7386          |       |
| Be-7                   | 0.059 ± 0.010 | 0.062 ± 0.010 | 0.083 ± 0.011 | 0.052 ± 0.007 | -     |
| Co-58                  | < 0.0004      | < 0.0003      | < 0.0004      | < 0.0004      | -     |
| Co-60                  | < 0.0004      | < 0.0004      | < 0.0003      | < 0.0004      | -     |
| Cs-134                 | < 0.0004      | < 0.0006      | < 0.0005      | < 0.0004      | 0.037 |
| Cs-137                 | < 0.0004      | < 0.0003      | < 0.0005      | < 0.0002      | 0.045 |

  

| Location PE-5          |               |               |               |               |       |
|------------------------|---------------|---------------|---------------|---------------|-------|
| Lab Code               | PEAP- 1988    | PEAP- 3969    | PEAP- 6038    | PEAP- 7441    |       |
| Vol. (m <sup>3</sup> ) | 7292          | 7332          | 6976          | 5640          |       |
| Be-7                   | 0.051 ± 0.009 | 0.063 ± 0.008 | 0.073 ± 0.011 | 0.046 ± 0.012 | -     |
| Co-58                  | < 0.0002      | < 0.0004      | < 0.0004      | < 0.0003      | -     |
| Co-60                  | < 0.0004      | < 0.0003      | < 0.0004      | < 0.0003      | -     |
| Cs-134                 | < 0.0005      | < 0.0004      | < 0.0005      | < 0.0005      | 0.037 |
| Cs-137                 | < 0.0003      | < 0.0003      | < 0.0005      | < 0.0005      | 0.045 |

Table 3. Airborne particulates, analyses for gamma-emitting isotopes.

Collection: Quarterly Composite

Units: pCi/m<sup>3</sup>

| Location               |               |               |               |               |          |
|------------------------|---------------|---------------|---------------|---------------|----------|
| PE-6                   |               |               |               |               |          |
| Quarter                | 1st Qtr.      | 2nd Qtr.      | 3rd Qtr.      | 4th Qtr.      | Req. LLD |
| Lab Code               | PEAP- 1989    | PEAP- 3971    | PEAP- 6039    | PEAP- 7442    |          |
| Vol. (m <sup>3</sup> ) | 7486          | 6788          | 6742          | 7068          |          |
| Be-7                   | 0.075 ± 0.011 | 0.067 ± 0.008 | 0.088 ± 0.013 | 0.057 ± 0.010 | -        |
| Co-58                  | < 0.0003      | < 0.0003      | < 0.0006      | < 0.0006      | -        |
| Co-60                  | < 0.0004      | < 0.0002      | < 0.0003      | < 0.0003      | -        |
| Cs-134                 | < 0.0004      | < 0.0005      | < 0.0005      | < 0.0005      | 0.037    |
| Cs-137                 | < 0.0004      | < 0.0004      | < 0.0004      | < 0.0003      | 0.045    |
| Location               |               |               |               |               |          |
| PE-7                   |               |               |               |               |          |
| Lab Code               | PEAP- 1990    | PEAP- 3972    | PEAP- 6040    | PEAP- 7443    |          |
| Vol. (m <sup>3</sup> ) | 7323          | 7065          | 6629          | 7194          |          |
| Be-7                   | 0.073 ± 0.010 | 0.056 ± 0.007 | 0.070 ± 0.012 | 0.049 ± 0.010 | -        |
| Co-58                  | < 0.0002      | < 0.0002      | < 0.0004      | < 0.0006      | -        |
| Co-60                  | < 0.0004      | < 0.0003      | < 0.0003      | < 0.0003      | -        |
| Cs-134                 | < 0.0005      | < 0.0004      | < 0.0006      | < 0.0003      | 0.037    |
| Cs-137                 | < 0.0004      | < 0.0004      | < 0.0003      | < 0.0005      | 0.045    |
| Location               |               |               |               |               |          |
| PE-35                  |               |               |               |               |          |
| Lab Code               | PEAP- 1991    | PEAP- 3973    | PEAP- 6041    | PEAP- 7444    |          |
| Vol. (m <sup>3</sup> ) | 7417          | 7072          | 6825          | 7484          |          |
| Be-7                   | 0.068 ± 0.010 | 0.056 ± 0.010 | 0.087 ± 0.010 | 0.049 ± 0.009 | -        |
| Co-58                  | < 0.0003      | < 0.0004      | < 0.0003      | < 0.0006      | -        |
| Co-60                  | < 0.0004      | < 0.0004      | < 0.0003      | < 0.0004      | -        |
| Cs-134                 | < 0.0005      | < 0.0005      | < 0.0004      | < 0.0006      | 0.037    |
| Cs-137                 | < 0.0004      | < 0.0005      | < 0.0005      | < 0.0007      | 0.045    |

Table 4. Lake water, analyses for gross beta and gamma emitting isotopes.

|            | Location: P-28 | Collection: Monthly composites | Units: pCi/L    |            |          |
|------------|----------------|--------------------------------|-----------------|------------|----------|
| Lab Code   | PELW- 489      | PELW- 805                      | PELW- 1303      | PELW- 2129 |          |
| Start Date | 12-29-14       | 01-29-15                       | 02-26-15        | 03-26-15   | Req. LLD |
| End Date   | 01-29-15       | 02-26-15                       | 03-26-15        | 04-30-15   |          |
| Gross beta | 2.6 ± 0.8      | 2.5 ± 1.0                      | 1.9 ± 1.0       | 1.5 ± 0.6  | 3.0      |
| Mn-54      | < 3.3          | < 1.2                          | < 2.3           | < 2.0      | 11       |
| Fe-59      | < 6.2          | < 2.3                          | < 3.7           | < 5.0      | 22       |
| Co-58      | < 4.0          | < 1.2                          | < 1.5           | < 2.0      | 11       |
| Co-60      | < 3.6          | < 0.8                          | < 1.9           | < 2.4      | 11       |
| Zn-65      | < 5.2          | < 1.6                          | < 3.0           | < 4.0      | 22       |
| Zr-95      | < 5.3          | < 2.4                          | < 3.1           | < 3.4      | 22       |
| Nb-95      | < 2.8          | < 1.3                          | < 3.1           | < 3.8      | 11       |
| Cs-134     | < 3.9          | < 1.1                          | < 2.3           | < 3.1      | 11       |
| Cs-137     | < 3.9          | < 1.4                          | < 1.8           | < 1.7      | 13       |
| Ba-140     | < 23.4         | < 8.8                          | < 16.9          | < 10.7     | 45       |
| La-140     | < 4.6          | < 3.0                          | < 2.5           | < 2.9      | 11       |
| Lab Code   | PELW- 2764     | PELW- 3360                     | NS <sup>a</sup> |            |          |
| Start Date | 04-30-15       | 05-28-15                       | -               |            |          |
| End Date   | 05-28-15       | 06-29-15                       | 07-30-15        |            |          |
| Gross beta | 1.7 ± 0.6      | 1.0 ± 0.6                      | -               |            |          |
| Mn-54      | < 2.3          | < 2.2                          | -               |            |          |
| Fe-59      | < 3.0          | < 2.6                          | -               |            |          |
| Co-58      | < 2.2          | < 2.5                          | -               |            |          |
| Co-60      | < 1.7          | < 2.6                          | -               |            |          |
| Zn-65      | < 3.2          | < 5.7                          | -               |            |          |
| Zr-95      | < 5.6          | < 3.1                          | -               |            |          |
| Nb-95      | < 3.2          | < 2.2                          | -               |            |          |
| Cs-134     | < 3.1          | < 3.1                          | -               |            |          |
| Cs-137     | < 2.8          | < 3.2                          | -               |            |          |
| Ba-140     | < 25.8         | < 13.2                         | -               |            |          |
| La-140     | < 6.0          | < 3.1                          | -               |            |          |

<sup>a</sup> No sample available, see Table 2.0, Listing of Missed Samples.



Table 4. Lake water, analyses for gross beta and gamma emitting isotopes.

|            | Location: P-34 |            | Collection: Monthly composites |            | Units: pCi/L |
|------------|----------------|------------|--------------------------------|------------|--------------|
| Lab Code   | PELW- 490      | PELW- 806  | PELW- 1304                     | PELW- 2130 |              |
| Start Date | 12-29-14       | 01-29-15   | 02-26-15                       | 03-26-15   | Req. LLD     |
| End Date   | 01-29-15       | 02-26-15   | 03-26-15                       | 04-30-15   |              |
| Gross beta | 2.2 ± 0.7      | 1.7 ± 0.9  | 2.1 ± 0.9                      | 1.2 ± 0.5  | 3.0          |
| Mn-54      | < 3.4          | < 2.1      | < 0.9                          | < 1.2      | 11           |
| Fe-59      | < 9.2          | < 5.4      | < 2.7                          | < 4.5      | 22           |
| Co-58      | < 5.4          | < 2.6      | < 1.2                          | < 2.8      | 11           |
| Co-60      | < 4.0          | < 2.5      | < 0.9                          | < 2.0      | 11           |
| Zn-65      | < 6.3          | < 2.5      | < 1.8                          | < 2.5      | 22           |
| Zr-95      | < 7.8          | < 4.3      | < 1.9                          | < 4.7      | 22           |
| Nb-95      | < 4.9          | < 3.0      | < 1.8                          | < 2.4      | 11           |
| Cs-134     | < 4.5          | < 3.0      | < 1.1                          | < 2.8      | 11           |
| Cs-137     | < 5.1          | < 2.7      | < 1.3                          | < 3.0      | 13           |
| Ba-140     | < 30.3         | < 16.3     | < 11.2                         | < 12.8     | 45           |
| La-140     | < 6.7          | < 3.4      | < 4.1                          | < 2.0      | 11           |
| Lab Code   | PELW- 2765     | PELW- 3361 | PELW- 4335                     | PELW- 4787 |              |
| Start Date | 04-30-15       | 05-28-15   | 06-29-15                       | 07-30-15   |              |
| End Date   | 05-28-15       | 06-29-15   | 07-30-15                       | 08-27-15   |              |
| Gross beta | 1.0 ± 0.5      | 1.1 ± 0.5  | 1.2 ± 0.6                      | < 0.9      | 3.0          |
| Mn-54      | < 2.6          | < 1.5      | < 2.9                          | < 1.1      | 11           |
| Fe-59      | < 5.3          | < 6.0      | < 4.9                          | < 3.2      | 22           |
| Co-58      | < 1.2          | < 2.1      | < 2.6                          | < 1.6      | 11           |
| Co-60      | < 2.0          | < 2.3      | < 1.6                          | < 0.9      | 11           |
| Zn-65      | < 2.6          | < 4.2      | < 2.7                          | < 2.4      | 22           |
| Zr-95      | < 4.5          | < 4.8      | < 5.6                          | < 1.5      | 22           |
| Nb-95      | < 3.9          | < 2.2      | < 3.0                          | < 2.6      | 11           |
| Cs-134     | < 2.8          | < 3.3      | < 3.3                          | < 1.3      | 11           |
| Cs-137     | < 3.0          | < 2.1      | < 3.6                          | < 1.2      | 13           |
| Ba-140     | < 28.0         | < 14.6     | < 16.5                         | < 23.9     | 45           |
| La-140     | < 4.0          | < 2.4      | < 10.4                         | < 4.0      | 11           |
| Lab Code   | PELW- 5351     | PELW- 6279 | PELW- 6715                     | PELW- 7247 |              |
| Start Date | 08-27-15       | 09-25-15   | 10-29-15                       | 11-25-15   |              |
| End Date   | 09-25-15       | 10-29-15   | 11-25-15                       | 12-30-15   |              |
| Gross beta | 2.3 ± 0.6      | 2.6 ± 1.0  | 1.3 ± 0.6                      | 1.0 ± 0.5  | 3.0          |
| Mn-54      | < 3.3          | < 2.8      | < 2.4                          | < 2.1      | 11           |
| Fe-59      | < 3.9          | < 5.1      | < 6.4                          | < 4.5      | 22           |
| Co-58      | < 1.5          | < 1.7      | < 3.0                          | < 2.5      | 11           |
| Co-60      | < 2.2          | < 1.8      | < 1.3                          | < 3.1      | 11           |
| Zn-65      | < 2.2          | < 2.9      | < 3.2                          | < 3.0      | 22           |
| Zr-95      | < 4.6          | < 3.9      | < 4.8                          | < 6.2      | 22           |
| Nb-95      | < 2.0          | < 4.4      | < 3.6                          | < 4.7      | 11           |
| Cs-134     | < 3.5          | < 2.4      | < 3.0                          | < 3.7      | 11           |
| Cs-137     | < 2.2          | < 2.9      | < 3.7                          | < 3.5      | 13           |
| Ba-140     | < 18.3         | < 41.2     | < 21.5                         | < 29.2     | 45           |
| La-140     | < 3.9          | < 3.9      | < 6.0                          | < 2.7      | 11           |

Table 4. Lake water, analyses for gross beta and gamma emitting isotopes.

|            | Location: P-36 | Collection: Monthly composites | Units: pCi/L |            |          |
|------------|----------------|--------------------------------|--------------|------------|----------|
| Lab Code   | PELW- 491      | PELW- 807                      | PELW- 1305   | PELW- 2131 |          |
| Start Date | 12-29-14       | 01-29-15                       | 02-26-15     | 03-26-15   | Req. LLD |
| End Date   | 01-29-15       | 02-26-15                       | 03-26-15     | 04-30-15   |          |
| Gross beta | 1.7 ± 0.8      | 1.1 ± 0.4                      | 2.7 ± 1.0    | 1.4 ± 0.6  | 3.0      |
| Mn-54      | < 3.2          | < 2.5                          | < 1.2        | < 2.5      | 11       |
| Fe-59      | < 7.0          | < 3.8                          | < 2.6        | < 3.3      | 22       |
| Co-58      | < 4.1          | < 2.3                          | < 0.8        | < 1.4      | 11       |
| Co-60      | < 3.0          | < 3.0                          | < 1.0        | < 1.7      | 11       |
| Zn-65      | < 3.6          | < 1.9                          | < 2.0        | < 3.0      | 22       |
| Zr-95      | < 4.2          | < 5.5                          | < 2.3        | < 4.3      | 22       |
| Nb-95      | < 2.2          | < 2.5                          | < 1.3        | < 1.5      | 11       |
| Cs-134     | < 3.7          | < 2.4                          | < 1.0        | < 2.5      | 11       |
| Cs-137     | < 4.3          | < 1.6                          | < 1.1        | < 2.6      | 13       |
| Ba-140     | < 22.0         | < 15.7                         | < 12.3       | < 12.4     | 45       |
| La-140     | < 4.2          | < 1.4                          | < 2.7        | < 1.7      | 11       |
| Lab Code   | PELW- 2766     | PELW- 3362                     | PELW- 4336   | PELW- 4788 |          |
| Start Date | 04-30-15       | 05-28-15                       | 06-29-15     | 07-30-15   |          |
| End Date   | 05-28-15       | 06-29-15                       | 07-30-15     | 08-27-15   |          |
| Gross beta | 1.0 ± 0.5      | < 0.9                          | 0.9 ± 0.5    | 1.0 ± 0.5  | 3.0      |
| Mn-54      | < 2.5          | < 3.1                          | < 1.4        | < 0.7      | 11       |
| Fe-59      | < 4.7          | < 6.3                          | < 5.6        | < 3.3      | 22       |
| Co-58      | < 1.7          | < 2.2                          | < 3.0        | < 1.3      | 11       |
| Co-60      | < 1.9          | < 1.3                          | < 2.7        | < 1.1      | 11       |
| Zn-65      | < 3.5          | < 4.9                          | < 5.3        | < 2.1      | 22       |
| Zr-95      | < 5.6          | < 2.8                          | < 5.3        | < 2.4      | 22       |
| Nb-95      | < 3.0          | < 2.8                          | < 5.1        | < 1.8      | 11       |
| Cs-134     | < 2.8          | < 3.2                          | < 3.5        | < 1.3      | 11       |
| Cs-137     | < 2.7          | < 3.1                          | < 2.8        | < 0.8      | 13       |
| Ba-140     | < 44.0         | < 16.8                         | < 37.1       | < 15.5     | 45       |
| La-140     | < 5.2          | < 2.3                          | < 7.3        | < 6.0      | 11       |
| Lab Code   | PELW- 5352     | PELW- 6280                     | PELW- 6717   | PELW- 7248 |          |
| Start Date | 08-27-15       | 09-25-15                       | 10-29-15     | 11-25-15   |          |
| End Date   | 09-25-15       | 10-29-15                       | 11-25-15     | 12-30-15   |          |
| Gross beta | 1.1 ± 0.5      | 2.0 ± 0.9                      | 1.4 ± 0.6    | 1.0 ± 0.5  | 3.0      |
| Mn-54      | < 3.9          | < 1.7                          | < 2.1        | < 2.2      | 11       |
| Fe-59      | < 3.6          | < 5.3                          | < 3.3        | < 5.3      | 22       |
| Co-58      | < 3.6          | < 3.0                          | < 2.8        | < 2.5      | 11       |
| Co-60      | < 2.0          | < 1.6                          | < 2.3        | < 2.6      | 11       |
| Zn-65      | < 4.7          | < 2.1                          | < 4.4        | < 3.3      | 22       |
| Zr-95      | < 4.9          | < 5.2                          | < 5.3        | < 5.5      | 22       |
| Nb-95      | < 3.0          | < 3.8                          | < 3.0        | < 3.5      | 11       |
| Cs-134     | < 4.2          | < 2.3                          | < 3.1        | < 3.1      | 11       |
| Cs-137     | < 3.0          | < 2.2                          | < 3.1        | < 2.3      | 13       |
| Ba-140     | < 15.7         | < 35.8                         | < 28.8       | < 26.5     | 45       |
| La-140     | < 6.2          | < 7.3                          | < 7.1        | < 2.7      | 11       |

Table 4. Lake water, analyses for gross beta and gamma emitting isotopes.

|            | Location: P-59  |                 |                 | Collection: Monthly composites | Units: pCi/L |          |
|------------|-----------------|-----------------|-----------------|--------------------------------|--------------|----------|
| Lab Code   | NS <sup>a</sup> | NS <sup>a</sup> | NS <sup>a</sup> | PELW- 2132                     |              |          |
| Start Date | -               | -               | -               | 03-26-15                       |              | Req. LLD |
| End Date   | 01-29-15        | 02-26-15        | 03-26-15        | 04-30-15                       |              |          |
| Gross beta | -               | -               | -               | < 0.8                          |              | 3.0      |
| Mn-54      | -               | -               | -               | < 2.6                          |              | 11       |
| Fe-59      | -               | -               | -               | < 6.8                          |              | 22       |
| Co-58      | -               | -               | -               | < 2.2                          |              | 11       |
| Co-60      | -               | -               | -               | < 1.5                          |              | 11       |
| Zn-65      | -               | -               | -               | < 3.6                          |              | 22       |
| Zr-95      | -               | -               | -               | < 3.3                          |              | 22       |
| Nb-95      | -               | -               | -               | < 3.1                          |              | 11       |
| Cs-134     | -               | -               | -               | < 2.4                          |              | 11       |
| Cs-137     | -               | -               | -               | < 2.7                          |              | 13       |
| Ba-140     | -               | -               | -               | < 13.2                         |              | 45       |
| La-140     | -               | -               | -               | < 3.1                          |              | 11       |
| Lab Code   | PELW- 2767      | PELW- 3363      | PELW- 4338      | PELW- 4791                     |              |          |
| Start Date | 04-30-15        | 05-28-15        | 06-29-15        | 07-30-15                       |              |          |
| End Date   | 05-28-15        | 06-29-15        | 07-30-15        | 08-27-15                       |              |          |
| Gross beta | 1.2 ± 0.6       | 1.0 ± 0.5       | 1.0 ± 0.5       | 1.5 ± 0.6                      |              | 3.0      |
| Mn-54      | < 2.1           | < 3.3           | < 2.9           | < 1.0                          |              | 11       |
| Fe-59      | < 4.7           | < 3.4           | < 5.6           | < 2.3                          |              | 22       |
| Co-58      | < 2.1           | < 2.8           | < 2.7           | < 1.2                          |              | 11       |
| Co-60      | < 2.1           | < 2.0           | < 2.8           | < 0.8                          |              | 11       |
| Zn-65      | < 3.0           | < 5.9           | < 3.1           | < 2.2                          |              | 22       |
| Zr-95      | < 5.1           | < 6.0           | < 5.6           | < 2.3                          |              | 22       |
| Nb-95      | < 2.8           | < 1.6           | < 4.2           | < 1.6                          |              | 11       |
| Cs-134     | < 2.2           | < 3.4           | < 2.6           | < 1.2                          |              | 11       |
| Cs-137     | < 2.0           | < 2.8           | < 2.8           | < 0.8                          |              | 13       |
| Ba-140     | < 26.1          | < 19.3          | < 26.6          | < 15.0                         |              | 45       |
| La-140     | < 3.9           | < 2.7           | < 3.2           | < 4.3                          |              | 11       |
| Lab Code   | PELW- 5354      | PELW- 6283      | PELW- 6719      | PELW- 7250                     |              |          |
| Start Date | 08-27-15        | 09-25-15        | 10-29-15        | 11-25-15                       |              |          |
| End Date   | 09-25-15        | 10-29-15        | 11-25-15        | 12-30-15                       |              |          |
| Gross beta | 0.9 ± 0.5       | 2.1 ± 0.9       | 1.7 ± 0.6       | 0.9 ± 0.5                      |              | 3.0      |
| Mn-54      | < 2.7           | < 1.8           | < 2.2           | < 2.4                          |              | 11       |
| Fe-59      | < 3.3           | < 7.2           | < 5.7           | < 6.0                          |              | 22       |
| Co-58      | < 2.4           | < 2.8           | < 2.8           | < 1.9                          |              | 11       |
| Co-60      | < 2.8           | < 1.7           | < 1.9           | < 1.9                          |              | 11       |
| Zn-65      | < 3.3           | < 4.5           | < 3.0           | < 4.0                          |              | 22       |
| Zr-95      | < 4.9           | < 3.9           | < 2.1           | < 4.4                          |              | 22       |
| Nb-95      | < 4.5           | < 4.4           | < 2.7           | < 1.9                          |              | 11       |
| Cs-134     | < 3.4           | < 2.6           | < 2.3           | < 2.8                          |              | 11       |
| Cs-137     | < 3.9           | < 2.8           | < 2.8           | < 3.2                          |              | 13       |
| Ba-140     | < 17.1          | < 33.9          | < 18.0          | < 21.7                         |              | 45       |
| La-140     | < 3.6           | < 4.9           | < 4.2           | < 4.3                          |              | 11       |

<sup>a</sup> No sample available, shoreline inaccessible.

Table 4. Lake water, analyses for gross beta and gamma emitting isotopes.

| Location: P-60 |                 | Collection: Monthly composites |                 |            | Units: pCi/L |  |
|----------------|-----------------|--------------------------------|-----------------|------------|--------------|--|
| Lab Code       | NS <sup>a</sup> | NS <sup>a</sup>                | NS <sup>a</sup> | PELW- 2133 |              |  |
| Start Date     | -               | -                              | -               | 03-26-15   | Req. LLD     |  |
| End Date       | 01-29-15        | 02-26-15                       | 03-26-15        | 04-30-15   |              |  |
| Gross beta     | -               | -                              | -               | 2.6 ± 1.0  | 3.0          |  |
| Mn-54          | -               | -                              | -               | < 3.1      | 11           |  |
| Fe-59          | -               | -                              | -               | < 6.7      | 22           |  |
| Co-58          | -               | -                              | -               | < 3.1      | 11           |  |
| Co-60          | -               | -                              | -               | < 1.5      | 11           |  |
| Zn-65          | -               | -                              | -               | < 3.2      | 22           |  |
| Zr-95          | -               | -                              | -               | < 6.5      | 22           |  |
| Nb-95          | -               | -                              | -               | < 3.0      | 11           |  |
| Cs-134         | -               | -                              | -               | < 4.0      | 11           |  |
| Cs-137         | -               | -                              | -               | < 4.3      | 13           |  |
| Ba-140         | -               | -                              | -               | < 21.6     | 45           |  |
| La-140         | -               | -                              | -               | < 3.6      | 11           |  |
| Lab Code       | PELW- 2768      | PELW- 3365                     | PELW- 4339      | PELW- 4792 |              |  |
| Start Date     | 04-30-15        | 05-28-15                       | 06-29-15        | 07-30-15   |              |  |
| End Date       | 05-28-15        | 06-29-15                       | 07-30-15        | 08-27-15   |              |  |
| Gross beta     | 2.4 ± 0.8       | 1.3 ± 0.6                      | 1.6 ± 0.6       | 1.1 ± 0.6  | 3.0          |  |
| Mn-54          | < 2.4           | < 2.4                          | < 1.2           | < 1.3      | 11           |  |
| Fe-59          | < 7.2           | < 4.5                          | < 5.3           | < 2.9      | 22           |  |
| Co-58          | < 3.3           | < 1.8                          | < 1.0           | < 1.6      | 11           |  |
| Co-60          | < 3.0           | < 1.2                          | < 1.9           | < 0.6      | 11           |  |
| Zn-65          | < 3.7           | < 1.9                          | < 5.8           | < 2.4      | 22           |  |
| Zr-95          | < 5.9           | < 3.6                          | < 5.0           | < 2.4      | 22           |  |
| Nb-95          | < 3.9           | < 2.7                          | < 3.0           | < 2.0      | 11           |  |
| Cs-134         | < 3.5           | < 2.3                          | < 2.2           | < 1.2      | 11           |  |
| Cs-137         | < 3.6           | < 2.2                          | < 3.5           | < 1.3      | 13           |  |
| Ba-140         | < 18.6          | < 15.8                         | < 34.0          | < 13.7     | 45           |  |
| La-140         | < 4.4           | < 1.5                          | < 10.6          | < 5.1      | 11           |  |
| Lab Code       | PELW- 5355      | PELW- 6284                     | PELW- 6720      | PELW- 7251 |              |  |
| Start Date     | 08-27-15        | 09-25-15                       | 10-29-15        | 11-25-15   |              |  |
| End Date       | 09-25-15        | 10-29-15                       | 11-25-15        | 12-30-15   |              |  |
| Gross beta     | 1.7 ± 0.6       | < 1.8                          | < 1.0           | < 0.9      | 3.0          |  |
| Mn-54          | < 2.1           | < 1.7                          | < 2.7           | < 3.9      | 11           |  |
| Fe-59          | < 3.4           | < 4.4                          | < 5.7           | < 5.5      | 22           |  |
| Co-58          | < 2.3           | < 2.3                          | < 3.4           | < 4.8      | 11           |  |
| Co-60          | < 2.5           | < 2.1                          | < 1.2           | < 3.8      | 11           |  |
| Zn-65          | < 3.9           | < 3.2                          | < 2.4           | < 7.4      | 22           |  |
| Zr-95          | < 4.7           | < 4.8                          | < 3.1           | < 7.0      | 22           |  |
| Nb-95          | < 2.1           | < 3.4                          | < 2.6           | < 3.9      | 11           |  |
| Cs-134         | < 3.4           | < 2.2                          | < 3.2           | < 4.5      | 11           |  |
| Cs-137         | < 2.9           | < 2.2                          | < 3.0           | < 2.6      | 13           |  |
| Ba-140         | < 11.8          | < 42.0                         | < 19.1          | < 28.7     | 45           |  |
| La-140         | < 5.6           | < 5.4                          | < 6.2           | < 10.4     | 11           |  |

<sup>a</sup> No sample available, shoreline inaccessible.

Table 4. Lake water, analyses for gross beta and gamma emitting isotopes.

Location: P-39 <sup>a</sup>

Collection: Monthly composites

Units: pCi/L

| Lab Code   | PELW- 4337 | PELW- 4790 | PELW- 5353 | PELW- 6282 | Req. LLD |
|------------|------------|------------|------------|------------|----------|
| Start Date | 06-29-15   | 07-30-15   | 08-27-15   | 09-25-15   |          |
| End Date   | 07-30-15   | 08-27-15   | 09-25-15   | 10-29-15   |          |
| Gross beta | 1.0 ± 0.5  | 0.9 ± 0.5  | 1.1 ± 0.5  | < 1.7      | 3.0      |
| Mn-54      | < 3.5      | < 1.3      | < 1.9      | < 2.8      | 11       |
| Fe-59      | < 3.9      | < 3.4      | < 3.7      | < 5.3      | 22       |
| Co-58      | < 2.6      | < 1.3      | < 1.8      | < 2.3      | 11       |
| Co-60      | < 1.9      | < 1.4      | < 2.5      | < 2.6      | 11       |
| Zn-65      | < 2.6      | < 2.3      | < 3.8      | < 5.5      | 22       |
| Zr-95      | < 3.5      | < 1.8      | < 5.9      | < 4.2      | 22       |
| Nb-95      | < 2.7      | < 2.0      | < 1.9      | < 4.2      | 11       |
| Cs-134     | < 2.9      | < 1.4      | < 3.7      | < 2.2      | 11       |
| Cs-137     | < 1.4      | < 1.0      | < 3.8      | < 2.5      | 13       |
| Ba-140     | < 27.6     | < 22.7     | < 18.7     | < 28.4     | 45       |
| La-140     | < 4.3      | < 4.5      | < 5.4      | < 4.2      | 11       |
| Lab Code   | PELW- 6718 | PELW- 7249 |            |            |          |
| Start Date | 10-29-15   | 11-25-15   |            |            |          |
| End Date   | 11-25-15   | 12-30-15   |            |            |          |
| Gross beta | 1.4 ± 0.6  | 1.2 ± 0.5  |            |            |          |
| Mn-54      | < 1.7      | < 2.5      |            |            |          |
| Fe-59      | < 6.5      | < 4.4      |            |            |          |
| Co-58      | < 1.2      | < 2.0      |            |            |          |
| Co-60      | < 2.4      | < 3.1      |            |            |          |
| Zn-65      | < 1.7      | < 4.2      |            |            |          |
| Zr-95      | < 4.2      | < 5.9      |            |            |          |
| Nb-95      | < 3.4      | < 2.6      |            |            |          |
| Cs-134     | < 2.2      | < 3.3      |            |            |          |
| Cs-137     | < 2.1      | < 3.1      |            |            |          |
| Ba-140     | < 21.1     | < 15.6     |            |            |          |
| La-140     | < 4.2      | < 2.8      |            |            |          |

<sup>a</sup> New location replacing PE-28.

Table 4. Lake Water, analysis for tritium.  
 Collection: Quarterly composites of monthly collections.  
 Units: pCi/L

Required limit of detection: 1500 pCi/L

| Location              |                 |            |                 |                 |
|-----------------------|-----------------|------------|-----------------|-----------------|
| P-28                  |                 |            |                 |                 |
| Period                | 1st Qtr.        | 2nd Qtr.   | 3rd Qtr.        | 4th Qtr.        |
| Lab Code              | PELW- 1312      | PELW- 3519 | NS <sup>a</sup> | NS <sup>a</sup> |
| H-3                   | < 147           | < 147      |                 |                 |
| Location              |                 |            |                 |                 |
| P-34                  |                 |            |                 |                 |
| Period                | 1st Qtr.        | 2nd Qtr.   | 3rd Qtr.        | 4th Qtr.        |
| Lab Code              | PELW- 1313      | PELW- 3520 | PELW- 5652      | PELW- 7295      |
| H-3                   | < 148           | < 147      | < 152           | < 146           |
| Location              |                 |            |                 |                 |
| P-36                  |                 |            |                 |                 |
| Period                | 1st Qtr.        | 2nd Qtr.   | 3rd Qtr.        | 4th Qtr.        |
| Lab Code              | PELW- 1314      | PELW- 3521 | PELW- 5653      | PELW- 7296      |
| H-3                   | < 147           | < 147      | < 152           | < 146           |
| Location <sup>b</sup> |                 |            |                 |                 |
| P-39                  |                 |            |                 |                 |
|                       |                 |            | 3rd Qtr.        | 4th Qtr.        |
|                       |                 |            | PELW- 5654      | PELW- 7297      |
|                       |                 |            | < 152           | < 146           |
| Location              |                 |            |                 |                 |
| P-59                  |                 |            |                 |                 |
| Period                | 1st Qtr.        | 2nd Qtr.   | 3rd Qtr.        | 4th Qtr.        |
| Lab Code              | NA <sup>c</sup> | PELW- 3522 | PELW- 5655      | PELW- 7298      |
| H-3                   |                 | < 147      | < 152           | < 146           |
| Location              |                 |            |                 |                 |
| P-60                  |                 |            |                 |                 |
| Period                | 1st Qtr.        | 2nd Qtr.   | 3rd Qtr.        | 4th Qtr.        |
| Lab Code              | NA <sup>c</sup> | PELW- 3523 | PELW- 5656      | PELW- 7299      |
| H-3                   |                 | < 147      | < 152           | < 145           |

<sup>a</sup> "NS" = No sample; see Table 2.0, Listing of Missed Samples.

<sup>b</sup> New location replacing PE-28.

<sup>c</sup> No sample available, shoreline frozen.

Table 5. Milk, analyses for iodine-131 and gamma-emitting isotopes.  
Collection: Semimonthly during grazing season, monthly at other times.

| Collection<br>Date | Lab<br>Code     | Concentration (pCi/L) |        |        |        |        |            |
|--------------------|-----------------|-----------------------|--------|--------|--------|--------|------------|
|                    |                 | I-131                 | Cs-134 | Cs-137 | Ba-140 | La-140 | K-40       |
| Required LLD       | (pCi/L)         | 0.8                   | 11     | 13     | 45     | 11     | -          |
| <u>P-18</u>        |                 |                       |        |        |        |        |            |
| 01-05-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 02-02-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 03-03-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 04-06-15           | PEMI- 1496      | < 0.3                 | < 2.4  | < 2.5  | < 13.1 | < 3.3  | 1350 ± 81  |
| 04-20-15           | PEMI- 1821      | < 0.4                 | < 4.2  | < 2.9  | < 34.3 | < 7.1  | 1690 ± 119 |
| 05-04-15           | PEMI- 2315      | < 0.4                 | < 3.1  | < 3.7  | < 36.6 | < 4.0  | 1923 ± 114 |
| 05-21-15           | PEMI- 2578      | < 0.5                 | < 3.4  | < 3.4  | < 14.8 | < 2.5  | 1900 ± 127 |
| 06-01-15           | PEMI- 2843      | < 0.4                 | < 3.7  | < 3.2  | < 20.5 | < 3.2  | 1837 ± 132 |
| 06-15-15           | PEMI- 3026      | < 0.3                 | < 3.6  | < 4.1  | < 18.5 | < 3.2  | 1767 ± 118 |
| 07-06-15           | PEMI- 3495      | < 0.2                 | < 3.5  | < 4.1  | < 28.6 | < 7.1  | 1745 ± 104 |
| 07-20-15           | PEMI- 4022      | < 0.5                 | < 3.6  | < 4.2  | < 20.9 | < 2.6  | 1902 ± 141 |
| 08-03-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 08-17-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 09-08-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 09-21-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 10-05-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 10-19-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 11-02-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| 12-07-15           | ND <sup>a</sup> | -                     | -      | -      | -      | -      | -          |
| <u>P-19</u>        |                 |                       |        |        |        |        |            |
| 01-05-15           | PEMI- 27        | < 0.2                 | < 2.8  | < 3.2  | < 15.7 | < 2.0  | 1322 ± 93  |
| 02-02-15           | PEMI- 492       | < 0.5                 | < 3.1  | < 4.2  | < 18.0 | < 2.8  | 1211 ± 105 |
| 03-03-15           | PEMI- 927       | < 0.5                 | < 3.1  | < 2.5  | < 28.2 | < 6.2  | 1253 ± 89  |
| 04-06-15           | PEMI- 1497      | < 0.5                 | < 3.3  | < 3.2  | < 31.9 | < 5.7  | 1196 ± 88  |
| 04-20-15           | PEMI- 1822      | < 0.3                 | < 3.4  | < 3.0  | < 33.3 | < 6.8  | 1226 ± 100 |
| 05-04-15           | PEMI- 2316      | < 0.4                 | < 3.7  | < 2.8  | < 30.4 | < 6.3  | 1313 ± 102 |
| 05-21-15           | PEMI- 2579      | < 0.5                 | < 3.2  | < 3.0  | < 17.0 | < 3.2  | 1390 ± 106 |
| 06-01-15           | PEMI- 2844      | < 0.4                 | < 3.6  | < 3.0  | < 14.2 | < 2.2  | 1277 ± 107 |
| 06-15-15           | PEMI- 3028      | < 0.4                 | < 3.9  | < 4.5  | < 23.9 | < 2.4  | 1346 ± 119 |
| 07-06-15           | PEMI- 3496      | < 0.2                 | < 3.1  | < 1.9  | < 27.5 | < 3.3  | 1323 ± 99  |
| 07-20-15           | PEMI- 4023      | < 0.5                 | < 3.3  | < 3.1  | < 21.4 | < 6.7  | 1372 ± 113 |
| 08-03-15           | PEMI- 4308      | < 0.2                 | < 3.9  | < 2.3  | < 17.5 | < 2.5  | 1284 ± 110 |
| 08-17-15           | PEMI- 4565      | < 0.3                 | < 3.1  | < 2.7  | < 36.7 | < 8.1  | 1360 ± 95  |
| 09-08-15           | PEMI- 4972      | < 0.4                 | < 3.7  | < 3.8  | < 44.9 | < 6.3  | 1356 ± 112 |
| 09-21-15           | PEMI- 5237      | < 0.5                 | < 3.5  | < 3.7  | < 35.5 | < 5.2  | 1358 ± 98  |
| 10-05-15           | PEMI- 5616      | < 0.3                 | < 3.6  | < 3.0  | < 34.5 | < 3.1  | 1212 ± 97  |
| 10-19-15           | PEMI- 6055      | < 0.3                 | < 2.9  | < 2.6  | < 21.4 | < 4.0  | 1372 ± 86  |
| 11-02-15           | PEMI- 6351      | < 0.3                 | < 1.3  | < 1.7  | < 18.8 | < 2.2  | 1364 ± 42  |
| 12-07-15           | PEMI- 6943      | < 0.3                 | < 3.2  | < 2.6  | < 15.6 | < 3.8  | 1349 ± 104 |

<sup>a</sup> ND = No data, no milk available.

Table 5. Milk, analyses for iodine-131 and gamma-emitting isotopes (continued).  
Collection: Semimonthly during grazing season, monthly at other times.

| Collection<br>Date | Lab<br>Code | Concentration (pCi/L) |        |        |        |        |            |
|--------------------|-------------|-----------------------|--------|--------|--------|--------|------------|
|                    |             | I-131                 | Cs-134 | Cs-137 | Ba-140 | La-140 | K-40       |
| Required LLD       | (pCi/L)     | 0.8                   | 11     | 13     | 45     | 11     | -          |
| <u>P-51</u>        |             |                       |        |        |        |        |            |
| 01-05-15           | PEMI- 28    | < 0.4                 | < 3.1  | < 3.0  | < 10.8 | < 5.1  | 1336 ± 94  |
| 02-02-15           | PEMI- 493   | < 0.4                 | < 4.4  | < 4.9  | < 31.6 | < 5.2  | 1405 ± 125 |
| 03-03-15           | PEMI- 928   | < 0.5                 | < 3.0  | < 1.8  | < 17.7 | < 3.5  | 1346 ± 86  |
| 04-06-15           | PEMI- 1498  | < 0.4                 | < 2.9  | < 2.6  | < 27.3 | < 1.8  | 1330 ± 88  |
| 04-20-15           | PEMI- 1823  | < 0.4                 | < 3.3  | < 3.2  | < 24.6 | < 3.5  | 1349 ± 112 |
| 05-04-15           | PEMI- 2317  | < 0.4                 | < 3.1  | < 2.6  | < 35.7 | < 8.1  | 1418 ± 86  |
| 05-21-15           | PEMI- 2580  | < 0.3                 | < 3.6  | < 4.1  | < 17.4 | < 2.8  | 1310 ± 113 |
| 06-01-15           | PEMI- 2845  | < 0.5                 | < 3.5  | < 3.7  | < 11.5 | < 1.8  | 1362 ± 113 |
| 06-15-15           | PEMI- 3029  | < 0.3                 | < 3.9  | < 2.2  | < 20.5 | < 2.0  | 1341 ± 110 |
| 07-06-15           | PEMI- 3497  | < 0.5                 | < 3.3  | < 3.1  | < 28.7 | < 5.7  | 1343 ± 104 |
| 07-20-15           | PEMI- 4024  | < 0.3                 | < 3.3  | < 4.2  | < 13.8 | < 2.9  | 1284 ± 101 |
| 08-03-15           | PEMI- 4309  | < 0.5                 | < 3.5  | < 3.5  | < 19.0 | < 3.0  | 1323 ± 102 |
| 08-17-15           | PEMI- 4566  | < 0.4                 | < 3.2  | < 2.8  | < 34.8 | < 4.6  | 1362 ± 97  |
| 09-08-15           | PEMI- 4973  | < 0.4                 | < 3.2  | < 3.4  | < 44.2 | < 5.8  | 1308 ± 91  |
| 09-21-15           | PEMI- 5238  | < 0.4                 | < 2.8  | < 3.3  | < 22.1 | < 3.6  | 1303 ± 86  |
| 10-05-15           | PEMI- 5617  | < 0.3                 | < 1.3  | < 0.9  | < 15.4 | < 6.3  | 717 ± 35   |
| 10-19-15           | PEMI- 6056  | < 0.4                 | < 3.5  | < 3.8  | < 35.5 | < 8.2  | 1440 ± 105 |
| 11-02-15           | PEMI- 6352  | < 0.3                 | < 1.2  | < 1.5  | < 13.2 | < 3.5  | 1371 ± 41  |
| 12-07-15           | PEMI- 6944  | < 0.5                 | < 3.3  | < 3.8  | < 13.0 | < 6.7  | 1445 ± 108 |

<sup>a</sup> ND = No data, no milk available.



Table 7. Food Products, analyses for gamma emitting isotopes.

Collection: Monthly

Units: pCi/kg wet

Location: P-2

| Lab Code       | PEVE- 4038  | PEVE- 4039     | PEVE- 4040    | PEVE- 4041  | Req. LLD |
|----------------|-------------|----------------|---------------|-------------|----------|
| Date Collected | 07-21-15    | 07-21-15       | 07-21-15      | 07-21-15    |          |
| Sample Type    | Beet Greens | Collard Greens | Turnip Greens | Swiss Chard |          |
| Be-7           | < 105       | < 91           | 311 ± 146     | 249 ± 80    | -        |
| K-40           | 3374 ± 249  | 3937 ± 232     | 5100 ± 353    | 5772 ± 315  | -        |
| Co-58          | < 8.4       | < 9.0          | < 10.3        | < 10.4      | -        |
| Co-60          | < 8.1       | < 7.8          | < 7.5         | < 9.7       | -        |
| I-131          | < 18.7      | < 19.4         | < 35.6        | < 31.3      | 45       |
| Cs-134         | < 8.1       | < 7.3          | < 10.3        | < 9.1       | 45       |
| Cs-137         | < 9.6       | < 7.9          | < 12.7        | < 10.4      | 60       |

  

| Lab Code       | PEVE- 4572      | PEVE- 4573     | PEVE- 4574    | PEVE- 4575  |  |
|----------------|-----------------|----------------|---------------|-------------|--|
| Date Collected | 08-18-15        | 08-18-15       | 08-18-15      | 08-18-15    |  |
| Sample Type    | Japanese Greens | Collard Greens | Turnip Greens | Swiss Chard |  |
| Be-7           | < 112           | < 101          | 256 ± 96      | 329 ± 92    |  |
| K-40           | 2793 ± 243      | 3274 ± 326     | 3874 ± 330    | 3871 ± 284  |  |
| Co-58          | < 9.4           | < 11.2         | < 6.3         | < 9.3       |  |
| Co-60          | < 6.4           | < 8.1          | < 5.4         | < 6.0       |  |
| I-131          | < 26.4          | < 15.7         | < 22.6        | < 28.4      |  |
| Cs-134         | < 8.5           | < 12.9         | < 10.3        | < 8.2       |  |
| Cs-137         | < 12.2          | < 12.8         | < 9.9         | < 10.2      |  |

  

| Lab Code       | PEVE- 5160      | PEVE- 5161     | PEVE- 5162    | PEVE- 5163  |  |
|----------------|-----------------|----------------|---------------|-------------|--|
| Date Collected | 09-16-15        | 09-16-15       | 09-16-15      | 09-16-15    |  |
| Sample Type    | Japanese Greens | Collard Greens | Turnip Greens | Swiss Chard |  |
| Be-7           | 719 ± 82        | < 93           | 743 ± 149     | 609 ± 151   |  |
| K-40           | 3817 ± 164      | 3602 ± 255     | 5516 ± 393    | 4814 ± 379  |  |
| Co-58          | < 7.4           | < 8.5          | < 11.6        | < 13.3      |  |
| Co-60          | < 5.6           | < 5.8          | < 13.6        | < 7.6       |  |
| I-131          | < 16.7          | < 29.0         | < 39.2        | < 42.5      |  |
| Cs-134         | < 6.0           | < 8.5          | < 10.7        | < 12.1      |  |
| Cs-137         | < 7.6           | < 6.6          | < 9.9         | < 14.5      |  |

  

| Lab Code       | PEVE- 6057     | PEVE- 6058    | PEVE- 6059  |  |
|----------------|----------------|---------------|-------------|--|
| Date Collected | 10-20-15       | 10-20-15      | 10-20-15    |  |
| Sample Type    | Collard Greens | Turnip Greens | Swiss Chard |  |
| Be-7           | < 129          | 684 ± 131     | 454 ± 146   |  |
| K-40           | 4429 ± 336     | 4189 ± 284    | 6013 ± 467  |  |
| Co-58          | < 9.7          | < 8.0         | < 7.4       |  |
| Co-60          | < 10.2         | < 4.5         | < 12.1      |  |
| I-131          | < 31.2         | < 41.5        | < 43.8      |  |
| Cs-134         | < 10.1         | < 8.9         | < 13.8      |  |
| Cs-137         | < 13.4         | < 9.9         | < 12.5      |  |

Table 7. Food Products, analyses for gamma emitting isotopes.

Collection: Monthly

Units: pCi/kg wet

Location: P-16

| Lab Code       | PEVE- 4042      | PEVE- 4043     | PEVE- 4044    | PEVE- 4045    | Req. LLD |
|----------------|-----------------|----------------|---------------|---------------|----------|
| Date Collected | 07-21-15        | 07-21-15       | 07-21-15      | 07-21-15      |          |
| Sample Type    | Beet Greens     | Collard Greens | Swiss Chard   | Turnip Greens |          |
| Be-7           | 150 ± 74        | < 94           | 185 ± 70      | 239 ± 107     | -        |
| K-40           | 4658 ± 243      | 3979 ± 250     | 6263 ± 242    | 5279 ± 327    | -        |
| Co-58          | < 7.9           | < 5.9          | < 8.3         | < 7.2         | -        |
| Co-60          | < 7.0           | < 8.1          | < 8.1         | < 9.4         | -        |
| I-131          | < 20.0          | < 25.9         | < 22.7        | < 35.9        | 45       |
| Cs-134         | < 6.1           | < 8.8          | < 7.3         | < 9.3         | 45       |
| Cs-137         | < 7.5           | < 9.9          | < 7.8         | < 10.4        | 60       |
| Lab Code       | PEVE- 4576      | PEVE- 4577     | PEVE- 4578    | PEVE- 4580    |          |
| Date Collected | 08-18-15        | 08-18-15       | 08-18-15      | 08-18-15      |          |
| Sample Type    | Japanese Greens | Collard Greens | Swiss Chard   | Turnip Greens |          |
| Be-7           | < 108           | < 83           | 209 ± 98      | < 117         |          |
| K-40           | 4197 ± 312      | 3539 ± 289     | 4137 ± 251    | 3294 ± 270    |          |
| Co-58          | < 10.4          | < 7.5          | < 8.1         | < 9.7         |          |
| Co-60          | < 7.3           | < 9.2          | < 8.6         | < 7.9         |          |
| I-131          | < 32.9          | < 19.5         | < 20.9        | < 21.0        |          |
| Cs-134         | < 9.0           | < 7.4          | < 7.9         | < 10.4        |          |
| Cs-137         | < 9.4           | < 6.1          | < 7.0         | < 13.3        |          |
| Lab Code       | PEVE- 5164      | PEVE- 5165     | PEVE- 5166    | PEVE- 5167    |          |
| Date Collected | 09-16-15        | 09-16-15       | 09-16-15      | 09-16-15      |          |
| Sample Type    | Japanese Greens | Collard Greens | Swiss Chard   | Turnip Greens |          |
| Be-7           | 402 ± 157       | 300 ± 113      | 363 ± 107     | 400 ± 109     |          |
| K-40           | 3459 ± 327      | 3655 ± 277     | 4238 ± 298    | 3561 ± 274    |          |
| Co-58          | < 7.0           | < 5.9          | < 10.1        | < 7.6         |          |
| Co-60          | < 11.4          | < 6.7          | < 10.2        | < 6.9         |          |
| I-131          | < 33.6          | < 24.3         | < 24.2        | < 15.8        |          |
| Cs-134         | < 12.0          | < 9.1          | < 9.4         | < 7.7         |          |
| Cs-137         | < 13.5          | < 7.1          | < 6.7         | < 8.9         |          |
| Lab Code       | PEVE- 6060      | PEVE- 6061     | PEVE- 6062    |               |          |
| Date Collected | 10-20-15        | 10-20-15       | 10-20-15      |               |          |
| Sample Type    | Collard Greens  | Swiss Chard    | Turnip Greens |               |          |
| Be-7           | 370 ± 127       | 572 ± 181      | 746 ± 131     |               |          |
| K-40           | 4486 ± 344      | 5723 ± 367     | 6511 ± 437    |               |          |
| Co-58          | < 6.2           | < 8.8          | < 14.5        |               |          |
| Co-60          | < 10.7          | < 8.9          | < 12.9        |               |          |
| I-131          | < 28.0          | < 32.6         | < 43.9        |               |          |
| Cs-134         | < 11.1          | < 12.3         | < 13.3        |               |          |
| Cs-137         | < 6.9           | < 12.0         | < 16.5        |               |          |

Table 7. Food Products, analyses for gamma emitting isotopes.

Collection: Monthly

Units: pCi/kg wet

Location: P-18

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| Lab Code       | PEVE- 4581    | PEVE- 4582     | PEVE- 4583  | PEVE- 5169    |
|----------------|---------------|----------------|-------------|---------------|
| Date Collected | 08-18-15      | 08-18-15       | 08-18-15    | 09-16-15      |
| Sample Type    | Turnip Greens | Collard Greens | Swiss Chard | Turnip Greens |
| Be-7           | 249 ± 119     | < 89           | 516 ± 191   | 717 ± 181     |
| K-40           | 5547 ± 328    | 4180 ± 277     | 9638 ± 586  | 7858 ± 474    |
| Co-58          | < 10.1        | < 10.2         | < 17.4      | < 12.7        |
| Co-60          | < 12.4        | < 8.1          | < 12.9      | < 17.9        |
| I-131          | < 17.7        | < 30.2         | < 31.8      | < 41.9        |
| Cs-134         | < 8.9         | < 8.3          | < 17.2      | < 12.2        |
| Cs-137         | < 9.8         | < 8.7          | < 19.0      | < 13.6        |

|                |                |
|----------------|----------------|
| Lab Code       | PEVE- 5170     |
| Date Collected | 09-16-15       |
| Sample Type    | Collard Greens |
| Be-7           | 381 ± 182      |
| K-40           | 4787 ± 385     |
| Co-58          | < 6.2          |
| Co-60          | < 10.7         |
| I-131          | < 33.2         |
| Cs-134         | < 12.9         |
| Cs-137         | < 8.3          |

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Table 7. Food Products, analyses for gamma emitting isotopes.

Collection: Monthly

Units: pCi/kg wet

Location: P-20

| Lab Code       | PEVE- 4046      | PEVE- 4047     | PEVE- 4048     | PEVE- 4049    | Req. LLD |
|----------------|-----------------|----------------|----------------|---------------|----------|
| Date Collected | 07-21-15        | 07-21-15       | 07-21-15       | 07-21-15      |          |
| Sample Type    | Beet Greens     | Collard Greens | Swiss Chard    | Turnip Greens |          |
| Be-7           | 406 ± 108       | < 140          | 517 ± 160      | 375 ± 148     | -        |
| K-40           | 4976 ± 263      | 5453 ± 383     | 8049 ± 439     | 6125 ± 378    | -        |
| Co-58          | < 5.0           | < 9.9          | < 15.7         | < 11.1        | -        |
| Co-60          | < 5.4           | < 11.1         | < 13.2         | < 8.8         | -        |
| I-131          | < 14.9          | < 32.2         | < 36.9         | < 39.2        | 45       |
| Cs-134         | < 8.0           | < 12.9         | < 12.7         | < 10.9        | 45       |
| Cs-137         | < 7.4           | < 11.4         | < 11.1         | < 12.1        | 60       |
|                |                 |                |                |               |          |
| Lab Code       | PEVE- 4584      | PEVE- 4585     | PEVE- 4586     | PEVE- 5171    |          |
| Date Collected | 08-18-15        | 08-18-15       | 08-18-15       | 09-16-15      |          |
| Sample Type    | Japanese Greens | Collard Greens | Turnip Greens  | Swiss Chard   |          |
| Be-7           | < 138           | < 93           | < 95           | 464 ± 184     |          |
| K-40           | 3860 ± 317      | 5066 ± 318     | 6631 ± 325     | 8360 ± 550    |          |
| Co-58          | < 8.9           | < 7.8          | < 7.6          | < 20.9        |          |
| Co-60          | < 10.0          | < 9.9          | < 6.9          | < 9.6         |          |
| I-131          | < 22.0          | < 28.2         | < 19.2         | < 39.1        |          |
| Cs-134         | < 11.4          | < 8.5          | < 7.6          | < 15.6        |          |
| Cs-137         | < 11.4          | < 8.1          | < 9.3          | < 12.2        |          |
|                |                 |                |                |               |          |
| Lab Code       | PEVE- 5172      | PEVE- 5173     | PEVE- 6064     | PEVE- 6065    |          |
| Date Collected | 09-16-15        | 09-16-15       | 10-20-15       | 10-20-15      |          |
| Sample Type    | Collard Greens  | Turnip Greens  | Collard Greens | Turnip Greens |          |
| Be-7           | < 103           | 265 ± 116      | < 122          | 387 ± 110     |          |
| K-40           | 6256 ± 394      | 6554 ± 373     | 5688 ± 397     | 6470 ± 388    |          |
| Co-58          | < 12.8          | < 8.5          | < 8.6          | < 9.7         |          |
| Co-60          | < 7.1           | < 9.8          | < 7.0          | < 11.6        |          |
| I-131          | < 44.6          | < 33.2         | < 27.7         | < 37.3        |          |
| Cs-134         | < 10.3          | < 7.2          | < 12.3         | < 10.0        |          |
| Cs-137         | < 11.4          | < 8.7          | < 9.8          | < 8.7         |          |

Table 7. Food Products, analyses for gamma emitting isotopes.

Collection: Monthly

Units: pCi/kg wet

Location: P-37

| Lab Code       | PEVE- 4050  | PEVE- 4051  | PEVE- 4587     | PEVE- 4588    |          |
|----------------|-------------|-------------|----------------|---------------|----------|
| Date Collected | 07-21-15    | 07-21-15    | 08-18-15       | 08-18-15      | Req. LLD |
| Sample Type    | Beet Greens | Swiss Chard | Collard Greens | Turnip Greens |          |
| Be-7           | 274 ± 113   | < 87        | < 111          | < 109         | -        |
| K-40           | 5634 ± 311  | 3634 ± 222  | 2818 ± 268     | 3402 ± 281    | -        |
| Co-58          | < 7.7       | < 8.8       | < 8.0          | < 8.1         | -        |
| Co-60          | < 9.1       | < 9.1       | < 9.7          | < 11.1        | -        |
| I-131          | < 26.2      | < 23.0      | < 24.6         | < 23.9        | 45       |
| Cs-134         | < 9.6       | < 7.7       | < 11.5         | < 9.8         | 45       |
| Cs-137         | < 9.5       | < 6.8       | < 12.8         | < 8.5         | 60       |

| Lab Code       | PEVE- 5174    | PEVE- 5175      | PEVE- 5176     | PEVE- 6066    |  |
|----------------|---------------|-----------------|----------------|---------------|--|
| Date Collected | 09-16-15      | 09-16-15        | 09-16-15       | 10-20-15      |  |
| Sample Type    | Turnip Greens | Japanese Greens | Collard Greens | Turnip Greens |  |
| Be-7           | 305 ± 127     | 295 ± 87        | < 119          | 682 ± 144     |  |
| K-40           | 6056 ± 442    | 3835 ± 281      | 3243 ± 303     | 6440 ± 362    |  |
| Co-58          | < 8.6         | < 9.6           | < 14.1         | < 15.2        |  |
| Co-60          | < 6.5         | < 7.9           | < 11.6         | < 7.3         |  |
| I-131          | < 40.3        | < 34.5          | < 37.7         | < 42.5        |  |
| Cs-134         | < 14.1        | < 9.7           | < 10.1         | < 9.8         |  |
| Cs-137         | < 14.6        | < 9.9           | < 11.4         | < 7.7         |  |

| Lab Code       | PEVE- 6067      | PEVE- 6068     |  |
|----------------|-----------------|----------------|--|
| Date Collected | 10-20-15        | 10-20-15       |  |
| Sample Type    | Japanese Greens | Collard Greens |  |
| Be-7           | 609 ± 153       | < 116          |  |
| K-40           | 5443 ± 375      | 5042 ± 328     |  |
| Co-58          | < 7.7           | < 12.1         |  |
| Co-60          | < 7.1           | < 7.5          |  |
| I-131          | < 44.0          | < 38.9         |  |
| Cs-134         | < 12.4          | < 10.3         |  |
| Cs-137         | < 10.3          | < 7.5          |  |

Table 7. Food Products, analyses for gamma emitting isotopes.

Collection: Monthly

Units: pCi/kg wet

Location: P-70

| Lab Code       | PEVE- 4052  | PEVE- 4053  | PEVE- 4589      | PEVE- 4590  | Req. LLD |
|----------------|-------------|-------------|-----------------|-------------|----------|
| Date Collected | 07-21-15    | 07-21-15    | 08-18-15        | 08-18-15    |          |
| Sample Type    | Beet Greens | Swiss Chard | Japanese Greens | Swiss Chard |          |
| Be-7           | 419 ± 134   | 520 ± 154   | 273 ± 101       | 783 ± 142   | -        |
| K-40           | 7860 ± 401  | 8001 ± 415  | 5133 ± 308      | 12725 ± 464 | -        |
| Co-58          | < 14.1      | < 11.0      | < 10.4          | < 9.0       | -        |
| Co-60          | < 11.7      | < 12.5      | < 5.9           | < 8.7       | -        |
| I-131          | < 33.5      | < 24.4      | < 12.7          | < 13.6      | 45       |
| Cs-134         | < 11.8      | < 11.0      | < 9.8           | < 10.4      | 45       |
| Cs-137         | < 8.8       | < 12.2      | < 10.2          | < 11.3      | 60       |

  

| Lab Code       | PEVE- 4591     | PEVE- 5177      | PEVE- 5178    | PEVE- 5179     |
|----------------|----------------|-----------------|---------------|----------------|
| Date Collected | 08-18-15       | 09-16-15        | 09-16-15      | 09-16-15       |
| Sample Type    | Collard Greens | Japanese Greens | Turnip Greens | Collard Greens |
| Be-7           | < 109          | 647 ± 126       | 662 ± 173     | < 114          |
| K-40           | 5483 ± 347     | 4795 ± 346      | 6060 ± 407    | 4498 ± 302     |
| Co-58          | < 6.2          | < 13.7          | < 7.3         | < 5.8          |
| Co-60          | < 10.2         | < 7.8           | < 9.0         | < 7.7          |
| I-131          | < 20.5         | < 32.9          | < 32.8        | < 37.9         |
| Cs-134         | < 9.3          | < 9.2           | < 11.9        | < 9.4          |
| Cs-137         | < 8.4          | < 9.3           | < 11.8        | < 8.8          |

  

| Lab Code       | PEVE- 6069      | PEVE- 6070    | PEVE- 6072     | PEVE- 6073  |
|----------------|-----------------|---------------|----------------|-------------|
| Date Collected | 10-20-15        | 10-20-15      | 10-20-15       | 10-20-15    |
| Sample Type    | Japanese Greens | Turnip Greens | Collard Greens | Swiss Chard |
| Be-7           | 1008 ± 137      | 656 ± 110     | 237 ± 97       | 1169 ± 178  |
| K-40           | 5645 ± 280      | 4758 ± 310    | 4763 ± 268     | 7373 ± 423  |
| Co-58          | < 8.8           | < 11.1        | < 8.3          | < 12.7      |
| Co-60          | < 6.7           | < 5.5         | < 6.1          | < 9.4       |
| I-131          | < 37.4          | < 27.2        | < 32.8         | < 40.9      |
| Cs-134         | < 7.5           | < 9.3         | < 6.9          | < 13.5      |
| Cs-137         | < 7.4           | < 7.4         | < 7.2          | < 9.6       |

Table 9. Fish, analyses for gamma emitting isotopes.

Collection: Annually

Units: pCi/kg wet

| Location       |           | P-25       |                 |                 |          |  |
|----------------|-----------|------------|-----------------|-----------------|----------|--|
| Lab Code       | PEF- 3201 | PEF- 3202  | PEF- 3203       | PEF- 3204       | Req. LLD |  |
| Date Collected | 06-05-15  | 06-05-15   | 06-05-15        | 06-05-15        |          |  |
| Sample Type    | Catfish   | Walleye    | Freshwater Drum | Smallmouth Bass |          |  |
| K-40           | 837 ± 306 | 1159 ± 344 | 1202 ± 437      | 1511 ± 339      | -        |  |
| Mn-54          | < 18.9    | < 13.6     | < 15.1          | < 23.6          | 94       |  |
| Fe-59          | < 61.9    | < 51.0     | < 121.6         | < 49.9          | 195      |  |
| Co-58          | < 16.6    | < 19.2     | < 25.5          | < 14.7          | 97       |  |
| Co-60          | < 9.9     | < 14.7     | < 15.7          | < 12.1          | 97       |  |
| Zn-65          | < 29.4    | < 27.5     | < 31.8          | < 40.7          | 195      |  |
| Cs-134         | < 17.9    | < 16.1     | < 27.2          | < 17.3          | 97       |  |
| Cs-137         | < 16.8    | < 19.6     | < 34.8          | < 20.5          | 112      |  |

| Location       |            | P-25      |  |          |
|----------------|------------|-----------|--|----------|
| Lab Code       | PEF- 5191  | PEF- 5192 |  | Req. LLD |
| Date Collected | 09-15-15   | 09-15-15  |  |          |
| Sample Type    | White Bass | Walleye   |  |          |
| K-40           | 585 ± 212  | 751 ± 258 |  | -        |
| Mn-54          | < 16.6     | < 17.0    |  | 94       |
| Fe-59          | < 43.3     | < 54.2    |  | 195      |
| Co-58          | < 19.0     | < 25.2    |  | 97       |
| Co-60          | < 10.6     | < 16.9    |  | 97       |
| Zn-65          | < 24.6     | < 39.8    |  | 195      |
| Cs-134         | < 14.4     | < 19.0    |  | 97       |
| Cs-137         | < 15.6     | < 15.3    |  | 112      |

Table 9. Fish, analyses for gamma emitting isotopes.

Collection: Annually

Units: pCi/kg wet

| Location       |            | P-32        |                 |                 |          |  |
|----------------|------------|-------------|-----------------|-----------------|----------|--|
| Lab Code       | PEF- 3205  | PEF- 3206   | PEF- 3207       | PEF- 3208       | Req. LLD |  |
| Date Collected | 06-05-15   | 06-05-15    | 06-05-15        | 06-05-15        |          |  |
| Sample Type    | Walleye    | White Perch | Freshwater Drum | Smallmouth Bass |          |  |
| K-40           | 1889 ± 347 | 1299 ± 356  | 1138 ± 319      | 1439 ± 504      | -        |  |
| Mn-54          | < 18.7     | < 21.5      | < 12.5          | < 23.8          | 94       |  |
| Fe-59          | < 40.8     | < 88.9      | < 58.9          | < 74.2          | 195      |  |
| Co-58          | < 22.6     | < 17.5      | < 22.2          | < 27.7          | 97       |  |
| Co-60          | < 6.6      | < 16.0      | < 9.3           | < 12.7          | 97       |  |
| Zn-65          | < 19.9     | < 23.4      | < 31.0          | < 52.1          | 195      |  |
| Cs-134         | < 15.3     | < 27.4      | < 22.7          | < 30.1          | 97       |  |
| Cs-137         | < 19.6     | < 24.3      | < 15.6          | < 27.1          | 112      |  |

| Location       |           | P-32        |            |                 |          |  |
|----------------|-----------|-------------|------------|-----------------|----------|--|
| Lab Code       | PEF- 5193 | PEF- 5194   | PEF- 5195  | PEF- 5196       | Req. LLD |  |
| Date Collected | 09-15-15  | 09-15-15    | 09-15-15   | 09-15-15        |          |  |
| Sample Type    | Walleye   | Tiger Musky | White Bass | Channel Catfish |          |  |
| K-40           | < 1272    | 1188 ± 306  | < 769      | 786 ± 291       | -        |  |
| Mn-54          | < 65.1    | < 19.2      | < 41.4     | < 22.7          | 94       |  |
| Fe-59          | < 184.3   | < 45.3      | < 94.6     | < 59.7          | 195      |  |
| Co-58          | < 94.2    | < 26.5      | < 45.1     | < 19.6          | 97       |  |
| Co-60          | < 42.1    | < 21.1      | < 28.6     | < 14.1          | 97       |  |
| Zn-65          | < 96.0    | < 22.1      | < 68.2     | < 27.8          | 195      |  |
| Cs-134         | < 76.8    | < 18.4      | < 52.2     | < 17.6          | 97       |  |
| Cs-137         | < 67.5    | < 19.5      | < 46.7     | < 12.7          | 112      |  |



Table 11. Sediments, analyses for gamma emitting isotopes.

Collection: Semiannually

Units: pCi/kg dry

| Location       |            | P-64       |          |
|----------------|------------|------------|----------|
| Lab Code       | PEBS- 2668 | PEBS- 5188 |          |
| Date Collected | 05-07-15   | 09-16-15   | Req. LLD |
| K-40           | 2268 ± 270 | 9693 ± 510 | -        |
| Co-58          | < 16.0     | < 24.4     | 50       |
| Co-60          | < 6.6      | < 9.6      | 40       |
| Cs-134         | < 10.1     | < 9.2      | 112      |
| Cs-137         | < 6.1      | < 10.2     | 135      |

  

| Location       |            | P-66       |          |
|----------------|------------|------------|----------|
| Lab Code       | PEBS- 2669 | PEBS- 3342 |          |
| Date Collected | 05-07-15   | 06-29-15   | Req. LLD |
| K-40           | 6423 ± 397 | 6854 ± 462 | -        |
| Co-58          | < 17.7     | < 13.0     | 50       |
| Co-60          | < 4.4      | < 9.5      | 40       |
| Cs-134         | < 12.1     | < 9.0      | 112      |
| Cs-137         | < 14.2     | < 9.3      | 135      |

  

| Location       |            | P-66 |          |
|----------------|------------|------|----------|
| Lab Code       | PEBS- 5190 |      |          |
| Date Collected | 09-16-15   |      | Req. LLD |
| K-40           | 7272 ± 425 |      | -        |
| Co-58          | < 13.2     |      | 50       |
| Co-60          | < 12.0     |      | 40       |
| Cs-134         | < 13.5     |      | 112      |
| Cs-137         | < 14.8     |      | 135      |

2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

Appendix D  
Corrections to Previous Annual  
Environmental and Effluent Release  
Reports

## 2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

### **APPENDIX D**

#### **Corrections to Previous Annual Environmental and Effluent Release Reports:**

There are two corrections to the 2014 Annual Environmental and Effluent Release Report.

1. This correction adds information regarding the time period when Meteorological Data could not be transferred to the dose assessment program for routine dose calculations.
2. This correction documents an abnormal release via the underdrain system.

2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

Appendix E  
Abnormal releases

## 2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

### APPENDIX E

#### Abnormal Releases

In November 2011, radioactivity was detected in the Nuclear Closed Cooling (NCC) system. The source of this activity is the primary coolant. There is some leakage from the NCC system to Service Water and from there to the environment. Residual activity remains in the NCC system and it is being tracked as an abnormal release.

Low levels of tritium activity have been detected in the underdrain system. The underdrain system flows to the Emergency Service Water basin and from there to the environment. This activity is being tracked as an abnormal release.

The calculated annual doses for the combined abnormal releases were 1.55E-04 mrem whole body and 2.40E-04 mrem organ.

|   | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Annual   |
|---|-----------|-----------|-----------|-----------|----------|
| A. Fission and Activation Products (Ci) |           |           |           |           |          |
| Mn-54                                   | 3.32E-05  | 7.90E-06  | 6.00E-06  | 2.90E-06  | 5.00E-05 |
| Co-58                                   | 7.49E-06  | <LLD      | <LLD      | 1.94E-05  | 2.69E-05 |
| Co-60                                   | 2.45E-04  | 3.80E-05  | 2.22E-05  | 6.56E-05  | 3.71E-04 |
| Sn-113                                  | 1.86E-08  | <LLD      | <LLD      | <LLD      | 1.86E-08 |
| Cs-134                                  | 8.96E-06  | <LLD      | <LLD      | <LLD      | 8.96E-06 |
| Cs-137                                  | 2.78E-05  | <LLD      | <LLD      | <LLD      | 2.78E-05 |
| B. Tritium (Ci)                         | 1.46E-02  | 1.26E-02  | 1.27E-02  | 1.27E-02  | 5.26E-02 |
| C. Noble Gases (Ci)                     | <LLD      | <LLD      | <LLD      | <LLD      | <LLD     |
| D. Gross Alpha (Ci)                     | <LLD      | <LLD      | 4.27E-07  | <LLD      | 4.27E-07 |

2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

Appendix F  
ODCM Non-Compliances

## 2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

### APPENDIX F

#### ODCM Non-Compliances

##### Effluent Monitoring

The Service Water Flow Monitor was out of service from 11/14/14 until 3/6/15. The delay in returning the monitor to service is due to age of the monitor (could not obtain spare parts) and need to procure a new one.

On 12/13/2015 the Liquid Radwaste to Emergency Service Water monitor was declared inoperable due to a missed quarterly channel functional test. This test should have been performed by 9/13/15. The functional test was done on 12/18/15 and the monitor was returned to service. No liquid radwaste discharges were performed during the time frame the monitor was out of service.

##### Environmental Monitoring

PNPP was unable to obtain all commercially and recreationally important fish species. Per Chemistry Technical Assignment File TAF 14-001, commercially and recreationally important species are defined as yellow perch, walleye, white bass, and small mouth bass. Using gill nets, the fish obtained in June at the PNPP discharge were catfish, walleye, fresh water drum, and small mouth bass. The control samples were white perch, walleye, fresh water drum, and small mouth bass. In September only White Bass and Walleye were obtained at the PNPP discharge and Walleye, Tiger Musky, White Bass and Channel Catfish were obtained at the Control location.

On 2/19/15 environmental air samples at locations #3 and #35 were not obtained due to extreme weather conditions and snow depth. These samples continued to run and were changed out the following week.

On 10/7/15, the environmental air sample at location #4 displayed a lower than expected volume due to controller box failure. Pump was running. The average volume from previous four weeks were used for sample volume. Controller box was replaced.

On 10/15/15 the environmental air sample at location #5 was not obtained due to turbine failure and pump stopping. Turbine was replaced and sampler was returned to service.

On 11/18/15 environmental air samples at locations #3 and #5 were found with low volume due to power loss. When power had returned the pumps failed to restart. The I-131 LLD was achieved.

On 12/2/15 environmental air sample at location #3 were found with low volume due to a power loss. When power had returned the pump failed to restart. Vendor was contacted and PNPP was informed that there was a flaw in some circuit boards which prevented restart when power returned. Circuit boards at locations 3 and 5 were replaced. The I-131 LLD was not achieved.

From January through March 2015, water samples were not obtained at locations #59 and #60 due to the lake being frozen.

2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

Appendix G  
ODCM Changes



# 2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

## **APPENDIX G**

### **ODCM Changes**

There were no changes to the ODCM during this reporting period.

2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

Appendix H  
Changes to Process Control Program

# 2015 ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

## APPENDIX H

### Process Control Program Changes

Revision 13 to the Process Control Program was issued on 5/27/15. The changes were:

1. Section 3.5 was revised to reflect increased storage capacity inside the Radwaste Storage Area. Newly designed stackable, reusable liners and an engineering evaluation (EER 600663802) which allows liners to be stacked 2 high, increased the storage capacity to 42 total liners with all other materials removed from the area, providing the combined weight of the stacked liners does not exceed 20,625 lbs.
2. Updated PCP Radwaste Process Flow Charts to present a professional appearance.
3. Change topical report reference from OM-42-WS to OM-34-WS
4. Change topical report owner from Vectra Dewatering System to reflect new ownership of Nuclear Packaging Inc.
5. Section 3.5 was revised to reflect the new usage of the WARF/RISB building which agrees with RPI-1301.
6. Section 2.0 added the use of upper fuel pool temporary demineralizers during outages which produce another waste stream and another source of bead resin.
7. Minor grammatical corrections.
8. Changed person to approve procedure to Director of Site Operation.
9. Added term "re-usable liner" wherever the word HIC is located.
10. Changed Appendix A – 1.30 title to MODE/OPERATIONAL CONDITION
11. Appendix A, Item 1-34 added that Perry does not perform solidification of waste however, should this process be required in the future, it will be performed in accordance with Vendor Supplied Procedures.
12. Changed terminology from offsite burial to offsite disposal.
13. Removed definition of HIC from section 1.1.
14. Incorporated new DCS computer system lockout feature for isolating the inlet valve in section 3.1

These changes did not reduce the overall conformance of solidified waste to existing criteria for solid radwastes. The changes to the Process Control Program were reviewed by the Plant Operations Review Committee and found acceptable.

**Enclosure B  
L-16-151**

**Corrections to the 2014 PNPP Annual Environmental and Effluent Release Report**

# ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

## METEOROLOGICAL DATA

The Meteorological Monitoring System at PNPP consists of a 60-meter tower equipped with two independent systems for measuring wind speed, wind direction, and temperature at both 10-meter and 60-meter heights. The tower also has instrumentation to measure dew point and barometric pressure. Data is logged from the tower through separate data loggers, and transmitted to a common plant computer. This system compiles the data and calculates a variety of atmospheric parameters, communicates with the Meteorological Information Dose Assessment System (MIDAS), and sends data over communication links to the plant Control Room.

A detailed report of the monthly and annual operation of the PNPP Meteorological Monitoring Program is produced under separate cover. For the period of January 1, 2014 through December 31, 2014, the report substantiates the quality and quantity of meteorological data collected in accordance with applicable regulatory guidance.

From 9/25/14 to 12/9/14 meteorological data could not be transferred to a plant computer for routine effluent dose calculations due to equipment failure. During this time frame default meteorological data was used. Had there been an emergency, however, real-time data was available for dose calculations.

## DOSE ASSESSMENT

The maximum concentration for any radioactive release is controlled by the limits set forth in Title 10 of the Code of Federal Regulations, Part 20 (10CFR20). Sampling, analyzing, processing, and monitoring the effluent stream ensures compliance with these concentration limits. Dose limit compliance is verified through periodic dose assessment calculations. Some dose calculations are conservatively performed for a hypothetical individual who is assumed to reside on the site boundary at the highest potential dose location all year. This person, called the "maximum individual", would incur the maximum potential dose from direct exposure (air plus ground plus water), inhalation, and ingestion of water, milk, vegetation, and fish. Because no one actually meets these criteria, the actual dose received by a real member of the public is significantly less than what is calculated for this hypothetical individual.

Dose calculations for this maximum individual at the site boundary are performed for two cases. First, they are performed using data for a 360 degree radius around the plant site (land and water based meteorological sectors); even though some of these sectors are over Lake Erie, which has no permanent residents. The second calculation is performed considering only those sectors around the plant in which people reside (land-based meteorological sectors).

The calculated hypothetical, maximum individual dose values at the site boundary are provided in Table 7. This table considers all meteorological sectors around PNPP and provides either the whole body or worst-case, organ dose values.

## ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

**Table 7: Maximum Individual Site Boundary Dose, Considering All Sectors**

| Type of Dose         | Organ                    | Estimated Dose, (mrem) | Limit   | % of Limit |
|----------------------|--------------------------|------------------------|---------|------------|
| Liquid Effluent      | Whole body               | 9.00E-04               | 3.0E+00 | 3.0E-02    |
|                      | Liver                    | 1.03E-03               | 1.0E+01 | 1.0E-02    |
| Noble Gas            | Air Dose<br>Gamma – mrad | 2.13E-02               | 1.0E+01 | 2.1E-01    |
|                      | Air Dose<br>Beta – mrad  | 3.10E-02               | 2.0E+01 | 1.6E-01    |
| Noble Gas            | Whole body               | 1.70E-02               | 5.0E+00 | 3.4E-01    |
|                      | Skin                     | 3.52E-02               | 1.5E+01 | 2.3E-01    |
| Particulate & Iodine | Thyroid                  | 5.47E-03               | 1.5E+01 | 3.6E-02    |

The calculated hypothetical, maximum 50-mile radius population dose values at the site boundary are provided in Table 8. This table considers all meteorological sectors around PNPP and provides either the whole body or worst-case, organ dose values.

**Table 8: Population Dose, Considering All Sectors out to 50 miles.**

|                  | Organ      | Estimated Dose (person-rem) |
|------------------|------------|-----------------------------|
| Liquid Effluent  | Whole body | 1.5E-01                     |
|                  | Thyroid    | 1.3E-01                     |
| Gaseous Effluent | Whole body | 1.9E-03                     |
|                  | Thyroid    | 2.5E-03                     |

# ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

## APPENDIX E

### Abnormal Releases

In November 2011, radioactivity was detected in the Nuclear Closed Cooling (NCC) system. The source of this activity is the Primary Coolant. There is some leakage from the NCC system to Service Water and from there to the environment. The activity released from NCC has been included in the total radioactivity released. Feed and bleed evolutions have occurred throughout the year to reduce the radioactive concentration in NCC and thus reduced the activity released to the environment.

A feedwater venturi leak occurred in January of 2014. Tritium activity was detected in underdrain manholes. Underdrain flows to the Emergency Service Water basin and from there to the environment. The activity was tracked as an abnormal release. Only tritium activity was detected. The leakage to the underdrain system from the venturi leakage stopped in May 2014.

The calculated annual doses for the combined abnormal releases were 1.72E-04 mrem whole body and 3.83E-04 mrem organ.

| 2014                                    | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Annual   |
|---|-----------|-----------|-----------|-----------|----------|
| A. Fission and Activation Products (Ci) |           |           |           |           |          |
| Na-24                                   | <LLD      | <LLD      | 1.97E-04  | <LLD      | 1.97E-04 |
| Cr-51                                   | <LLD      | <LLD      | 3.96E-04  | 4.32E-05  | 4.39E-04 |
| Mn-54                                   | 3.34E-07  | <LLD      | 1.50E-04  | 1.03E-04  | 2.53E-04 |
| Mn-56                                   | <LLD      | <LLD      | 6.28E-05  | <LLD      | 6.28E-05 |
| Co-58                                   | <LLD      | <LLD      | 6.96E-05  | 5.54E-05  | 1.25E-04 |
| Fe-59                                   | <LLD      | <LLD      | 6.35E-05  | 1.90E-06  | 6.54E-05 |
| Co-60                                   | 6.68E-04  | 7.44E-05  | 6.56E-04  | 5.40E-04  | 1.94E-03 |
| Zn-65                                   | <LLD      | <LLD      | 2.90E-05  | 9.79E-06  | 3.88E-05 |
| Zn-69m                                  | <LLD      | <LLD      | 2.83E-05  | <LLD      | 2.83E-05 |
| Sr-91                                   | <LLD      | <LLD      | 1.08E-05  | <LLD      | 1.08E-05 |
| Y-91m                                   | <LLD      | <LLD      | 1.59E-05  | <LLD      | 1.59E-05 |
| Sr-92                                   | <LLD      | <LLD      | 1.20E-05  | <LLD      | 1.20E-05 |
| Nb-95                                   | <LLD      | <LLD      | 9.74E-06  | 2.70E-06  | 1.24E-05 |
| Zr-95                                   | <LLD      | <LLD      | 4.26E-06  | 7.41E-07  | 5.00E-06 |
| Tc-99m                                  | <LLD      | <LLD      | 3.91E-06  | <LLD      | 3.91E-06 |
| Ag-110m                                 | <LLD      | <LLD      | <LLD      | 2.46E-07  | 2.46E-07 |
| I-133                                   | <LLD      | <LLD      | 8.39E-07  | <LLD      | 8.39E-07 |
| Cs-134                                  | 1.25E-06  | 2.19E-06  | <LLD      | <LLD      | 3.43E-06 |
| Cs-137                                  | 2.84E-06  | 1.09E-05  | 2.47E-07  | <LLD      | 1.40E-05 |

## ANNUAL ENVIRONMENTAL AND EFFLUENT RELEASE REPORT

| 2014                | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Annual   |
|---------------------|-----------|-----------|-----------|-----------|----------|
| Au-199              | <LLD      | <LLD      | 6.55E-05  | <LLD      | 6.55E-05 |
| B. Tritium (Ci)     | 2.12E-02  | 4.01E-02  | 2.45E-02  | 4.29E-03  | 9.00E-02 |
| C. Noble Gases (Ci) |           |           |           |           |          |
| Ar-41               | <LLD      | <LLD      | 1.76E-06  | <LLD      | 1.76E-06 |
| Xe-133              | <LLD      | <LLD      | 4.21E-07  | <LLD      | 4.21E-07 |
| Xe-135              | <LLD      | <LLD      | 3.35E-06  | <LLD      | 3.35E-06 |
|                     |           |           |           |           |          |
| D. Gross Alpha (Ci) | 1.03E-05  | <LLD      | <LLD      | <LLD      | 1.03E-05 |