



**Entergy Nuclear Northeast**  
Indian Point Energy Center  
450 Broadway, GSB  
P.O. Box 249  
Buchanan, NY 10511-0249  
Tel (914) 254-6700

**Anthony J Vitale**  
Site Vice President

NL-17-047

April 26, 2017

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

**SUBJECT:** 2016 Annual Radioactive Effluent Release Report  
Indian Point Nuclear Generating Unit Nos. 1, 2 and 3  
Docket Nos. 50-003, 50-247 and 50-286  
License Nos. DPR-5, DPR-26 and DPR-64

Dear Sir or Madam:

The enclosure to this letter provides Entergy Nuclear Operations, Inc.'s (Entergy) Annual Radioactive Effluent Release Report for 2016. This report is submitted in accordance with Technical Specification 5.6.3 and Regulatory Guide 1.21.

There are no new commitments being made in this submittal. If you have any questions or require additional information, please contact Mr. Robert W. Walpole, Regulatory Assurance Manager at (914) 254-6710.

Sincerely,

A handwritten signature in black ink, appearing to read "Anthony J Vitale".

AJV/rl

Enclosure: Radioactive Effluent Release Report: 2016

IE48  
NMSS01  
NRR  
NMSS

cc: Mr. Daniel H. Dorman, Regional Administrator, NRC Region I  
Mr. Richard V. Guzman, NRC, Project Manager, Division of Reactor Licensing  
Mr. Kimberly A. Conway, IPEC NRC Unit 1 Project Manager  
NRC Resident Inspector's Office  
Mr. John B. Rhodes, President and CEO, NYSERDA (w/o enclosure)  
Ms. Bridget Frymire, New York State Department of Public Service (w/o enclosure)  
Mr. Timothy Rice, Bureau of Hazardous Waste & Radiation Mgmt. NYSDEC  
Mr. Robert Snyder, NYS Department of Health  
Mr. Chuck Nieder, NYS Department of Environmental Conservation  
Engineering Department, American Nuclear Insurers  
Chief, Compliance Section, New York State DEC  
Division of Water Regional Water Engineer, New York State DEC

ENCLOSURE TO NL-17-047

Radioactive Effluent Release Report: 2016

ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3  
DOCKET NOS. 50-003, 50-247 AND 50-286

## Radioactive Effluent Release Report: 2016

Facility Indian Point Energy Center (Indian Point Units 1, 2, and 3)

Licensee Entergy Nuclear Operations, Inc. (Entergy)

This information is provided in accordance with the requirements of Regulatory Guide 1.21. The numbered sections of this report reference corresponding sections of the subject Guide, pages 10 to 12. This report includes effluent information from Indian Point Units 1, 2, and 3. Units 1 and 2 share effluent processing equipment and Technical Specifications. In this site report, releases from Unit 1 are included with Unit 2, while Unit 3 releases are calculated and shown separately.

### A. Supplemental Information

#### 1. Regulatory Limits

Indian Point Energy Center is subject to limits on radioactive waste releases that are set forth in the Offsite Dose Calculation Manual (ODCM), Parts I and II, as defined in the Technical Specifications. ODCM Part I, also known as the Radiological Effluent Controls (or RECS) contains the specific requirements and controls, while ODCM Part II (calculational methodologies) contains the details necessary to perform offsite dose calculations from the sampling and monitoring outlined in the RECS.

#### 2. Maximum Permissible Concentration

##### a) Airborne Releases

Maximum concentrations and compliance with 10CFR20 release rate limits are controlled by the application of Radiation Monitor setpoints, preliminary grab sampling, and conservative procedural guidance for batch and continuous releases. These measures, in conjunction with plant design, preclude approaching release rate limits, per the ODCM.

##### b) Liquid Effluents

Proximity to release rate and total release limits is controlled through the application of a calculated Allowed Diluted Concentration (ADC) and ALARA guidance with regard to dilution flow and maximum tank concentration. The ADC is used to determine a Radiation Monitor setpoint associated with an estimated amount of non-gamma activity (H-3, Ni-63, Fe-55, Sr-89/90 etc.), as well as the measured gamma activity. ADC is defined in the station ODCM as a means of assuring compliance with the release rate limits of 10CFR20, as defined by the application of ten times the Effluent Concentrations of the new 10CFR20.

Liquid effluents are further controlled by the application of proceduralized ALARA limits such as a MINIMUM dilution flow of 100,000 gpm required for batch discharges, a maximum gamma concentration of 5E-5 uCi/ml (without gas) for routine effluents, and procedural guidance for optimizing decay and treatment of liquid waste.

#### 3. Average Energy

This information is no longer used. It is available on site.

4. Measurements and Approximations of Total Radioactivity

a) Fission and Activation Gases

Analyses of effluent gases are performed in compliance with the requirements of the RECS (ODCM Part I). In the case of isolated tanks (batch releases), the total activity discharged is based on an isotopic analysis of each batch with the volume of gas in the batch corrected to standard temperature and pressure.

Vapor containment purge and pressure relief (vent) discharges, which routinely total less than 150 hours/quarter in duration, have been treated as batch releases. However, both types of releases from the Vapor Containment are performed randomly with regard to time of day and duration (release periods were not dependent solely on time of day or atmospheric condition). Therefore, determination of doses due to Vapor Containment releases includes the use of annual average dispersion data, as defined in NUREG 0133, Section 3.3.

At least one complete isotopic concentration analysis of containment air is performed monthly and compared to a process monitor's reading. Pressure reliefs are quantified by scaling subsequent releases with the monitor's reading, applying the mixture from the grab sample. In this fashion, the base grab sample defines the mixture and the activity released. The monitor scales the release up or down and provides continuous indication of potential leaks.

Isotopic analyses for each vapor containment purge are taken prior to and during the purge. This information is combined with the volume of air in each discharge to calculate the quantity of activity released from these discharges.

The continuous building discharges are based on weekly samples of ventilation air analyzed for isotopic content. This information is combined with total air volume discharged and the process radiation monitor readings to determine the quantity of activity from continuous discharges.

b/c) Iodines and Particulates

Iodine and particulate releases are quantified by collecting a continuous sample of ventilation air on a Triethylenediamine (TEDA) impregnated, activated charcoal cartridge and a glass-fiber filter paper. These samples are changed weekly as required in the RECS. The concentration of isotopes found by analysis of these samples is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged.

If no I-131 is identified in weekly vent samples, "-" is entered in Table 1A. A typical Minimum Detectable Activity (MDA) for weekly I-131 analyses is  $1.0E-13$  uCi/cc, which is 100 times lower than ODCM requirements.

If I-131 is identified in any routine weekly sample, it is added to the table and other iodine isotopic concentrations (I-133, I-135) are then determined on a 24-hour sample at least once per month. The concentration of each isotope is analytically determined by ratioing the activities with weekly media for I-131. This activity is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged. A compositing method of analyzing for gross alpha, Sr-89, and Sr-90 is used per the station ODCMs. An absence of any positive activity is identified as "-".

d) Carbon-14

C-14 release quantification details are discussed in Section E.

e) Liquid Effluents

A sample of each batch discharge is taken and an isotopic analysis is performed in compliance with requirements specified in the ODCM. Proportional composite samples of continuous discharges are taken and analyzed per the ODCM, as well. Isotopic concentration data are combined with the information on volume discharged to determine the amount of each isotope discharged.

A compositing method of analyzing for non-gamma emitters is used per the station ODCM (Gross Alpha, Sr-89, Sr-90, Fe-55 and Ni-63). When there has been no positive activity, "-" is entered.

Liquid Effluent volumes of waste released on Table 2A are differentiated between processed fluids (routine liquid waste and Unit 1's North Curtain Drain), and water discharged through monitored pathways identified in the ODCM, but NOT processed (SG Blowdown and Unit 1's Sphere Foundation Drain Sump). The unprocessed water may still contain trace levels of contamination (generally only tritium) and as such, is identified as liquid waste. Curie and dose data from unprocessed fluid is included in the following tables, along with all other liquid effluent, continuous or batch, processed or not. Processed and unprocessed water is differentiated only to prevent confusion with regard to measures undertaken to convert liquid to solid waste (resin cleanup). Therefore, volumes of processed and unprocessed liquid waste are reported separately on Table 2A.

5. Batch Releases

Airborne:

<b>Unit 1 and 2 Airborne Releases</b>	<b>Qtr 1</b>	<b>Qtr 2</b>	<b>Qtr 3</b>	<b>Qtr 4</b>	<b>2016</b>
Number of Batch Releases	63	47	65	52	227
Total Time Period (min)	4160	1830	3050	2710	11700
Maximum Time Period (min)	418	136	73	90	418
Average Time Period (min)	66.0	38.9	46.9	52.0	51.7
Minimum Time Period (min)	1	12	7	22	1

<b>Unit 3 Airborne Releases</b>	<b>Qtr 1</b>	<b>Qtr 2</b>	<b>Qtr 3</b>	<b>Qtr 4</b>	<b>2016</b>
Number of Batch Releases	34	39	35	34	142
Total Time Period (min)	4890	5280	5900	5420	21500
Maximum Time Period (min)	210	183	223	244	244
Average Time Period (min)	144	135	169	159	151
Minimum Time Period (min)	22	7	1	3	1

Liquid:

<b>Unit 1 and 2 Liquid Releases</b>	<b>Qtr 1</b>	<b>Qtr 2</b>	<b>Qtr 3</b>	<b>Qtr 4</b>	<b>2016</b>
Number of Batch Releases	38	36	15	15	104
Total Time Period (min)	6330	5380	1350	1400	14460
Maximum Time Period (min)	1130	600	107	110	1130
Average Time Period (min)	167	149	90	92	139
Minimum Time Period (min)	70	51	77	69	51

<b>Unit 3 Liquid Releases</b>	<b>Qtr 1</b>	<b>Qtr 2</b>	<b>Qtr 3</b>	<b>Qtr 4</b>	<b>2016</b>
Number of Batch Releases	9	17	12	17	55
Total Time Period (min)	990	1860	1290	1910	6050
Maximum Time Period (min)	130	117	117	122	130
Average Time Period (min)	110	109	107	113	110
Minimum Time Period (min)	103	101	97	102	97

**Average Stream Flow:**

Regulatory Guide 1.21 includes a section to report average stream flows. This data, for some plants, is used to determine dilution volume. However, at IPEC, the Hudson River stream flow is not applied to dilution calculations, in favor of the more conservative method of using only the dilution in the discharge canal, running north to south, parallel to the river, and servicing the plant.

This conservative dilution volume is determined quarterly, applied for liquid offsite dose calculations (and all other determinations of diluted effluent), and reported on Tables 2A, in Section B of this report.

Hudson River flow information remains available, however, from the Department of the Interior, United States Geological Survey (USGS), or from web sites such as:

[http://ny.water.usgs.gov/projects/dialer\\_plots/Hudson\\_R\\_at\\_Poughkeepsie\\_Freshwater\\_Discharge.htm](http://ny.water.usgs.gov/projects/dialer_plots/Hudson_R_at_Poughkeepsie_Freshwater_Discharge.htm)

## 6. Abnormal Releases

### a) Liquid

#### General Groundwater

The Groundwater Monitoring Program is a voluntary program set up to assure timely effective management of situations involving inadvertent releases of licensed material to groundwater. A major part of the IPEC's program is a groundwater quantification model that involves a verification/calibration such that the annual release to the environment remains a function of annual precipitation and source term.

Two abnormal releases occurred during this reporting period. These releases were detected by the site groundwater monitoring program which identified elevated concentrations of tritium, and trace levels of Sb-125 and Co-58. The direct cause was determined to be the overflow of floor and equipment drains while conducting draining activities.

Conservative dose assessments of these events determined the doses to be negligible. The Groundwater Monitoring Program includes an annual groundwater and storm water offsite dose evaluation which further assess these and other legacy events. The subsurface water flow parameters of this assessment include direction and rate and to be used as the basis for estimating the dispersion of abnormal releases of liquid effluents into ground water. Storm water monitoring is also included in this assessment.

The offsite dose associated with the groundwater pathway remains extremely small. The 2016 effluent dose was similar to that of 2015. The total routine liquid effluent dose inclusive of the groundwater pathway contributes <0.1% of the annual limit. Groundwater and storm water effluent flow rates and source term data are further described in Section H of this report. A breakdown of the total dose from the groundwater and storm water pathways is provided in Section E of this report (Radiological Impact on Man).

### b) Airborne - None

## 7. ODCM Reporting Requirements

ODCM Part I requires reporting of various conditions during the year. These include effluent monitoring equipment out of service for periods exceeding 30 consecutive days, notification of any changes in the land use census, changes in the Radiological Environmental Monitoring Program (REMP), any time total curie content limitations in outdoor tanks is exceeded, or any other changes in the ODCM or Process Control Program (PCP).



### 7. ODCM Reporting Requirements (Cont)

During this reporting period, the following ODCM required effluent monitoring equipment was out of service (OOS) for periods greater than 30 consecutive days:

Instrument*	Effected Interval	Details
Unit 1 Sphere Foundation Drain Sump Flow Measurement Device, FR-7874	3/19/16 to 4/19/16 31 days	Delays experienced in obtaining a calibrated ultrasonic flow measurement device.
Unit 2 Fan Cooler Unit Service Water Return, R-46 & R-53 and Steam Generator Blowdown, R-49	3/7/16 to 5/28/16 72 days	All three monitors placed in standby for repairs to leaks in the service water piping. The repair time was influenced by the extensive nature of these repairs.
Unit 2 Waste Gas, R- 50	10/9/16 to 11/15/16 36 days	Trouble shooting determined that the detector needed replacement. Detector returned to service after calibration and required quarterly testing.
Unit 2 Condenser Air Ejector, R-45	10/27/16 to 1/6/17 71 days	Problems encountered with scalar board and controller. Sent detector to vendor for repair.
Unit 3 Steam Generator Blowdown, R-19	12/14/15 to 1/15/16 32 days	Failed RM-23P with lead time issue and then rolled into the 2 Year Calibration and replacement of failed components. Experienced delays due to resources.
Unit 3 RAMS Building Gas, R-59	12/1/16 to 1/12/17 42 days	2 Year Calibration and replacement of failed components. Delays due to resources.

As required, compensatory sampling was performed for the above OOS monitors.

\* List does not include Unit 3 CPF Effluent Line (3LG-FIT-41, 3LG-LIT-12, 3LG-LIT-22 & 3LG-FR-41) since these flow rate measurement devices are only required for operability when liquid releases are being performed via the Condensate Polisher Effluent pathway. Although this situation has not yet been necessary, in order to prepare for potential release via this pathway efforts are underway to have this equipment available (including any necessary surveillance).

7. ODCM Reporting Requirements (Cont)

Other Reporting Criteria:

**Tank Curie Limits**

During this reporting period, no tank curie limits in outdoor tanks were exceeded.

**Land Use Census**

During this reporting period, there were no changes to the Land Use Census.

**PCP changes**

During this reporting period, there were no changes to the Process Control Program.

**ODCM changes**

During this reporting period, there were no changes to the ODCM.

Indian Point Energy Center

(Units 1, 2, and 3)

RADIOACTIVE EFFLUENT RELEASE REPORT

B. GASEOUS EFFLUENTS

2016

TABLE 1A

INDIAN POINT 1 and 2 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

A. Fission & Activation Gases	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Release	Ci	1.66E-01	9.70E-03	4.53E-02	2.80E-02	2.49E-01	± 25
2. Average release rate	uCi/sec	2.11E-02	1.23E-03	5.70E-03	3.52E-03	7.87E-03	

B. Iodines

1. Total Iodine-131	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	

C. Particulates

1. Total Release, with half-life > 8 days	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	
3. Gross Alpha	Ci	-	-	-	-	0.00E+00	± 25

D. Tritium

1. Total release	Ci	3.44E+00	6.65E+00	1.72E+00	1.81E+00	1.36E+01	± 25
2. Average release rate	uCi/sec	4.38E-01	8.46E-01	2.16E-01	2.28E-01	4.32E-01	

E. Carbon-14

1. Total release	Ci	1.92E+00	1.92E+00	1.92E+00	1.92E+00	7.69E+00	
2. Average release rate	uCi/sec	2.45E-01	2.45E-01	2.42E-01	2.42E-01	2.43E-01	
		Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	

- Indicates < MDA

% of limit is located in Section E, Radiological Impact on Man, Dose Tables

TABLE 1C  
INDIAN POINT 1 and 2 **CONTINUOUS** GASEOUS EFFLUENTS  
RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)

Nuclides Released

1) Fission Gases

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Xe-133	Ci	-	-	-	-	0.00E+00
<b>Total for Period</b>	<b>Ci</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>

2) Iodines

I-131	Ci	-	-	-	-	0.00E+00
I-133	Ci	-	-	-	-	0.00E+00
I-135	Ci	-	-	-	-	0.00E+00
<b>Total for Period</b>	<b>Ci</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>

3) Particulates

Co-58	Ci	-	-	-	-	0.00E+00
	<b>Ci</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>

- Indicates < MDA

TABLE 1C  
 INDIAN POINT 1 and 2 - BATCH GASEOUS EFFLUENTS  
 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)

Nuclides Released

1) Fission Gases

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Ar-41	Ci	3.24E-02	2.79E-03	3.83E-02	2.47E-02	9.82E-02
Kr-85	Ci	-	-	-	-	0.00E+00
Kr-85M	Ci	9.76E-05	-	6.40E-05	1.48E-06	1.63E-04
Kr-87	Ci	2.72E-06	-	7.09E-05	-	7.36E-05
Kr-88	Ci	3.18E-05	-	1.48E-04	-	1.80E-04
Xe-131M	Ci	1.24E-04	-	-	-	1.24E-04
Xe-133	Ci	1.21E-01	6.04E-03	6.13E-03	3.12E-03	1.36E-01
Xe-133M	Ci	2.42E-03	-	-	4.99E-05	2.47E-03
Xe-135	Ci	9.59E-03	8.68E-04	4.80E-04	1.11E-04	1.10E-02
Xe-135M	Ci	9.34E-06	-	1.03E-04	-	1.12E-04
Xe-138	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	1.66E-01	9.70E-03	4.53E-02	2.80E-02	2.49E-01

- indicates <MDA

2) Iodines

Not Applicable for Batch Releases

3) Particulates

Not Applicable for Batch Releases

TABLE 1A  
INDIAN POINT 3 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)  
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

A. Fission & Activation Gases		Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Release	Ci	4.56E-02	5.20E-02	6.90E-02	6.54E-02	2.32E-01	± 25	
2. Average release rate	uCi/sec	5.80E-03	6.61E-03	8.68E-03	8.23E-03	7.36E-03		

B. Iodines		Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Iodine-131	Ci	-	-	-	-	0.00E+00	± 25	
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00		

C. Particulates		Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Release, with half-life > 8 days	Ci	-	-	-	-	0.00E+00	± 25	
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00		
3. Gross Alpha	Ci	-	-	-	-	0.00E+00	± 25	

D. Tritium		Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total release	Ci	3.61E+00	4.60E+00	4.70E+00	3.00E+00	1.59E+01	± 25	
2. Average release rate	uCi/sec	4.59E-01	5.85E-01	5.91E-01	3.77E-01	5.05E-01		

E. Carbon-14		Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total release	Ci	2.75E+00	2.75E+00	2.75E+00	2.75E+00	1.10E+01		
2. Average release rate	uCi/sec	3.50E-01	3.50E-01	3.46E-01	3.46E-01	3.48E-01		

- Indicates < MDA

% of limit is located in Section E, Radiological Impact on Man, Dose Tables

TABLE 1C  
 INDIAN POINT 3 - CONTINUOUS GASEOUS EFFLUENTS  
 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)

Nuclides Released

**1) Fission Gases**

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Ar-41	Ci	-	-	-	-	0.00E+00
Xe-133	Ci	-	-	-	-	0.00E+00
Xe-135	Ci	-	-	-	-	0.00E+00
<b>Total for Period</b>	<b>Ci</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>

**2) Iodines**

I-131	Ci	-	-	-	-	0.00E+00
I-133	Ci	-	-	-	-	0.00E+00
I-135	Ci	-	-	-	-	0.00E+00
<b>Total for Period</b>	<b>Ci</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>

**3) Particulates**

<b>Total for Period</b>	<b>Ci</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>
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- indicates < MDA



TABLE 1C  
INDIAN POINT 3 - BATCH GASEOUS EFFLUENTS  
RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016).

Nuclides Released:

1) Fission Gases

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Ar-41	Ci	3.46E-02	3.76E-02	4.25E-02	4.02E-02	1.55E-01
Kr-85	Ci	-	-	-	-	0.00E+00
Kr-85m	Ci	-	-	-	-	0.00E+00
Kr-87	Ci	-	-	-	-	0.00E+00
Kr-88	Ci	-	-	-	-	0.00E+00
Xe-131m	Ci	-	-	8.40E-03	-	8.40E-03
Xe-133	Ci	1.10E-02	1.43E-02	1.80E-02	2.48E-02	6.81E-02
Xe-133m	Ci	-	-	-	-	0.00E+00
Xe-135	Ci	-	-	-	4.10E-04	4.10E-04
Xe-135m	Ci	-	-	-	-	0.00E+00
<b>Total for Period</b>	<b>Ci</b>	<b>4.56E-02</b>	<b>5.19E-02</b>	<b>6.89E-02</b>	<b>6.54E-02</b>	<b>2.32E-01</b>

- Indicates < MDA

2) Iodines

Not Applicable for Batch Releases

3) Particulates

Not Applicable for Batch Releases

Indian Point Energy Center

(Units 1, 2, and 3)

RADIOACTIVE EFFLUENT REPORT

C. LIQUID EFFLUENTS

2016

TABLE 2A

## INDIAN POINT 1 and 2 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)

## LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

A. Fission & Activation Products	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Release (not including Tritium, Gr Alpha, & Gases)	Ci	5.28E-02	2.01E-02	2.11E-02	1.68E-02	1.11E-01	± 25
2. Average Diluted Conc	uCi/ml	9.15E-11	4.34E-11	2.50E-11	2.08E-11	4.11E-11	

## B. Tritium

1. Total Release	Ci	4.59E+02	1.13E+02	1.91E+01	4.13E+01	6.32E+02	± 25
2. Average Diluted Conc	uCi/ml	7.95E-07	2.44E-07	2.26E-08	5.11E-08	2.35E-07	

## C. Dissolved &amp; Entrained Gases

1. Total Release	Ci	1.44E-04	-	-	-	1.44E-04	± 25
2. Average Diluted Conc	uCi/ml	2.50E-13	-	-	-	5.35E-14	

## D. Gross Alpha

1. Total Release	Ci	-	-	-	-	0.00E+00	± 25
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## E. Volume of Waste Released

1. Processed Waste (LW & NCD)	liters	5.15E+06	2.60E+06	1.46E+06	1.84E+06	1.11E+07	± 10
2. Unprocessed (SGBD, SFDS, U1FD)	liters	3.35E+07	2.15E+07	4.34E+07	4.22E+07	1.41E+08	± 10

F. Volume of Dilution Water	liters	5.77E+11	4.63E+11	8.45E+11	8.09E+11	2.69E+12	± 10
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- Indicates < MDA

% of limit is located in Section E, Radiological Impact on Man, Dose Tables

TABLE 2B  
INDIAN POINT 1 and 2 LIQUID RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)  
CONTINUOUS RADIOACTIVE EFFLUENT

Nuclides Released	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Cs-137	Ci	1.69E-02	9.49E-04	2.10E-03	1.04E-03	2.10E-02
Ni-63	Ci	-	-	-	-	0.00E+00
Fe-55	Ci	3.08E-03	-	-	-	3.08E-03
Sr-89	Ci	-	-	-	-	0.00E+00
Sr-90	Ci	6.08E-05	2.10E-05	1.82E-05	6.88E-05	1.69E-04
<b>Total for Period</b>	Ci	<b>2.00E-02</b>	<b>9.70E-04</b>	<b>2.12E-03</b>	<b>1.11E-03</b>	<b>2.42E-02</b>

H-3 (only)	Ci	2.36E-01	7.09E-02	3.16E-02	7.38E-02	4.12E-01
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- Indicates < MDA

TABLE 2B

## INDIAN POINT 1 and 2 LIQUID RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)

## BATCH RADIOACTIVE EFFLUENT

Nuclides Released	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Ag-110M	Ci	2.80E-04	3.89E-05	-	5.06E-04	8.25E-04
Co-57	Ci	2.46E-05	-	-	-	2.46E-05
Co-58	Ci	3.30E-03	2.98E-03	4.82E-04	1.18E-03	7.94E-03
Co-60	Ci	3.49E-03	4.33E-04	4.37E-05	4.60E-04	4.43E-03
Cs-137		4.91E-04	1.86E-03	9.38E-06	2.16E-05	2.38E-03
Fe-55	Ci	4.08E-03	1.80E-03	-	1.79E-03	7.67E-03
Ni-63	Ci	1.67E-02	1.52E-03	3.05E-04	2.96E-03	2.15E-02
Sb-124	Ci	-	6.90E-04	-	-	6.90E-04
Sb-125	Ci	4.44E-03	8.80E-03	4.66E-03	8.74E-03	2.66E-02
Te-123M	Ci	-	2.68E-06	1.70E-05	-	1.97E-05
Te-125M	Ci	-	1.03E-03	1.34E-02	-	1.44E-02
<b>Total for Period</b>	<b>Ci</b>	<b>3.28E-02</b>	<b>1.92E-02</b>	<b>1.89E-02</b>	<b>1.57E-02</b>	<b>8.65E-02</b>

## Dissolved &amp; Entrained Gas

Kr-85	Ci	-	-	-	-	0.00E+00
Xe-133	Ci	1.44E-04	-	-	-	1.44E-04
<b>Total for Period</b>	<b>Ci</b>	<b>1.44E-04</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>1.44E-04</b>

- Indicates &lt; MDA

TABLE 2A  
INDIAN POINT 3 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

A. Fission & Activation Products	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Release (not including Tritium, Gr Alpha, & Gases)	Ci	5.16E-03	1.11E-02	4.36E-03	6.01E-03	2.66E-02	± 25
2. Average Diluted Conc	uCi/ml	8.94E-12	2.40E-11	5.16E-12	7.43E-12	9.88E-12	

B. Tritium

1. Total Release	Ci	1.99E+01	2.40E+02	2.77E+01	1.63E+02	4.51E+02	± 25
2. Average Diluted Conc	uCi/ml	3.45E-08	5.18E-07	3.28E-08	2.01E-07	1.67E-07	

C. Dissolved & Entrained Gases

1. Total Release	Ci	-	7.24E-05	-	1.12E-05	8.36E-05	± 25
2. Average Diluted Conc	uCi/ml	-	1.56E-13	-	1.38E-14	3.10E-14	

D. Gross Alpha

1. Total Release	Ci	-	-	-	-	0.00E+00	± 25
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E. Volume of Waste Released

1. Processed Fluids (Mon Tanks)	liters	2.32E+05	4.40E+05	3.09E+05	4.47E+05	1.43E+06	± 10
2. Unprocessed Fluids (SGs)	liters	1.62E+06	1.62E+06	1.64E+06	1.80E+06	6.68E+06	± 10

F. Volume of Dilution Water	liters	5.77E+11	4.63E+11	8.45E+11	8.09E+11	2.69E+12	± 10
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- indicates < MDA

% of limit is located in Section E, Radiological Impact on Man, Dose Tables

TABLE 2B  
 INDIAN POINT 3 LIQUID RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2016)  
 BATCH and CONTINUOUS RADIOACTIVE LIQUID EFFLUENT

*Batch Fission/Activation Products*

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Ag-110M	Ci	2.06E-04	7.92E-04	1.25E-04	2.21E-04	1.34E-03
Co-58	Ci	1.81E-04	8.24E-05	-	2.90E-06	2.66E-04
Co-60	Ci	1.35E-03	3.96E-03	1.10E-03	1.07E-03	7.48E-03
Cs-137	Ci	3.88E-04	5.43E-04	3.60E-05	-	9.67E-04
Fe-55	Ci	7.70E-04	1.26E-03	1.24E-03	2.20E-03	5.47E-03
Mn-54	Ci	3.51E-05	7.07E-05	4.29E-06	-	1.10E-04
Ni-63	Ci	1.43E-03	2.01E-03	1.11E-03	1.91E-03	6.46E-03
Sb-125	Ci	8.00E-04	1.85E-03	7.46E-04	6.04E-04	4.00E-03
Te-125M	Ci	-	5.69E-04	-	-	5.69E-04
<b>Total for Period</b>	<b>Ci</b>	<b>5.16E-03</b>	<b>1.11E-02</b>	<b>4.36E-03</b>	<b>6.01E-03</b>	<b>2.67E-02</b>

*Dissolved and Entrained Gas (Batch)*

Xe-133	Ci	-	7.24E-05	-	1.12E-05	8.36E-05
Xe-135	Ci	-	-	-	-	0.00E+00
<b>Total for Period</b>	<b>Ci</b>	<b>0.00E+00</b>	<b>7.24E-05</b>	<b>0.00E+00</b>	<b>1.12E-05</b>	<b>8.36E-05</b>

*Continuous Releases (SG Blowdown)*

H-3 (only)	Ci	8.32E-04	1.18E-03	2.12E-03	2.23E-03	6.36E-03
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- indicates < mda

Indian Point Energy Center

(Units 1, 2, and 3)

RADIOACTIVE EFFLUENT REPORT

D. SOLID WASTE

2016



**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**  
Percent Cutoff: 0 (all identified isotopes are included)

Waste Stream: Resins, Filters, and Evap Bottoms				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	6.17E+02	1.75E+01	5.14E+00	+/- 25%
B	3.61E+02	1.02E+01	9.48E+01	+/- 25%
C	1.19E+02	3.38E+00	2.69E+01	+/- 25%
All	1.10E+03	3.11E+01	1.27E+02	+/- 25%

Waste Stream : Dry Active Waste				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	4.39E+04	1.24E+03	3.09E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	4.39E+04	1.24E+03	3.09E+00	+/-25%

Waste Stream : Irradiated Components				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Waste Stream: Other Waste				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	1.96E+02	5.55E+00	3.18E-03	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.96E+02	5.55E+00	3.18E-03	+/-25%

Waste Stream: Sum of All 4 Categories				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	4.47E+04	1.27E+03	8.23E+00	+/-25%
B	3.61E+02	1.02E+01	9.48E+01	+/-25%
C	1.19E+02	3.38E+00	2.69E+01	+/-25%
All	4.52E+04	1.28E+03	1.30E+02	+/-25%

Combined Waste Type Shipment, Major Volume Waste Type Shown

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of  
Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Number of Shipments	Mode of Transportations	Destination
1	Hittman Transport	ALARON Services (Veolia)
23	Hittman Transport	Energy Solutions – Bear Creek
1	Hittman Transport	Erwin Resin Solutions LLC
1	Hittman Transport	Energy Solutions – GRF
4	Horwith Trucks	Energy Solutions – GRF

**Resins, Filters and Evaporator Bottoms  
Waste Class A**

Nuclide Name	Percent Abundance	Curies
H-3	0.11%	5.52E-03
C-14	0.00%	1.62E-04
Cr-51	0.01%	4.21E-04
Mn-54	0.44%	2.27E-02
Fe-55	5.66%	2.91E-01
Co-57	0.68%	3.49E-02
Co-58	29.97%	1.54E+00
Co-60	13.41%	6.89E-01
Ni-59	0.62%	3.16E-02
Ni-63	44.96%	2.31E+00
Zn-65	0.11%	5.65E-03
Sr-90	0.02%	1.04E-03
Zr-95	0.00%	1.64E-04
Nb-95	0.06%	2.87E-03
Tc-99	0.01%	3.73E-04
Ag-110m	0.25%	1.30E-02
Sb-124	0.01%	4.51E-04
Sb-125	1.48%	7.58E-02
I-129	0.00%	2.08E-05
Cs-134	0.01%	3.53E-04
Cs-137	2.00%	1.03E-01
Ce-144	0.01%	3.47E-04
Pu-238	0.00%	2.93E-05
Pu-241	0.18%	9.41E-03
Am-241	0.00%	1.06E-05

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Resins, Filters and Evaporator Bottoms  
Waste Class B**

Nuclide Name	Percent Abundance	Curies
H-3	0.00%	2.57E-03
C-14	0.00%	5.41E-04
Cr-51	0.07%	6.35E-02
Mn-54	2.66%	2.52E+00
Fe-55	11.18%	1.06E+01
Co-57	0.41%	3.89E-01
Co-58	7.74%	7.34E+00
Co-60	27.75%	2.63E+01
Ni-59	0.52%	4.95E-01
Ni-63	41.14%	3.90E+01
Zn-65	1.13%	1.07E+00
Sr-89	0.01%	8.82E-03
Sr-90	0.03%	3.28E-02
Tc-99	0.00%	3.65E-03
Ag-110m	0.10%	9.81E-02
Sn-113	0.06%	5.24E-02
Sb-124	0.00%	3.26E-03
Sb-125	3.32%	3.15E+00
I-129	0.00%	1.54E-04
Cs-137	3.78%	3.58E+00
Ce-144	0.06%	5.47E-02
Pu-238	0.00%	4.98E-04
Pu-239	0.00%	9.56E-05
Pu-241	0.03%	2.47E-02
Am-241	0.00%	8.51E-05
Cm-242	0.00%	2.41E-05
Cm-243	0.00%	1.85E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Resins, Filters and Evaporator Bottoms  
Waste Class C**

Nuclide Name	Percent Abundance	Curies
H-3	0.07%	1.95E-02
C-14	0.01%	1.46E-03
Mn-54	1.15%	3.10E-01
Fe-55	17.69%	4.75E+00
Co-57	0.21%	5.60E-02
Co-58	3.03%	8.14E-01
Co-60	48.04%	1.29E+01
Ni-59	0.20%	5.37E-02
Ni-63	18.10%	4.86E+00
Zn-65	3.07%	8.25E-01
Sr-89	0.00%	1.85E-04
Sr-90	0.03%	6.78E-03
Zr-95	1.36%	3.66E-01
Nb-95	2.49%	6.69E-01
Tc-99	1.11%	2.99E-01
Ag-110m	1.09%	2.93E-01
Sn-113	0.08%	2.20E-02
Sb-125	1.86%	5.00E-01
I-129	0.00%	2.96E-04
Cs-137	0.31%	8.37E-02
Ce-144	0.01%	2.40E-03
Pu-238	0.00%	1.16E-03
Pu-239	0.00%	2.36E-04
Pu-241	0.07%	1.86E-02
Am-241	0.00%	1.76E-04
Cm-242	0.00%	8.07E-05
Cm-243	0.00%	3.64E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of  
Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Resins, Filters and Evaporator Bottoms  
Total Combined**

Nuclide Name	Percent Abundance	Curies
H-3	0.02%	2.76E-02
C-14	0.00%	2.16E-03
Cr-51	0.05%	6.39E-02
Mn-54	2.25%	2.85E+00
Fe-55	12.37%	1.57E+01
Co-57	0.38%	4.80E-01
Co-58	7.64%	9.69E+00
Co-60	31.45%	3.99E+01
Ni-59	0.46%	5.80E-01
Ni-63	36.42%	4.62E+01
Zn-65	1.50%	1.90E+00
Sr-89	0.01%	9.01E-03
Sr-90	0.03%	4.06E-02
Zr-95	0.29%	3.66E-01
Nb-95	0.53%	6.72E-01
Tc-99	0.24%	3.03E-01
Ag-110m	0.32%	4.04E-01
Sn-113	0.06%	7.44E-02
Sb-124	0.00%	3.71E-03
Sb-125	2.93%	3.72E+00
I-129	0.00%	4.71E-04
Cs-134	0.00%	3.53E-04
Cs-137	2.97%	3.77E+00
Ce-144	0.05%	5.74E-02
Pu-238	0.00%	1.68E-03
Pu-239	0.00%	3.31E-04
Pu-241	0.04%	5.27E-02
Am-241	0.00%	2.72E-04
Cm-242	0.00%	1.05E-04
Cm-243	0.00%	5.50E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Dry Active Waste  
Waste Class A**

Nuclide Name	Percent Abundance	Curies
H-3	0.60%	1.86E-02
C-14	0.10%	3.13E-03
Mn-54	0.49%	1.51E-02
Fe-55	64.14%	1.98E+00
Co-57	0.03%	7.78E-04
Co-58	0.08%	2.55E-03
Co-60	20.67%	6.38E-01
Ni-59	0.11%	3.41E-03
Ni-63	11.50%	3.55E-01
Tc-99	0.49%	1.50E-02
Sb-125	0.36%	1.12E-02
I-129	0.00%	1.04E-04
Cs-137	1.32%	4.07E-02
Ce-144	0.02%	5.05E-04
Pu-238	0.00%	7.47E-06
Pu-241	0.09%	2.81E-03
Am-241	0.00%	4.56E-06
Cm-243	0.00%	4.45E-06

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Dry Active Waste  
Total Combined

Nuclide Name	Percent Abundance	Curies
H-3	0.60%	1.86E-02
C-14	0.10%	3.13E-03
Mn-54	0.49%	1.51E-02
Fe-55	64.14%	1.98E+00
Co-57	0.03%	7.78E-04
Co-58	0.08%	2.55E-03
Co-60	20.67%	6.38E-01
Ni-59	0.11%	3.41E-03
Ni-63	11.50%	3.55E-01
Tc-99	0.49%	1.50E-02
Sb-125	0.36%	1.12E-02
I-129	0.00%	1.04E-04
Cs-137	1.32%	4.07E-02
Ce-144	0.02%	5.05E-04
Pu-238	0.00%	7.47E-06
Pu-241	0.09%	2.81E-03
Am-241	0.00%	4.56E-06
Cm-243	0.00%	4.45E-06

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Other Waste  
Waste Class A**

Nuclide Name	Percent Abundance	Curies
H-3	0.34%	1.07E-05
C-14	0.05%	1.58E-06
Mn-54	0.49%	1.56E-05
Fe-55	64.68%	2.06E-03
Co-57	0.03%	7.99E-07
Co-58	0.08%	2.51E-06
Co-60	20.82%	6.63E-04
Ni-59	0.11%	3.55E-06
Ni-63	11.59%	3.69E-04
Tc-99	0.02%	5.69E-07
Sb-125	0.36%	1.16E-05
I-129	0.00%	6.63E-08
Cs-137	1.33%	4.23E-05
Ce-144	0.02%	5.18E-07
Pu-238	0.00%	7.78E-09
Pu-241	0.09%	2.92E-06
Am-241	0.00%	4.75E-09
Cm-243	0.00%	4.63E-09

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.



**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Other Waste  
Total Combined**

Nuclide Name	Percent Abundance	Curies
H-3	0.34%	1.07E-05
C-14	0.05%	1.58E-06
Mn-54	0.49%	1.56E-05
Fe-55	64.68%	2.06E-03
Co-57	0.03%	7.99E-07
Co-58	0.08%	2.51E-06
Co-60	20.82%	6.63E-04
Ni-59	0.11%	3.55E-06
Ni-63	11.59%	3.69E-04
Tc-99	0.02%	5.69E-07
Sb-125	0.36%	1.16E-05
I-129	0.00%	6.63E-08
Cs-137	1.33%	4.23E-05
Ce-144	0.02%	5.18E-07
Pu-238	0.00%	7.78E-09
Pu-241	0.09%	2.92E-06
Am-241	0.00%	4.75E-09
Cm-243	0.00%	4.63E-09

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Sum of All 4 Categories  
Waste Class A

Nuclide Name	Percent Abundance	Curies
H-3	0.29%	2.42E-02
C-14	0.04%	3.29E-03
Cr-51	0.01%	4.21E-04
Mn-54	0.46%	3.79E-02
Fe-55	27.70%	2.28E+00
Co-57	0.43%	3.57E-02
Co-58	18.71%	1.54E+00
Co-60	16.16%	1.33E+00
Ni-59	0.43%	3.51E-02
Ni-63	32.32%	2.66E+00
Zn-65	0.07%	5.65E-03
Sr-90	0.01%	1.04E-03
Zr-95	0.00%	1.64E-04
Nb-95	0.03%	2.87E-03
Tc-99	0.19%	1.54E-02
Ag-110m	0.16%	1.30E-02
Sb-124	0.01%	4.51E-04
Sb-125	1.06%	8.71E-02
I-129	0.00%	1.25E-04
Cs-134	0.00%	3.53E-04
Cs-137	1.75%	1.44E-01
Ce-144	0.01%	8.52E-04
Pu-238	0.00%	3.68E-05
Pu-241	0.15%	1.22E-02
Am-241	0.00%	1.52E-05
Cm-243	0.00%	4.45E-06

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Sum of All 4 Categories  
Waste Class B**

Nuclide Name	Percent Abundance	Curies
H-3	0.00%	2.57E-03
C-14	0.00%	5.41E-04
Cr-51	0.07%	6.35E-02
Mn-54	2.66%	2.52E+00
Fe-55	11.18%	1.06E+01
Co-57	0.41%	3.89E-01
Co-58	7.74%	7.34E+00
Co-60	27.75%	2.63E+01
Ni-59	0.52%	4.95E-01
Ni-63	41.14%	3.90E+01
Zn-65	1.13%	1.07E+00
Sr-89	0.01%	8.82E-03
Sr-90	0.03%	3.28E-02
Tc-99	0.00%	3.65E-03
Ag-110m	0.10%	9.81E-02
Sn-113	0.06%	5.24E-02
Sb-124	0.00%	3.26E-03
Sb-125	3.32%	3.15E+00
I-129	0.00%	1.54E-04
Cs-137	3.78%	3.58E+00
Ce-144	0.06%	5.47E-02
Pu-238	0.00%	4.98E-04
Pu-239	0.00%	9.56E-05
Pu-241	0.03%	2.47E-02
Am-241	0.00%	8.51E-05
Cm-242	0.00%	2.41E-05
Cm-243	0.00%	1.85E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Sum of All 4 Categories  
Waste Class C

Nuclide Name	Percent Abundance	Curies
H-3	0.07%	1.95E-02
C-14	0.01%	1.46E-03
Mn-54	1.15%	3.10E-01
Fe-55	17.69%	4.75E+00
Co-57	0.21%	5.60E-02
Co-58	3.03%	8.14E-01
Co-60	48.04%	1.29E+01
Ni-59	0.20%	5.37E-02
Ni-63	18.10%	4.86E+00
Zn-65	3.07%	8.25E-01
Sr-89	0.00%	1.85E-04
Sr-90	0.03%	6.78E-03
Zr-95	1.36%	3.66E-01
Nb-95	2.49%	6.69E-01
Tc-99	1.11%	2.99E-01
Ag-110m	1.09%	2.93E-01
Sn-113	0.08%	2.20E-02
Sb-125	1.86%	5.00E-01
I-129	0.00%	2.96E-04
Cs-137	0.31%	8.37E-02
Ce-144	0.01%	2.40E-03
Pu-238	0.00%	1.16E-03
Pu-239	0.00%	2.36E-04
Pu-241	0.07%	1.86E-02
Am-241	0.00%	1.76E-04
Cm-242	0.00%	8.07E-05
Cm-243	0.00%	3.64E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Units 1 and 2 Solid Waste Shipped Offsite for Disposal and Estimates of  
Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Sum of All 4 Categories  
Waste Class All

Nuclide Name	Percent Abundance	Curies
H-3	0.04%	4.63E-02
C-14	0.00%	5.29E-03
Cr-51	0.05%	6.39E-02
Mn-54	2.21%	2.87E+00
Fe-55	13.56%	1.76E+01
Co-57	0.37%	4.81E-01
Co-58	7.47%	9.70E+00
Co-60	31.20%	4.05E+01
Ni-59	0.45%	5.83E-01
Ni-63	35.83%	4.65E+01
Zn-65	1.46%	1.90E+00
Sr-89	0.01%	9.01E-03
Sr-90	0.03%	4.06E-02
Zr-95	0.28%	3.66E-01
Nb-95	0.52%	6.72E-01
Tc-99	0.25%	3.18E-01
Ag-110m	0.31%	4.04E-01
Sn-113	0.06%	7.44E-02
Sb-124	0.00%	3.71E-03
Sb-125	2.87%	3.73E+00
I-129	0.00%	5.75E-04
Cs-134	0.00%	3.53E-04
Cs-137	2.94%	3.81E+00
Ce-144	0.04%	5.80E-02
Pu-238	0.00%	1.69E-03
Pu-239	0.00%	3.31E-04
Pu-241	0.04%	5.55E-02
Am-241	0.00%	2.77E-04
Cm-242	0.00%	1.05E-04
Cm-243	0.00%	5.54E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0 (all identified isotopes are included)

Waste Stream : Resins, Filters, and Evaporator Bottoms				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	0.00E+00	0.00E+00	0.00E+00	+/- 25%
B	1.20E+02	3.41E+00	2.07E+01	+/- 25%
C	0.00E+00	0.00E+00	0.00E+00	+/- 25%
All	1.20E+02	3.41E+00	2.07E+01	+/- 25%

Waste Stream : Dry Active Waste				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	2.56E+03	7.25E+01	1.84E-02	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	2.56E+03	7.25E+01	1.84E-02	+/-25%

Waste Stream : Irradiated Components				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Waste Stream : Other Waste				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Waste Stream : Sum of All 4 Categories				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft <sup>3</sup>	m <sup>3</sup>		
A	2.56E+03	7.25E+01	1.84E-02	+/-25%
B	1.20E+02	3.41E+00	2.07E+01	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	2.68E+03	7.59E+01	2.07E+01	+/-25%

Combined Waste Type Shipment, Major Volume Waste Type Shown

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Number of Shipments	Mode of Transportations	Destination
2	Hittman Transport	Energy Solutions Bear Creek

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Resins, Filters and Evaporator Bottoms

Waste Class B

Nuclide Name	Percent Abundance	Curies
H-3	0.01%	2.27E-03
C-14	0.44%	9.01E-02
Cr-51	0.31%	6.47E-02
Mn-54	1.15%	2.38E-01
Fe-55	15.65%	3.24E+00
Co-57	0.10%	1.97E-02
Co-58	0.14%	2.98E-02
Co-60	14.20%	2.94E+00
Ni-59	0.93%	1.93E-01
Ni-63	52.18%	1.08E+01
Sr-89	0.01%	1.89E-03
Sr-90	0.03%	6.26E-03
Nb-94	0.02%	4.99E-03
Tc-99	0.01%	1.35E-03
Sb-125	7.15%	1.48E+00
I-129	0.00%	1.67E-04
Cs-134	0.17%	3.45E-02
Cs-137	7.39%	1.53E+00
Ba-133	0.03%	5.67E-03
Ce-144	0.07%	1.38E-02
Pu-238	0.00%	3.62E-05
Pu-239	0.00%	7.61E-06
Pu-241	0.00%	1.02E-03
Am-241	0.00%	1.74E-05
Cm-242	0.00%	6.96E-06
Cm-243	0.00%	2.13E-05

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Resins, Filters and Evaporator Bottoms  
Waste Class Total Combined**

Nuclide Name	Percent Abundance	Curies
H-3	0.01%	2.27E-03
C-14	0.44%	9.01E-02
Cr-51	0.31%	6.47E-02
Mn-54	1.15%	2.38E-01
Fe-55	15.65%	3.24E+00
Co-57	0.10%	1.97E-02
Co-58	0.14%	2.98E-02
Co-60	14.20%	2.94E+00
Ni-59	0.93%	1.93E-01
Ni-63	52.18%	1.08E+01
Sr-89	0.01%	1.89E-03
Sr-90	0.03%	6.26E-03
Nb-94	0.02%	4.99E-03
Tc-99	0.01%	1.35E-03
Sb-125	7.15%	1.48E+00
I-129	0.00%	1.67E-04
Cs-134	0.17%	3.45E-02
Cs-137	7.39%	1.53E+00
Ba-133	0.03%	5.67E-03
Ce-144	0.07%	1.38E-02
Pu-238	0.00%	3.62E-05
Pu-239	0.00%	7.61E-06
Pu-241	0.00%	1.02E-03
Am-241	0.00%	1.74E-05
Cm-242	0.00%	6.96E-06
Cm-243	0.00%	2.13E-05

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.



**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Dry Active Waste  
Waste Class A**

Nuclide Name	Percent Abundance	Curies
H-3	1.52%	2.79E-04
C-14	0.02%	3.11E-06
Cr-51	1.60%	2.94E-04
Mn-54	0.23%	4.19E-05
Fe-55	15.09%	2.77E-03
Co-57	0.08%	1.42E-05
Co-58	2.50%	4.59E-04
Co-60	24.95%	4.58E-03
Ni-59	0.66%	1.21E-04
Ni-63	40.64%	7.46E-03
Zr-95	2.70%	4.95E-04
Nb-94	0.16%	3.01E-05
Nb-95	4.43%	8.14E-04
Tc-99	0.09%	1.73E-05
Sn-113	0.14%	2.54E-05
Sb-125	2.52%	4.63E-04
I-129	0.02%	3.45E-06
Cs-137	2.64%	4.84E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Dry Active Waste  
Waste Class Total Combined**

Nuclide Name	Percent Abundance	Curies
H-3	1.52%	2.79E-04
C-14	0.02%	3.11E-06
Cr-51	1.60%	2.94E-04
Mn-54	0.23%	4.19E-05
Fe-55	15.09%	2.77E-03
Co-57	0.08%	1.42E-05
Co-58	2.50%	4.59E-04
Co-60	24.95%	4.58E-03
Ni-59	0.66%	1.21E-04
Ni-63	40.64%	7.46E-03
Zr-95	2.70%	4.95E-04
Nb-94	0.16%	3.01E-05
Nb-95	4.43%	8.14E-04
Tc-99	0.09%	1.73E-05
Sn-113	0.14%	2.54E-05
Sb-125	2.52%	4.63E-04
I-129	0.02%	3.45E-06
Cs-137	2.64%	4.84E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Sum of All 4 Categories  
Waste Class A

Nuclide Name	Percent Abundance	Curies
H-3	1.52%	2.79E-04
C-14	0.02%	3.11E-06
Cr-51	1.60%	2.94E-04
Mn-54	0.23%	4.19E-05
Fe-55	15.09%	2.77E-03
Co-57	0.08%	1.42E-05
Co-58	2.50%	4.59E-04
Co-60	24.95%	4.58E-03
Ni-59	0.66%	1.21E-04
Ni-63	40.64%	7.46E-03
Zr-95	2.70%	4.95E-04
Nb-94	0.16%	3.01E-05
Nb-95	4.43%	8.14E-04
Tc-99	0.09%	1.73E-05
Sn-113	0.14%	2.54E-05
Sb-125	2.52%	4.63E-04
I-129	0.02%	3.45E-06
Cs-137	2.64%	4.84E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

**Sum of All 4 Categories  
Waste Class B**

Nuclide Name	Percent Abundance	Curies
H-3	0.01%	2.27E-03
C-14	0.44%	9.01E-02
Cr-51	0.31%	6.47E-02
Mn-54	1.15%	2.38E-01
Fe-55	15.65%	3.24E+00
Co-57	0.10%	1.97E-02
Co-58	0.14%	2.98E-02
Co-60	14.20%	2.94E+00
Ni-59	0.93%	1.93E-01
Ni-63	52.18%	1.08E+01
Sr-89	0.01%	1.89E-03
Sr-90	0.03%	6.26E-03
Nb-94	0.02%	4.99E-03
Tc-99	0.01%	1.35E-03
Sb-125	7.15%	1.48E+00
I-129	0.00%	1.67E-04
Cs-134	0.17%	3.45E-02
Cs-137	7.39%	1.53E+00
Ba-133	0.03%	5.67E-03
Ce-144	0.07%	1.38E-02
Pu-238	0.00%	3.62E-05
Pu-239	0.00%	7.61E-06
Pu-241	0.00%	1.02E-03
Am-241	0.00%	1.74E-05
Cm-242	0.00%	6.96E-06
Cm-243	0.00%	2.13E-05

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

**Unit 3 Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream 01/01/2016 to 12/31/2016**

Percent Cutoff: 0

Sum of All 4 Categories  
Total Combined

Nuclide Name	Percent Abundance	Curies
H-3	0.01%	2.55E-03
C-14	0.44%	9.01E-02
Cr-51	0.31%	6.50E-02
Mn-54	1.15%	2.38E-01
Fe-55	15.64%	3.24E+00
Co-57	0.10%	1.97E-02
Co-58	0.15%	3.02E-02
Co-60	14.24%	2.95E+00
Ni-59	0.93%	1.93E-01
Ni-63	52.15%	1.08E+01
Sr-89	0.01%	1.89E-03
Sr-90	0.03%	6.26E-03
Zr-95	0.00%	4.95E-04
Nb-94	0.02%	5.02E-03
Nb-95	0.00%	8.14E-04
Tc-99	0.01%	1.37E-03
Sn-113	0.00%	2.54E-05
Sb-125	7.15%	1.48E+00
I-129	0.00%	1.70E-04
Cs-134	0.17%	3.45E-02
Cs-137	7.39%	1.53E+00
Ba-133	0.03%	5.67E-03
Ce-144	0.07%	1.38E-02
Pu-238	0.00%	3.62E-05
Pu-239	0.00%	7.61E-06
Pu-241	0.00%	1.02E-03
Am-241	0.00%	1.74E-05
Cm-242	0.00%	6.96E-06
Cm-243	0.00%	2.13E-05

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report curies shipped.

Indian Point Energy Center  
(Units 1, 2, and 3)

RADIOACTIVE EFFLUENT REPORT

E. RADIOLOGICAL IMPACT ON MAN

Jan 1, 2016 - Dec 31, 2016

RADIOLOGICAL IMPACT ON MAN

Routine Effluent Dose Calculations:

The Radiological Impact on Man due to radioactive effluent from the site is determined from NRC approved modeling, per Regulatory Guide 1.109 and NUREG 0133. Calculations are divided into 3 categories: Noble Gases, Particulates and Iodine, and Liquid Releases (fish and invertebrate consumption). This modeling involves conservative dose calculations to Adult, Teen, Child, and Infant age groups. Furthermore, dose modeling is performed for six separate organs as well as the total body dose. This well-established industry model provides doses (as a result of plant effluent) to a hypothetical maximally exposed individual offsite. While ALL age groups and organs are considered, it is this maximum value that is provided in the tables that follow.

An approved computer code is used to perform liquid and gaseous dose calculations according to the models and parameters presented in the Indian Point Offsite Dose Calculation Manual (ODCM). This information is stored in a database on site to enhance dose tracking and information management. Site airborne effluent dose calculations include annual average dispersion and deposition factors, averaged from data collected over approximately ten year periods. When new data is averaged (approximately every ten years) the modeling is updated and used in subsequent airborne effluent calculations. Liquid offsite dose calculations involve fish and invertebrate consumption pathways only, as determined appropriate in the ODCM. While the ODCM identified some site-specific dose factors, the bulk of this information is obtained directly from Regulatory Guide 1.109 and NUREG 0133. Details of the calculations, site-specific data, and their bases are presented in the ODCM.

Carbon-14 (C-14):

Concentrations and offsite dose from C-14 were determined from sampling at Indian Point #3 from August 1980 to June 1982, during a study conducted by the NY State Department of Health (C. Kunz, later published and incorporated into NCRP 81). The annual C-14 curies released, as determined from this study, were consistent with NUREG 0017, Rev. 1. Data was then normalized to a maximum expected annual total, based on rated electrical capacity, (approximately 1000 MW(e) maintained for the entire year). Once the curies released were established, dose calculations were performed per the station ODCM, which uses all C-14 released to determine inhalation doses, and 26% of the total (determined to be Carbon Dioxide form), to determine the ingestion doses, in accordance with Regulatory Guide 1.109.

In 2010, IPEC and other facilities combined historical data with the application of an EPRI model designed to estimate C-14 releases, given some key site-specific plant parameters (mass of the primary coolant, average thermal neutron cross section, rated MW, etc.). The estimates from this model, for IPEC, closely match the measured observations of 1982.

The maximum annual C-14 release information is as follows:

Maximum (Bounding) Annual C-14 releases from IPEC		Unit 2	Unit 3
Liquid Effluent C <sup>14</sup> Released	Curies	0.07	0.07
Total Airborne C <sup>14</sup> Released	Curies	11.19	11.05
Airborne C <sup>14</sup> as CO <sub>2</sub>	Curies	2.91	2.87
Airborne Effluent Child TB Dose, C <sup>14</sup>	mrem	0.0690	0.0675
Airborne Effluent Child Bone Dose, C <sup>14</sup>	mrem	0.346	0.338
Liquid Effluent Child TB Dose, C <sup>14</sup>	mrem	0.00117	0.00116
Liquid Effluent Child Bone Dose, C <sup>14</sup>	mrem	0.00583	0.00577

The bounding values were then normalized with actual effective full power days (EFFD) to yield more accurate year to year annual airborne curies and mrem for each unit. A small liquid effluent component is maintained at IPEC as a result of data accumulated in the 1983 study (Kunz). Tables 1A (shown earlier) include the airborne curie data for the current year. The following section (Radiological Impact on Man) includes the dose information.

C-14 doses are grouped with "Iodine and Particulate" and reported in Table D in the following Radiological Impact on Man tables, for each unit. Table "C" provides doses from this category *excluding* C-14, to facilitate historical comparisons. However, since C-14 is grouped as a particulate, the total dose for this isotope needs to be added to all other Iodines and Particulates, for comparison of the singular dose limit for this category.

Therefore, table "D" includes dose from all categories of this group (Iodine, Particulate, Tritium, and Carbon-14), for appropriate comparison of the dose limits.

C-14 doses (alone) for the current year are provided (for information) in the following table:

Calculated Annual C-14 releases from IPEC, 2016		Unit 2	Unit 3
Airborne Effluent Child TB Dose, C <sup>14</sup>	mrem	0.0474	0.0674
Airborne Effluent Child Bone Dose, C <sup>14</sup>	mrem	0.238	0.338

The airborne effluent dose from C-14 is distributed evenly over the year and applied to a total Iodine and Particulate dose in Table "D" following this section.

**Members of the Public:**

Members of the public visiting the site receive minimal dose as a result of onsite releases because of the relatively insignificant total amount of time they are on site, as well as the immeasurably low levels of dose at the critical receptors. Their doses can be calculated from standard ODCM methodology, with typical occupancy factors employed. These factors are determined by comparing a conservative assumption for their expected hours on site, to 8760 hours (the number of hours in a year, used in calculations in the ODCM).

example 1: Several students visit the site for an 8-hour guided tour.

Their occupancy factor is:  $8 / 8760$  or **0.0009**.

example 2: A man drives his wife to work and drops her off at the security gate each morning, with a total stay-time on site for 2 minutes per day. His occupancy factor is calculated as follows:

$$2 \text{ min}/60 \text{ min/hr} = 0.0333 \text{ hr}; \quad 0.0333 / 8760 = 3.8\text{E-}6.$$

While onsite meteorological factors (dispersion and deposition) may be as high as a factor of ten higher than those used by the ODCM for routine effluents, these occupancy factors, when multiplied by doses calculated per the ODCM, demonstrate that dose to MEMBERS OF THE PUBLIC within the site boundary is negligible.



**Groundwater:**

Curies and dose contribution from activity discovered in onsite groundwater and storm drain pathways during the year are discussed in more detail in Section H. The offsite dose calculation involves multiple source term measurements, as well as computations for release and dilution flow. A summary of the quantification methodology, and the resulting calculated doses, is provided at the end of Section H. The Total Dose table below provides a means to compare ground water doses with those of other components making up the total offsite dose.

**Total Dose:**

Unit and pathway-specific dose data can be found on the Radiological Impact on Man tables following this discussion. For simplicity and to demonstrate compliance with 40CFR190, the following table indicates the maximum hypothetical Total Dose to an individual from operation of the facility, including any measured direct shine component from the site property:

Year: 2016		Total Body	Max Organ
<b>40 CFR 190 limit ----&gt;</b>	<b>IPEC</b>	<b>25 mrem</b>	<b>75 mrem</b>
<b>Routine Airborne Effluents<sup>1</sup></b>	<b>Units 1 and 2</b>	<b>2.32E-03</b>	<b>2.32E-03</b>
<b>Routine Liquid Effluents</b>	<b>Units 1 and 2</b>	<b>9.35E-04</b>	<b>2.46E-03</b>
Liquid Releases of C <sup>14</sup>	Units 1 and 2	1.17E-03	5.83E-03
Airborne Releases of C <sup>14</sup>	Units 1 and 2	4.74E-02	2.38E-01
<b>Routine Airborne Effluents<sup>1</sup></b>	<b>Unit 3</b>	<b>2.70E-03</b>	<b>2.70E-03</b>
<b>Routine Liquid Effluents</b>	<b>Unit 3</b>	<b>1.55E-04</b>	<b>4.98E-04</b>
Liquid Releases of C <sup>14</sup>	Unit 3	1.17E-03	5.83E-03
Airborne Releases of C <sup>14</sup>	Unit 3	6.74E-02	3.38E-01
<b>Ground Water &amp; Storm Drain Totals</b>	<b>IPEC<sup>2</sup></b>	<b>1.93E-05</b>	<b>7.77E-05</b>
<b>Direct Shine from areas such as dry cask storage, radwaste storage, SG Mausoleum, etc.</b>	<b>IPEC<sup>3</sup></b>	<b>2.20E-01</b>	<b>2.20E-01</b>
<b>Indian Point Energy Center Total Dose, per 40 CFR 190</b>	<b>IPEC</b>	<b>3.43E-01</b>	<b>8.16E-01</b>

Note 1: Routine airborne dose in this table is conservatively represented as a sum of Iodine, Particulate, and Tritium dose (excluding C-14, in mrem) with a mrem term added from noble gas gamma air energy (mrad, expressed as mrem). This 'addition' does not represent a real dose and is listed here solely to help demonstrate compliance with 40CFR190. (Doses by type of release and comparison to the specific limits of 10CFR50 Appendix I are summarized on the following pages.)

Note 2: Groundwater curie and dose calculations are provided in Section H.

Note 3: 40CFR190 requires the reporting of total dose, including that of direct shine. Direct shine dose from sources other than dry cask are indistinguishable from background. Direct shine dose is determined from TLDs near the dry cask area and site boundary, compared with REMP TLDs and historical values, and corrected with occupancy factors to determine a bounding, worst case assessment of direct shine dose to a real individual. These doses are slightly higher than those of the previous year due to additional storage on the Independent Spent fuel Storage Installation (ISFSI). Details of each year's dose evaluation are available on site from Radiation Protection.

INDIAN POINT UNITS 1 and 2 NUCLEAR POWER PLANTS  
RADIOLOGICAL IMPACT ON MAN  
JANUARY - DECEMBER 2016

Maximum exposed individual doses in mrem or mrad

A. LIQUID DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Organ Dose	(mrem)	2.08E-03	3.84E-04	1.23E-04	2.16E-04	<b>2.46E-03</b>
Applicable Limit	(mrem)	5	5	5	5	10
Percent of Limit	(%)	4.16E-02	7.68E-03	2.46E-03	4.32E-03	2.46E-02
Age Group		Child	Child	Child	Child	Child
Critical Organ		Bone	Bone	Bone	Bone	Bone

Adult Total Body	(mrem)	7.92E-04	1.76E-04	6.00E-05	4.92E-05	<b>9.35E-04</b>
Applicable Limit	(mrem)	1.5	1.5	1.5	1.5	3.0
Percent of Limit	(%)	5.28E-02	1.17E-02	4.00E-03	3.28E-03	3.12E-02

B. AIRBORNE NOBLE GAS DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Gamma Air	(mrad)	1.62E-05	1.30E-06	1.51E-05	9.59E-06	<b>4.22E-05</b>
Applicable Limit	(mrad)	5	5	5	5	10
Percent of Limit	(%)	3.24E-04	2.60E-05	3.02E-04	1.92E-04	4.22E-04

Beta Air	(mrad)	1.83E-05	1.24E-06	9.48E-06	5.95E-06	<b>3.50E-05</b>
Applicable Limit	(mrad)	10	10	10	10	20
Percent of Limit	(%)	1.83E-04	1.24E-05	9.48E-05	5.95E-05	1.75E-04

C. AIRBORNE IODINE, PARTICULATE, & TRITIUM DOSES (excluding C-14, for info only)

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Iodine/Part	(mrem)	5.77E-04	1.11E-03	2.88E-04	3.04E-04	<b>2.28E-03</b>
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	7.69E-03	1.48E-02	3.84E-03	4.05E-03	1.52E-02
Age Group		Child	Child	Child	Child	Child
Critical Organ		Liver	Liver	Liver	Liver	Liver

D. AIRBORNE IODINE, PARTICULATE, TRITIUM, and CARBON-14 DOSES

Child TB Dose	(mrem)	1.24E-02	1.30E-02	1.21E-02	1.22E-02	<b>4.97E-02</b>
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	1.66E-01	1.73E-01	1.62E-01	1.62E-01	3.31E-01

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Child Bone Dose	(mrem)	5.95E-02	5.95E-02	5.95E-02	5.95E-02	<b>2.38E-01</b>
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	7.93E-01	7.93E-01	7.93E-01	7.93E-01	1.59E+00

INDIAN POINT 3 NUCLEAR POWER PLANT  
RADIOLOGICAL IMPACT ON MAN  
JANUARY - DECEMBER 2016

Maximum exposed individual doses in mrem or mrad

Applicable Limit	(mrem)	5	5	5	5	10
Percent of Limit	(%)	2.46E-04	6.58E-03	1.41E-03	2.52E-03	4.98E-03
Age Group		Child	Adult	Child	Child	Child
Critical Organ		Bone	GILLI	Bone	Bone	Bone

Adult Total Body	(mrem)	2.66E-05	1.11E-04	1.12E-05	3.50E-05	<b>1.55E-04</b>
Applicable Limit	(mrem)	1.5	1.5	1.5	1.5	3.0
Percent of Limit	(%)	1.77E-03	7.40E-03	7.47E-04	2.33E-03	5.17E-03

B. AIRBORNE NOBLE GAS DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Gamma Air	(mrad)	1.50E-05	1.64E-05	1.87E-05	1.78E-05	<b>6.79E-05</b>
Applicable Limit	(mrad)	5	5	5	5	10
Percent of Limit	(%)	3.00E-04	3.28E-04	3.74E-04	3.56E-04	6.79E-04

Beta Air	(mrad)	1.77E-05	1.96E-05	2.38E-05	2.25E-05	<b>8.36E-05</b>
Applicable Limit	(mrad)	10	10	10	10	20
Percent of Limit	(%)	1.77E-04	1.96E-04	2.38E-04	2.25E-04	4.18E-04

C. AIRBORNE IODINE, PARTICULATE, & TRITIUM DOSES (excluding C-14, for info only)

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Iodine/Part	(mrem)	5.96E-04	7.59E-04	7.76E-04	4.96E-04	<b>2.63E-03</b>
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	7.95E-03	1.01E-02	1.03E-02	6.61E-03	1.75E-02
Age Group		Child	Child	Child	Child	Child
Critical Organ		Liver	Liver	Liver	Liver	Liver

D. AIRBORNE IODINE, PARTICULATE, TRITIUM, and CARBON-14 DOSES

Child TB Dose	(mrem)	1.74E-02	1.76E-02	1.76E-02	1.73E-02	<b>7.00E-02</b>
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	2.33E-01	2.35E-01	2.35E-01	2.31E-01	4.67E-01
		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Child Bone Dose	(mrem)	8.45E-02	8.45E-02	8.45E-02	8.45E-02	<b>3.38E-01</b>
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	1.13E+00	1.13E+00	1.13E+00	1.13E+00	2.25E+00

Indian Point Energy Center  
(Units 1, 2, and 3)

RADIOLOGICAL EFFLUENT REPORT

F. METEOROLOGICAL DATA

Jan 1, 2016 - Dec 31, 2016

This data is stored onsite and is available in printed or electronic form.

Indian Point Energy Center  
(Units 1, 2, and 3)

RADIOACTIVE EFFLUENT REPORT

G. OFFSITE DOSE CALCULATION MANUAL, REMP SAMPLING LOCATIONS,  
PROCESS CONTROL PROGRAM, OR LAND USE CENSUS LOCATION CHANGES

2016

**There were no changes to the REMP Sampling Locations in 2016.**

**There were no changes in the Land Use Census in 2016.**

**There were no changes to the Process Control Program in 2016**

**There were no changes to the IPEC ODCM in 2016**

Indian Point Energy Center  
(Units 1, 2, and 3)

RADIOACTIVE EFFLUENT REPORT

H. GROUNDWATER and STORM WATER REPORT

ACTIVITY ON SITE and OFFSITE DOSE CALCULATION

FOR THE PERIOD:

Jan 1, 2016 - Dec 31, 2016

## Summary of IPEC Groundwater and Storm Water Activity, 2016

The precipitation mass balance model applied in previous years was applied for offsite dose calculations in 2016, with some minor calibration updates performed by the contractor with regard to the distribution of groundwater flow through the site. Groundwater elevation readings continued to validate the model throughout the year.

As defined in the ODCM, a conservative method of source term selection is used for determining offsite dose from Groundwater and Storm Water. If a result is *below MDC* (whether positive or negative) it is *not* included in the computed average. This computed average is therefore biased high (more conservative from a dose computation perspective) relative to an average computed using all of the data (many of which indicate no activity). In cases where all the sampling locations assigned to a given stream tube provided results below the MDC, then an average activity value of zero was assigned to the effected portion of the stream tube. (This mathematically allows the calculation to proceed in the absence of positive detections).

Historical average precipitation at IPEC has been approximately 3 feet per year. In 2011, precipitation was unusually high (over 6 feet). In 2016, precipitation was measured at 2.65 feet per year (or inches per month, as an average). Doses from Groundwater/Storm water are dependent on two factors: source term and precipitation during the effected year.

### Results of 2016 Groundwater and Storm water offsite dose evaluation

The results of the assessment are shown on the following table. These dose values are a small portion of the annual limits (<0.1%), and were added to the Total Dose table in the opening summary of the Dose to Man section of this report (Section E).

Groundwater (GW) and storm water tritium released from IPEC in 2016 totaled approximately 0.33 curies, resulting in a total body dose of significantly less than 0.1 mrem. It is evident that tritium alone, whether from ground water or routine effluents, does not arithmetically contribute to integrated offsite dose.

Sampling near the effluent points identified only trace levels of Tritium and Strontium-90 (Sb-125 detected in one of the up-gradient storm drains). These data, as part of the Monitored Natural Attenuation analyses, show a continuation of the decreasing trends established with the termination of the identified Unit 2 SFP leaks (tritium plume) and the defueling and draining of Unit 1 SFPs (strontium plume). Strontium-90, a legacy isotope from Unit 1, contributed approximately 0.0000101 curies to site effluent from the groundwater pathway. Combined GW releases from IPEC in 2016 (all radionuclides) resulted in a calculated annual dose of less than 0.0008% of the annual limits for whole body and critical organ:

#### IPEC Groundwater and Storm Water Effluent Dose, 2016

0.0000193 mrem to the total body	(0.0006% limit)
0.0000777 mrem to the critical organ, adult bone	(0.0008% limit)

The annual dose from combined groundwater and storm water pathways remains well below applicable limits. When combined with routine liquid effluents (Section E), the total dose also remains significantly below ALARA limits of 3 mrem total body, and 10 mrem to the critical organ.





# INDIAN POINT RADIOLOGICAL GROUNDWATER MONITORING PROGRAM

2016

## Summary of Results

The following pages represent the isotopic radio-analytical data for all onsite groundwater testing performed at Indian Point in 2016, as required per the ODCM and NEI 07-07.

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
B-6	3/18/2016	3.68E+02	4.35E+02	0.6	1.2	0.0	5.0	1.6	5.3			-6.4	12.6	2.5	5.3
B-6	6/1/2016	9.52E+01	3.39E+02	-0.2	1.1	-0.1	6.1	-3.5	9.3			-0.9	16.7	-3.4	6.3
B-6	8/11/2016	1.15E+02	3.09E+02	-0.9	1.3	19.6	10.3	2.3	3.6			-2.3	9.9	0.8	4.8
B-6	10/24/2016	8.84E+01	3.54E+02	0.4	1.1	-0.8	4.8	-1.4	4.3			4.5	12.3	0.2	5.6
I-2	3/14/2016	1.78E+02	3.84E+02	0.5	1.2	-0.3	5.9	-1.9	5.9			-0.2	15.2	3.1	6.2
I-2	6/22/2016	-1.77E+01	4.14E+02	1.3	1.5	0.3	6.0	-3.0	8.8			8.6	16.4	-1.4	8.6
I-2	8/10/2016	8.30E+01	3.18E+02	-0.2	0.5	2.3	5.1	3.8	5.1			0.1	12.7	-0.9	5.3
I-2	9/19/2016	1.03E+02	3.81E+02	-0.4	1.1	0.6	5.2	1.8	5.0			-3.5	11.2	2.3	5.7
I-2	11/8/2016	7.65E+01	3.36E+02	0.3	0.8	2.5	4.8	-0.7	6.2			2.8	12.3	0.4	5.1
MH-5 VCFD	1/6/2016	1.91E+03													
MH-5 VCFD	1/20/2016	2.42E+03	8.10E+02	0.2	1.1	0.3	4.7	1.7	2.1			-2.9	12.7	0.6	5.1
MH-5 VCFD	1/29/2016	1.44E+05	4.77E+03	-0.1	1.0	0.4	4.3	3.9	4.1			25.5	19.1	-2.0	4.4
MH-5 VCFD	2/5/2016	2.44E+05	7.26E+03	-0.4	0.8	0.9	6.8	1.7	6.8			54.5	24.8	0.8	6.0
MH-5 VCFD	2/9/2016	7.60E+04	3.81E+03	-0.4	1.3	-1.1	6.6	0.3	5.7			36.3	27.5	0.3	5.9
MH-5 VCFD	2/11/2016	3.98E+04	2.79E+03	-1.1	1.3	3.0	7.2	-1.8	5.6			30.4	29.3	1.3	6.4
MH-5 VCFD	2/15/2016	1.37E+04	9.93E+02	1.7	1.8	0.2	5.6	2.4	3.5			6.5	16.0	-0.8	6.0
MH-5 VCFD	2/18/2016	1.17E+05	3.21E+03	-0.4	1.5	1.6	7.9	0.1	5.7			48.5	20.2	-1.2	6.9
MH-5 VCFD	2/22/2016	3.81E+04	1.91E+03	-0.4	1.5	0.5	8.6	-3.6	6.8			0.0	22.0	-2.5	7.9
MH-5 VCFD	2/25/2016	1.66E+05	1.23E+04	0.0	1.0	-4.5	5.8	0.0	5.7			115.0	37.2	2.0	6.0
MH-5 VCFD	3/1/2016	1.89E+05	4.11E+03	0.2	1.3	-1.2	6.9	2.9	6.7			84.8	45.9	5.8	8.2
MH-5 VCFD	3/3/2016	2.26E+05	4.50E+03	-0.1	1.4	-1.5	4.7	-0.8	5.9			106.0	30.0	0.0	6.2
MH-5 VCFD	3/7/2016	7.01E+04	7.17E+03	-0.4	1.5	1.6	6.8	2.8	7.2			39.6	28.6	0.3	6.9
MH-5 VCFD	3/10/2016	3.05E+04	5.28E+03	-0.5	1.6	0.9	6.4	3.8	8.3			19.8	33.9	3.6	6.3
MH-5 VCFD	3/14/2016	1.99E+04	1.26E+03	-0.7	1.3	2.0	6.8	-1.9	6.6			0.0	25.4	-4.4	7.7
MH-5 VCFD	3/17/2016	1.86E+04	1.26E+03	0.4	1.3	3.0	7.1	2.0	6.2			55.6	24.8	-0.2	8.2
MH-5 VCFD	3/21/2016	1.10E+04	9.90E+02	0.1	1.1	0.0	5.5	2.3	5.5			54.7	24.7	-0.6	4.7
MH-5 VCFD	3/28/2016	2.33E+03	5.16E+02	-0.4	1.2	-3.1	9.1	0.5	6.9			11.3	19.7	0.6	7.1
MH-5 VCFD	3/31/2016	1.52E+03	4.56E+02		0.9		10.1		6.4						6.1
MH-5 VCFD	4/4/2016	8.49E+02	5.52E+02	0.3	1.3	1.7	4.9	-0.8	4.6			10.4	14.4	0.3	5.5
MH-5 VCFD	4/7/2016	8.14E+02	3.81E+02	0.0	1.2	-0.1	5.0	-5.5	6.2			7.2	17.2	3.0	5.9

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MH-5 VCFD	4/11/2016	8.45E+02	4.02E+02	-0.2	1.5	2.3	7.9	3.1	6.9			10.3	19.7	-0.1	8.3
MH-5 VCFD	4/18/2016	9.15E+02	4.95E+02	-0.7	1.4	-0.1	6.0	3.0	7.5			-0.5	15.7	-3.4	5.4
MH-5 VCFD	4/25/2016	2.20E+03	4.62E+02	0.1	0.9	-0.5	6.2	0.2	7.1			13.1	17.6	1.1	6.7
MH-5 VCFD	5/2/2016	1.17E+04	1.04E+03	-0.2	1.5	-3.3	5.3	-0.9	7.2			19.0	25.5	-2.5	6.1
MH-5 VCFD	5/9/2016	2.54E+04	1.46E+03	-0.5	1.5	5.3	5.5	-0.6	6.2			0.0	19.9	-4.0	11.3
MH-5 VCFD	5/16/2016	3.65E+03	5.85E+02	-1.3	1.4	-1.6	6.2	0.9	6.9	-2.8	14.1	10.5	20.3	-2.8	7.4
MH-5 VCFD	5/23/2016	1.44E+03	4.59E+02	-0.5	1.3	-0.8	6.9	-1.2	8.7			6.7	19.9	1.9	7.7
MH-5 VCFD	6/1/2016	8.61E+02	4.41E+02	-0.3	1.1	-1.5	6.0	3.4	5.6			14.2	18.5	-1.9	8.2
MH-5 VCFD	6/6/2016	2.05E+03	4.53E+02	0.9	1.6	1.0	7.6	0.8	5.6	-6.5	17.7	4.5	14.2	-1.2	7.6
MH-5 VCFD	6/14/2016	1.42E+02	3.66E+02	-0.3	1.1	-1.0	5.3	-2.8	5.3	-5.9	18.1	-0.1	12.8	0.6	5.3
MH-5 VCFD	6/27/2016	3.04E+02	3.69E+02	0.1	0.9	5.6	8.1	1.1	7.6	-9.9	15.8	2.3	21.5	2.0	8.9
MH-5 VCFD	7/6/2016	6.01E+02	3.57E+02			3.3	7.7	7.5	6.3			2.5	20.9	-4.7	11.1
MH-5 VCFD	7/18/2016	3.68E+02	4.26E+02	-0.8	0.9	1.0	9.4	0.6	4.7	5.2	17.9	5.0	14.5	0.9	7.3
MH-5 VCFD	8/4/2016	8.50E+03	8.04E+02	-0.1	1.0	2.8	4.9	3.5	5.6			-5.2	14.0	0.7	6.0
MH-5 VCFD	8/15/2016	1.05E+03	4.53E+02	0.6	1.7	2.5	6.8	-0.7	5.8	4.9	16.3	-6.1	15.6	4.7	6.6
MH-5 VCFD	9/2/2016	9.30E+02	4.17E+02			3.4	4.5	-1.1	5.7			3.6	12.8	-0.4	4.8
MH-5 VCFD	9/12/2016	6.93E+02	3.96E+02			0.2	4.5	0.1	5.0			8.2	14.2	-2.8	5.5
MH-5 VCFD	9/20/2016	8.28E+02	4.11E+02	-0.2	1.3	-1.7	6.8	1.2	4.3			1.6	11.6	-2.2	3.8
MH-5 VCFD	10/12/2016	9.72E+02	5.49E+02	0.3	1.2	-1.2	5.7	3.4	4.7			6.1	14.3	1.3	6.1
MH-5 VCFD	10/24/2016	7.58E+02	4.98E+02	0.9	1.1	-0.8	5.7	-0.6	6.0			0.6	14.2	1.5	6.2
MH-5 VCFD	11/21/2016	1.78E+03	5.13E+02	0.8	1.5	-0.1	6.7	-4.2	7.3			1.4	17.7	0.0	9.0
MH-5 VCFD	12/8/2016	1.22E+04	1.01E+03	0.3	1.7	0.5	4.4	-3.9	3.8			14.6	18.3	1.1	5.5
MH-5 VCFD	12/16/2016	2.62E+03	5.31E+02												
MH-5 VCFD	12/21/2016	1.90E+03	4.98E+02												
MW-107	5/11/2016	5.93E+01	3.72E+02	0.9	1.1	-2.2	8.3	-0.1	7.1			-4.5	15.9	-2.2	7.2
MW-111	1/20/2016	3.55E+04	1.69E+03	-0.2	1.0	3.6	9.2	0.2	7.9			8.7	20.5	-2.9	9.0
MW-111	2/5/2016	2.64E+04	1.38E+03	0.1	1.1	-0.1	6.9	-0.4	7.3			4.7	17.7	-2.6	7.1
MW-111	2/12/2016	3.85E+04	1.64E+03	-0.2	1.4	0.4	6.1	-0.3	5.4			10.4	14.8	2.9	6.2
MW-111	2/18/2016	3.23E+04	1.77E+03	-0.1	1.2	0.6	6.0	-3.5	8.1			-6.3	18.1	-1.2	7.7
MW-111	2/24/2016	4.76E+04	7.53E+03	-0.1	1.1	1.4	6.5	-0.2	6.1			5.5	17.1	1.3	7.2

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-111	3/3/2016	4.26E+04	2.00E+03	0.4	1.6	1.7	5.3	-2.6	5.3			2.1	14.7	1.8	5.5
MW-111	3/10/2016	5.22E+04	6.33E+03	-0.3	1.4	-0.6	6.6	2.1	6.9			12.2	16.5	-6.1	8.6
MW-111	3/15/2016	6.61E+04	2.33E+03	1.0	1.5	-1.2	7.5	0.0	4.8			-5.3	15.3	-1.4	6.3
MW-111	3/24/2016	6.01E+04	2.14E+03	-0.5	1.4	0.6	7.7	3.0	6.7			2.0	16.0	-0.2	5.5
MW-111	3/29/2016	4.31E+04	1.69E+03	-0.1	1.3	2.2	7.0	0.0	8.0			-8.5	18.6	-1.3	6.1
MW-111	4/6/2016	6.51E+03	6.90E+02	-0.3	1.0	-2.2	5.8	-3.4	6.5			-2.4	16.0	-2.8	6.8
MW-111	4/12/2016	1.18E+04	8.49E+02	-0.6	1.0	1.4	6.0	1.3	8.3			-4.1	16.9	-2.3	6.2
MW-111	4/19/2016	1.41E+04	9.87E+02	-0.5	1.6	-4.7	7.4	2.2	6.8			9.5	19.3	1.7	7.7
MW-111	4/27/2016	5.16E+04	2.03E+03	-0.2	1.2	2.1	6.0	0.4	6.9			-3.2	15.3	-3.1	7.6
MW-111	5/25/2016	1.36E+05	4.38E+03	0.1	1.2	3.8	8.8	4.6	3.8			-0.1	14.9	0.0	6.5
MW-111	6/22/2016	1.81E+05	5.43E+03												
MW-111	7/20/2016	2.26E+05	4.80E+03	1.2	1.7	-1.8	6.2	1.1	7.4	3.3	18.1	-0.6	18.1	-0.7	8.0
MW-111	8/16/2016	1.44E+05	4.53E+03	1.5	1.6	-2.7	6.0	1.1	6.0			4.9	13.4	1.7	4.7
MW-111	9/13/2016	2.14E+05	6.27E+03			-1.7	5.1	-1.4	5.6			2.1	11.8	1.5	4.8
MW-111	10/7/2016	1.81E+05	5.43E+03	0.4	0.9	0.0	11.1	0.5	5.3			3.1	12.1	1.9	7.0
MW-111	10/26/2016	1.45E+05	4.26E+03	0.8	1.1	-0.2	6.5	0.5	5.3			-2.8	14.8	0.2	6.4
MW-111	11/22/2016	1.35E+05	4.02E+03	0.2	1.6	-2.6	5.2	0.6	5.1			-2.6	13.9	-2.6	6.5
MW-111	12/21/2016	3.42E+04	1.49E+03			-0.3	4.3	1.1	4.4			2.5	11.0	-1.7	5.4
MW-30-69	1/11/2016	5.74E+05													
MW-30-69	1/28/2016	1.67E+06	5.43E+04	0.0	1.3	-0.6	7.0	5.0	7.0			2.1	18.2	5.8	5.3
MW-30-69	2/4/2016	3.04E+06	9.78E+04	-0.4	1.6	0.4	4.8	2.0	5.6			1.5	13.1	0.0	4.6
MW-30-69	2/8/2016	2.47E+06	7.35E+04	0.4	1.1	-5.2	8.8	2.0	7.8			-9.6	19.2	0.5	8.5
MW-30-69	2/11/2016	2.92E+06	8.40E+04	0.8	1.6	-1.0	6.3	5.7	4.8			4.7	14.0	-2.9	5.6
MW-30-69	2/16/2016	4.31E+06	1.25E+05	0.6	1.2	-0.2	4.9	2.6	8.7			2.2	14.9	-1.8	4.5
MW-30-69	2/23/2016	4.02E+06	1.91E+04	0.2	1.6	-0.7	6.9	-0.4	7.6			6.6	16.6	-0.2	6.5
MW-30-69	2/29/2016	3.38E+06	1.73E+04	0.7	1.7	-1.7	8.2	4.5	8.7			1.8	19.8	0.7	7.3
MW-30-69	3/8/2016	2.87E+06	7.71E+04	-1.2	1.3	0.1	6.0	0.7	6.4			8.3	23.9	0.2	6.2
MW-30-69	3/14/2016	3.90E+06	1.27E+05	-1.1	1.1	-1.4	5.1	4.4	5.8			11.4	13.6	-0.2	5.2
MW-30-69	3/20/2016	2.66E+06	7.80E+04	0.8	0.9	1.1	7.7	-3.1	7.7			0.6	18.7	-0.7	7.2
MW-30-69	3/28/2016	2.83E+06	8.58E+04	-0.3	1.2	0.0	5.7	-3.3	7.1			7.6	16.8	4.5	6.0

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-30-69	4/4/2016	3.23E+06	1.04E+05	1.1	1.4	2.8	6.9	-2.4	6.9			15.1	28.8	2.8	7.4
MW-30-69	4/11/2016	3.36E+06	1.11E+05	0.2	1.2	-0.2	6.3	-1.4	6.5			16.4	20.7	-0.6	7.1
MW-30-69	4/18/2016	3.24E+06	1.05E+05	1.1	1.4	-0.7	5.9	-1.5	4.9			7.6	14.1	-1.1	4.4
MW-30-69	4/25/2016	3.00E+06	8.07E+04	0.4	1.1	0.1	7.0	-0.4	9.1			9.9	17.1	0.6	6.8
MW-30-69	5/4/2016	2.76E+06	7.89E+04	-0.3	1.3	3.6	7.8	2.1	8.6			26.0	31.5	1.8	7.4
MW-30-69	5/9/2016	2.58E+06	7.26E+04	1.4	1.5	-1.1	5.5	-0.5	5.3			5.4	16.0	0.7	4.8
MW-30-69	5/16/2016	2.73E+06	8.19E+04	0.8	1.6	0.6	5.1	-3.2	5.6	9.9	13.8	0.0	26.4	2.8	5.1
MW-30-69	5/25/2016	2.94E+06	1.54E+04	-0.4	1.1	0.2	8.0	1.2	7.3			22.1	25.4	-0.2	8.0
MW-30-69	5/31/2016	2.27E+06	6.63E+04	0.9	1.4	-0.7	5.8	0.2	5.9			19.3	26.4	1.6	7.6
MW-30-69	6/6/2016	2.56E+06	1.24E+04	0.0	1.3	-2.0	7.4	0.4	6.8	10.6	18.7	8.6	15.6	3.2	7.5
MW-30-69	6/20/2016	2.48E+06	7.26E+04	0.4	1.5	1.1	5.9	1.9	5.3	13.9	17.9	9.3	23.4	-1.7	4.7
MW-30-69	7/26/2016	6.52E+05	1.91E+04	-0.4	1.1	-1.8	5.6	0.5	6.9	7.2	19.6	4.1	15.5	3.0	6.7
MW-30-69	8/10/2016	4.89E+05	1.43E+04	0.4	1.4	0.9	6.1	-3.1	6.7			11.3	16.1	1.5	5.9
MW-30-69	8/23/2016	5.01E+05	7.47E+03			1.6	5.3	1.5	5.5			4.8	13.5	6.7	6.2
MW-30-69	9/27/2016	9.51E+05													
MW-30-69	10/12/2016	7.34E+05	2.16E+04	0.6	1.2	2.3	6.3	2.4	5.1			9.5	16.8	3.2	6.9
MW-30-69	10/25/2016	6.40E+05	1.88E+04	0.1	1.0	1.7	5.6	-0.4	4.4			8.3	13.2	1.6	5.8
MW-30-69	11/8/2016	7.01E+05	2.11E+04	0.9	1.1	-0.4	4.1	1.4	4.6			7.4	12.0	-0.7	5.2
MW-30-69	11/21/2016	5.81E+05	1.66E+04	-0.3	1.0	-0.7	5.3	2.4	6.2			4.3	12.8	1.9	6.4
MW-30-69	12/9/2016	4.55E+05	1.38E+04	0.0	1.2	1.2	6.1	-0.2	5.6			10.5	17.6	2.3	7.2
MW-30-84	1/11/2016	2.05E+04													
MW-30-84	1/28/2016	2.09E+04	1.87E+03	0.4	1.6	0.9	4.3	3.9	5.2			-3.2	12.0	-1.7	4.9
MW-30-84	2/4/2016	2.05E+04	1.89E+03	-0.5	1.4	-1.2	4.7	2.5	4.6			3.7	13.1	1.6	4.7
MW-30-84	2/8/2016	2.24E+04	1.24E+03	-0.3	0.9	0.5	6.7	4.3	6.8			3.9	18.4	-4.4	7.2
MW-30-84	2/11/2016	2.47E+04	1.30E+03	-0.2	1.0	-1.0	8.3	0.4	5.5			5.2	14.1	0.2	5.2
MW-30-84	2/16/2016	4.27E+04	1.85E+03	0.0	0.8	-0.4	5.7	-2.2	5.1			0.3	12.5	1.2	5.1
MW-30-84	2/23/2016	5.01E+04	2.16E+03	0.0	1.7	0.3	7.1	-1.1	6.6			3.3	20.5	-2.2	8.6
MW-30-84	3/8/2016	8.22E+04	7.47E+03	0.6	1.4	-3.2	5.4	-1.0	4.7			2.3	12.6	0.2	4.4
MW-30-84	3/14/2016	1.07E+05	3.57E+03	-0.1	1.2	2.7	9.4	1.6	5.4			3.4	12.4	-1.7	5.2
MW-30-84	3/20/2016	1.30E+05	4.23E+03	-0.5	1.3	-4.0	6.3	0.7	6.9			-3.3	18.6	-0.7	6.6

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-30-84	3/28/2016	1.46E+05	4.35E+03	-0.2	1.2	4.6	7.1	3.6	7.6			7.6	18.7	1.2	7.7
MW-30-84	4/4/2016	1.56E+05	3.90E+03	-1.2	1.3	2.7	5.5	-5.0	5.9			-4.8	12.7	-1.3	6.0
MW-30-84	4/11/2016	1.72E+05	5.64E+03	-0.8	1.0	0.4	8.0	1.2	6.8			-2.1	14.6	-0.5	5.6
MW-30-84	4/18/2016	1.89E+05	6.15E+03	-0.4	1.2	-1.3	6.3	3.8	4.9			-4.2	13.1	0.9	4.9
MW-30-84	4/25/2016	1.71E+05	4.83E+03	0.5	1.4	-2.1	6.2	0.7	6.0			1.1	12.9	-0.6	5.1
MW-30-84	5/25/2016	2.06E+05	4.05E+03	0.3	1.5	0.0	8.7	-1.5	7.7			-12.7	21.2	3.7	6.8
MW-30-84	8/10/2016	1.95E+05	3.57E+03	-0.5	0.8	0.3	7.1	-1.2	6.5			7.8	17.4	-2.8	5.9
MW-30-84	11/8/2016	1.71E+05	5.16E+03	0.5	1.0	-1.6	3.6	0.0	3.7			2.5	9.2	-0.3	4.6
MW-30-84	12/19/2016	1.57E+05	4.59E+03	-0.3	1.2	-0.5	4.7	-0.2	4.7			3.5	11.4	0.2	4.7
MW-31-49	1/11/2016	3.00E+02													
MW-31-49	1/26/2016	7.44E+04	2.29E+03	-0.1	1.0	0.8	5.0	0.4	5.4			58.1	23.7	-4.4	6.8
MW-31-49	2/4/2016	4.46E+05	1.46E+04	0.7	1.2	-1.0	5.7	0.2	4.8			138.0	30.6	1.2	6.4
MW-31-49	2/8/2016	3.81E+04	2.66E+03	0.6	1.3	-3.0	6.7	2.2	8.4			0.0	34.5	-1.1	6.5
MW-31-49	2/12/2016	3.25E+04	2.53E+03	-0.3	1.2	-2.0	5.9	1.3	6.1			21.1	29.2	-4.8	13.3
MW-31-49	2/15/2016	1.38E+04	1.01E+03	-0.3	0.7	-0.4	7.1	-0.8	6.8			0.0	19.7	0.0	6.4
MW-31-49	2/22/2016	1.06E+04	1.07E+03	-0.2	1.0	0.9	7.7	1.8	7.1			11.7	16.9	0.1	7.4
MW-31-49	3/1/2016	2.74E+05	1.57E+04	0.1	1.0	-0.2	12.6	-3.1	6.4			73.8	35.7	3.9	8.5
MW-31-49	3/7/2016	2.37E+03	5.10E+02	0.6	1.4	2.0	10.3	0.2	6.6			4.2	20.3	2.3	7.4
MW-31-49	3/14/2016	6.41E+03	7.44E+02	0.1	1.3	3.1	5.5	3.4	5.7			-2.1	14.1	-0.2	6.8
MW-31-49	3/21/2016	3.61E+03	6.48E+02	0.0	1.5	-0.9	7.2	1.0	7.6			13.8	19.9	0.0	7.5
MW-31-49	3/28/2016	8.47E+03	1.02E+03	-0.7	1.0	2.3	6.2	0.5	6.1			4.0	15.9	2.7	5.9
MW-31-49	4/4/2016	1.35E+04	9.30E+02	-0.1	0.6	5.5	6.3	-0.2	6.0			5.8	18.9	-3.5	8.5
MW-31-49	4/11/2016	1.30E+04	9.06E+02	-0.8	1.0	-1.0	5.2	-5.6	7.8			14.4	15.9	-0.9	6.0
MW-31-49	4/18/2016	9.90E+03	9.51E+02	-0.2	1.1	3.7	7.0	-0.8	4.8			13.3	26.4	0.2	5.4
MW-31-49	4/25/2016	2.28E+05	6.48E+03	-0.3	1.3	1.1	8.2	0.6	9.5			286.0	57.3	1.3	8.3
MW-31-49	5/23/2016	7.25E+04	2.34E+03	0.4	1.6	1.5	7.5	1.4	6.8			86.4	33.9	-1.6	7.6
MW-31-49	8/9/2016	8.60E+04	2.58E+03	0.0	1.0	1.8	7.4	-3.2	8.0			34.6	25.7	-0.8	6.9
MW-31-49	11/8/2016	2.02E+03	5.76E+02	0.4	1.1	-0.7	5.9	0.4	5.1			7.8	12.7	5.8	11.3
MW-31-63	1/11/2016	2.63E+04													
MW-31-63	1/26/2016	5.47E+04	2.18E+03	-0.3	1.1	-1.6	7.1	0.5	7.7			0.5	20.2	-4.1	8.1

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-31-63	2/4/2016	1.03E+06	3.30E+04	1.2	1.3	2.3	5.3	3.3	5.2			0.0	19.9	-5.1	5.6
MW-31-63	2/8/2016	2.50E+06	7.29E+04	-0.8	0.8	-0.7	9.5	8.2	10.7			86.3	38.1	1.1	8.7
MW-31-63	2/12/2016	3.14E+06	9.24E+04	-0.1	1.3	1.2	6.8	5.0	8.3			132.0	35.1	0.3	6.5
MW-31-63	2/15/2016	3.91E+06	1.16E+05	-0.1	1.3	-0.4	5.3	2.7	5.7			195.0	35.4	1.2	6.6
MW-31-63	2/22/2016	4.47E+06	1.97E+04	-0.5	1.3	0.0	10.8	1.8	7.8			265.0	43.5	-1.4	9.0
MW-31-63	3/1/2016	3.76E+06	5.91E+04	1.0	1.6	-1.0	6.7	1.1	7.2			215.0	43.8	3.0	6.5
MW-31-63	3/7/2016	3.05E+06	8.43E+04	0.5	1.6	0.0	8.5	0.8	6.8			271.0	44.7	-2.2	5.6
MW-31-63	3/14/2016	3.16E+06	9.51E+04	-0.5	1.0	-1.1	5.1	-0.4	5.9			180.0	36.9	-0.9	4.8
MW-31-63	3/21/2016	2.25E+06	6.39E+04	-0.3	1.0	-0.1	6.0	4.7	7.9			259.0	42.9	6.8	13.7
MW-31-63	3/28/2016	2.28E+06	6.75E+04	-0.2	1.4	0.4	7.1	3.9	6.9			199.0	37.2	0.3	7.7
MW-31-63	4/4/2016	2.07E+06	3.09E+04	0.6	1.7	-0.4	6.6	-0.4	5.5			202.0	34.2	-1.0	5.3
MW-31-63	4/11/2016	2.00E+06	1.07E+04	0.0	1.6	-0.7	6.3	-0.9	7.3			149.0	35.4	-1.1	6.8
MW-31-63	4/18/2016	2.05E+06	6.63E+04	-0.4	1.1	3.0	4.0	-0.6	6.1			199.0	36.9	5.2	10.1
MW-31-63	4/25/2016	1.76E+06	5.01E+04	0.7	1.3	5.6	8.5	-1.1	10.2			200.0	43.5	-0.1	7.7
MW-31-63	5/4/2016	1.80E+06	5.97E+04	1.1	1.4	-3.5	6.5	4.1	8.8			170.0	43.8	0.1	7.2
MW-31-63	5/9/2016	1.64E+06	4.65E+04	-0.6	1.3	-2.5	6.4	0.0	9.6			215.0	42.9	-2.1	5.8
MW-31-63	5/16/2016	1.58E+06	4.59E+04	0.8	1.7	0.7	7.1	5.9	7.4	4.9	15.3	174.0	46.2	3.1	6.9
MW-31-63	5/23/2016	1.64E+06	1.14E+04	0.9	1.4	2.2	8.6	1.7	7.7			150.0	43.2	2.8	8.1
MW-31-63	5/31/2016	1.35E+06	4.11E+04	-0.2	0.8	-0.6	10.2	1.1	9.9			74.8	32.1	-0.3	8.5
MW-31-63	6/6/2016	1.33E+06	8.94E+03	0.1	1.3	0.4	4.8	-1.1	6.0	0.4	16.7	222.0	35.1	-0.1	6.5
MW-31-63	6/20/2016	1.10E+06	3.21E+04	0.8	1.6	-1.4	7.5	6.2	9.2	2.0	17.6	52.0	34.8	-3.3	9.0
MW-31-63	7/5/2016	9.80E+05	2.84E+04	-0.5	0.8	0.2	6.2	0.0	5.8	0.7	16.3	136.0	31.5	0.1	7.4
MW-31-63	7/18/2016	8.39E+05	1.28E+04	0.6	1.5	0.3	7.3	-1.5	8.7	9.1	17.1	148.0	44.7	-0.4	8.3
MW-31-63	8/5/2016	8.43E+05	1.25E+04	0.2	1.5	2.2	12.8	-0.4	6.8	2.6	17.6	112.0	34.2	-1.1	7.6
MW-31-63	8/9/2016	7.79E+05	7.71E+03	-0.3	1.0	-1.6	6.9	6.4	4.5			96.3	42.9	3.8	7.7
MW-31-63	8/23/2016	6.73E+05	1.00E+04			4.2	6.2	-0.6	5.8			132.0	36.3	6.1	8.0
MW-31-63	9/15/2016	6.53E+05	1.85E+04	-0.5	1.0	-0.4	4.9	2.7	4.5			86.1	34.2	0.0	12.3
MW-31-63	9/20/2016	6.15E+05	1.85E+04	-0.5	0.8	5.1	14.6	0.7	5.8			118.0	42.0	0.0	16.9
MW-31-63	9/26/2016	5.97E+05	1.79E+04	0.3	1.3	0.3	6.5	-0.9	6.9			114.0	41.1	14.0	15.9
MW-31-63	10/12/2016	6.13E+05	1.87E+04	-0.3	1.2	-1.0	7.2	0.1	5.6			109.0	37.2	11.1	10.2

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-31-63	10/26/2016	6.04E+05	1.74E+04	0.3	0.7	-0.4	5.6	0.6	6.1			44.2	31.2	4.3	9.0
MW-31-63	11/8/2016	5.62E+05	1.70E+04	0.6	1.2	-6.9	8.6	0.9	6.9			124.0	38.1	9.7	8.1
MW-31-63	11/21/2016	5.50E+05	1.55E+04	1.2	1.7	-1.6	5.3	0.1	5.9			128.0	33.3	16.9	12.2
MW-31-63	12/9/2016	5.73E+05	1.64E+04	0.2	1.6	-1.3	4.6	-1.6	5.2			211.0	36.6	12.2	15.3
MW-31-63	12/16/2016	4.98E+05	1.48E+04	0.4	1.2	-1.7	5.6	1.4	6.0			178.0	36.3	14.4	17.1
MW-31-63	12/20/2016	4.48E+05	1.28E+04	-0.2	1.0	1.6	4.7	0.1	5.5			189.0	35.1	4.4	11.9
MW-31-85	1/26/2016	5.22E+05	7.77E+03	-0.8	1.2	-0.2	7.3	-1.3	8.4			0.5	21.0	-0.3	8.6
MW-31-85	3/1/2016	1.32E+05	4.11E+03	-0.3	1.2	-2.2	6.2	-1.0	7.8			0.0	31.8	0.1	5.9
MW-31-85	3/7/2016	6.21E+04	6.90E+03	-0.8	1.3	-1.6	10.6	-5.0	7.9			0.0	31.2	-2.6	8.3
MW-31-85	3/14/2016	1.07E+05	3.48E+03	1.2	1.5	2.3	3.1	4.8	6.6			15.3	24.8	1.0	6.5
MW-31-85	3/21/2016	6.25E+04	2.18E+03	-0.3	0.9	1.9	6.8	-3.9	7.7			23.0	25.5	1.2	6.8
MW-31-85	3/28/2016	4.34E+04	2.11E+03	-0.7	1.0	-3.3	5.9	0.4	7.0			21.0	18.1	-2.5	5.5
MW-31-85	4/4/2016	3.23E+05	4.29E+03	-0.3	0.9	1.1	5.1	-1.2	6.3			0.0	25.1	1.1	6.5
MW-31-85	4/11/2016	5.66E+05	5.67E+03	0.4	1.3	1.4	6.0	-0.8	6.6			0.0	29.6	0.6	6.9
MW-31-85	4/18/2016	5.72E+05	1.69E+04	0.2	0.8	0.9	5.6	4.0	4.9			46.8	24.8	-1.4	5.8
MW-31-85	4/25/2016	4.01E+05	1.14E+04	0.2	1.4	-1.8	8.2	0.6	7.9			78.2	50.1	0.3	8.0
MW-31-85	5/23/2016	2.97E+05	4.65E+03	-1.2	1.4	0.0	11.3	1.2	6.8			117.0	36.0	1.2	7.3
MW-31-85	6/20/2016	1.99E+05	5.88E+03	-0.1	1.2	3.3	6.8	1.1	8.0	-5.1	16.3	111.0	42.6	-2.7	8.0
MW-31-85	7/18/2016	1.22E+05	3.66E+03	-0.7	0.9	0.0	7.2	-0.7	7.7	9.3	17.1	105.0	35.7	0.0	10.6
MW-31-85	8/9/2016	9.45E+04	2.74E+03	-0.1	1.0	2.7	8.2	-1.6	6.9			74.7	38.4	0.0	9.8
MW-31-85	9/15/2016	6.36E+04	2.14E+03	-0.6	0.9	1.2	5.6	3.9	4.8			76.9	35.7	1.3	7.6
MW-31-85	11/8/2016	5.34E+04	1.85E+03	-0.7	0.8	1.0	5.8	0.9	5.0			43.1	29.0	9.3	11.1
MW-31-85	12/9/2016	3.56E+04	1.62E+03	-0.4	1.5	-1.3	5.2	3.4	5.8			46.6	39.6	0.5	6.9
MW-31-85	12/20/2016	7.28E+04	2.20E+03	-1.1	1.4										
MW-32-149	1/26/2016	2.14E+02	3.45E+02	0.8	1.2	1.9	5.1	0.2	5.3			-1.4	13.5	1.3	5.3
MW-32-149	6/6/2016	9.72E+02	3.93E+02	0.0	1.3	2.8	6.5	0.1	7.4			-5.4	17.0	0.4	7.6
MW-32-149	8/9/2016	8.04E+02	4.20E+02	0.1	1.0	1.8	9.4	0.6	9.1			19.3	28.1	0.1	9.2
MW-32-149	11/10/2016	9.12E+02	4.95E+02	0.4	1.0	3.7	6.3	-0.5	6.0			-5.3	19.6	-6.8	9.7
MW-32-173	1/26/2016	3.26E+02	3.66E+02	-0.3	1.0	1.6	7.6	-2.0	9.6			11.7	21.0	3.7	8.4
MW-32-173	6/6/2016	7.45E+01	3.15E+02	-0.7	0.9	0.4	9.6	-1.6	7.6			2.8	20.3	3.2	11.2



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-32-173	8/9/2016	2.39E+02	3.69E+02	0.7	1.5	-3.7	9.6	-1.0	9.4			19.2	23.7	-3.8	8.7
MW-32-173	11/10/2016	2.35E+02	4.23E+02	0.4	1.0	2.8	6.1	3.1	7.2			3.9	16.0	-2.4	10.4
MW-32-190	1/26/2016	7.34E+02	6.33E+02	-0.2	1.2	1.2	6.1	-3.7	7.3			-0.6	15.5	-2.7	7.3
MW-32-190	6/6/2016	5.24E+02	3.60E+02	-1.2	1.5	3.8	5.9	2.7	5.2			-8.9	16.9	0.3	6.4
MW-32-190	8/9/2016	7.66E+02	4.14E+02	0.6	1.3	1.2	9.2	-2.7	7.0			-5.9	15.4	1.3	6.1
MW-32-190	11/10/2016	2.05E+02	4.17E+02	1.0	1.8	-1.3	5.4	-2.2	6.1			5.8	12.5	3.0	6.9
MW-32-48	2/22/2016	4.24E+06	1.96E+04	1.4	1.6	-4.0	6.2	7.1	8.9			1220.0	73.2	0.9	6.6
MW-32-48	2/26/2016	2.00E+06	1.34E+04	1.2	1.4	-0.5	7.6	0.9	6.3			598.0	54.6	-3.1	7.0
MW-32-48	2/29/2016	1.06E+06	9.75E+03	0.2	1.4	-2.7	5.8	3.4	5.9			549.0	59.1	6.7	7.7
MW-32-48	3/3/2016	2.05E+06	1.34E+04	-0.1	1.6	0.2	6.2	5.4	8.3			568.0	63.3	-2.7	7.5
MW-32-48	3/7/2016	7.55E+05	8.37E+03	1.0	1.7	7.8	10.9	1.3	7.6			492.0	60.0	2.2	7.1
MW-32-48	3/10/2016	2.26E+06													
MW-32-48	3/14/2016	2.47E+06													
MW-32-48	3/17/2016	2.46E+06													
MW-32-48	3/18/2016	2.48E+06													
MW-32-48	3/21/2016	2.03E+06													
MW-32-48	3/22/2016	1.78E+06													
MW-32-48	3/23/2016	1.63E+06													
MW-32-59	1/11/2016	1.23E+04													
MW-32-59	1/26/2016	8.97E+06	2.93E+05	0.4	1.3	0.2	7.7	6.5	14.9			4750.0	178.2	2.8	8.2
MW-32-59	2/4/2016	1.64E+07	5.10E+05	-0.2	1.5	0.9	5.6	20.5	14.6			5510.0	143.1	0.6	5.5
MW-32-59	2/8/2016	8.44E+06	2.45E+05	0.1	1.4	-6.6	8.0	0.0	9.0			2980.0	129.6	2.1	6.4
MW-32-59	2/12/2016	8.20E+06	2.34E+05	0.1	1.0	0.2	7.8	7.7	9.2			2280.0	106.8	-2.1	6.4
MW-32-59	2/15/2016	6.15E+06	1.76E+05	1.0	1.6	-0.2	5.0	7.6	8.9			1750.0	90.0	-0.6	5.3
MW-32-59	2/18/2016	2.30E+06	1.45E+04	-0.2	1.4	1.2	5.4	6.1	6.2			1180.0	87.3	-3.7	6.7
MW-32-59	2/22/2016	4.32E+06	1.99E+04	0.7	1.2	1.9	6.5	0.0	6.9			1170.0	77.1	-1.5	6.8
MW-32-59	2/26/2016	2.00E+06	4.26E+04	-0.7	0.8	-0.4	7.2	1.8	7.3			725.0	69.6	2.4	9.6
MW-32-59	2/29/2016	1.14E+06	1.01E+04	0.2	1.6	-0.4	5.4	3.8	6.7			539.0	55.8	1.2	6.5
MW-32-59	3/3/2016	1.64E+06	4.59E+04	0.0	1.5	-0.1	6.0	-3.2	7.4			615.0	62.4	0.4	5.6
MW-32-59	3/7/2016	5.46E+05	1.88E+04	-0.9	1.3	0.0	6.5	-1.5	7.9			535.0	58.5	-1.7	6.1

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		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-32-59	3/10/2016	2.10E+06	5.67E+04	-0.7	1.4	-3.3	8.6	2.7	10.9			682.0	78.0	-2.4	8.7
MW-32-59	3/15/2016	2.90E+06	9.12E+04	-0.2	1.2	-1.0	5.5	5.5	7.4			704.0	69.0	1.0	6.3
MW-32-59	3/17/2016	2.82E+06													
MW-32-59	3/18/2016	2.79E+06	8.94E+04	-1.0	1.2	-0.8	6.7	2.4	7.5			643.0	64.8	5.3	5.6
MW-32-59	3/21/2016	2.24E+06	6.66E+04	-0.4	1.2	-3.4	8.5	1.5	7.7			619.0	69.0	-0.6	7.8
MW-32-59	3/22/2016	2.04E+06													
MW-32-59	3/23/2016	1.82E+06													
MW-32-59	3/24/2016	1.91E+06	6.21E+04	-0.7	0.8	0.9	9.5	-1.2	9.4			528.0	65.7	0.1	9.7
MW-32-59	3/28/2016	1.53E+06	4.59E+04	0.3	1.6	-1.8	7.0	1.0	8.5			568.0	65.4	1.4	8.5
MW-32-59	4/1/2016	1.94E+06	6.30E+04	-1.2	1.4	1.1	6.2	0.2	6.8			682.0	62.1	-1.5	6.5
MW-32-59	4/4/2016	2.62E+06	8.37E+04	0.7	1.2	1.2	6.8	1.2	6.1			798.0	69.9	-0.6	7.2
MW-32-59	4/7/2016	2.09E+06	6.81E+04	-0.5	1.5	-0.8	7.5	1.7	6.7			976.0	82.5	2.7	6.8
MW-32-59	4/11/2016	2.35E+06	7.68E+04	-0.6	1.1	-3.0	5.9	1.5	10.4			790.0	74.4	-4.5	6.5
MW-32-59	4/14/2016	2.16E+06	6.99E+04	0.0	1.2	-2.8	5.7	0.7	6.3			799.0	71.1	-5.6	7.0
MW-32-59	4/18/2016	2.07E+06	6.36E+04	-0.2	1.5	1.8	5.8	-2.4	6.7			678.0	57.9	-1.4	5.3
MW-32-59	4/21/2016	2.10E+06	6.03E+04	-1.0	1.5	2.8	7.1	-1.2	7.0			843.0	75.0	1.9	5.7
MW-32-59	4/25/2016	3.75E+06	1.05E+05	0.3	1.4	-4.7	5.6	3.1	7.0			1290.0	86.1	0.3	5.5
MW-32-59	5/2/2016	2.49E+06	6.84E+04	0.2	1.5	-2.5	6.2	-1.1	8.3			1170.0	97.2	2.3	8.8
MW-32-59	5/9/2016	3.66E+05	1.04E+04	1.2	1.6	0.0	21.0	-1.9	10.1			506.0	64.2	-5.6	8.9
MW-32-59	5/16/2016	1.17E+06	3.45E+04	1.2	1.3	0.5	8.2	1.7	8.6	-1.8	12.8	724.0	80.4	-3.5	9.6
MW-32-59	5/23/2016	1.23E+06	3.60E+04	0.5	1.2	-0.3	5.8	0.7	5.4			777.0	66.3	-4.1	7.9
MW-32-59	5/31/2016	1.88E+06	6.24E+04	-0.8	1.0	2.8	5.0	4.8	7.2			714.0	73.2	0.3	6.5
MW-32-59	6/6/2016	1.49E+06	4.38E+04	0.3	1.2	-1.3	6.1	1.9	6.8			599.0	66.3	-1.6	7.5
MW-32-59	6/20/2016	1.37E+06	4.05E+04	-0.3	0.9	2.4	6.3	-1.7	7.7	10.5	16.8	572.0	59.1	0.0	10.2
MW-32-59	7/5/2016	1.24E+06	3.57E+04	0.2	1.5	-0.2	6.4	3.0	6.0	3.1	16.4	516.0	63.0	76.7	19.7
MW-32-59	7/18/2016	1.21E+06	9.06E+03			-3.2	8.9	1.5	7.0			442.0	68.4	87.1	25.2
MW-32-59	8/5/2016	3.37E+05	1.01E+04	-0.2	1.0	0.2	7.1	1.4	8.3	-0.7	16.2	239.0	53.4	29.7	14.4
MW-32-59	8/9/2016	5.19E+05	1.48E+04	0.4	0.9	7.0	6.4	-1.8	9.6			329.0	60.0	59.2	16.1
MW-32-59	8/23/2016	4.28E+05	6.45E+03			2.2	5.4	-0.7	4.8			324.0	42.9	34.8	13.9
MW-32-59	9/15/2016	8.87E+05	2.55E+04	-0.7	1.3	-1.6	4.9	5.0	6.5			470.0	54.6	52.9	14.0

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		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-32-59	9/20/2016	4.89E+05	8.37E+03	0.5	1.0	12.9	8.3	2.4	7.1			273.0	47.4	16.5	13.7
MW-32-59	9/26/2016	4.26E+04	1.69E+03	0.0	1.6	1.2	5.6	-0.4	5.0			175.0	40.5	0.9	7.4
MW-32-59	10/12/2016	1.87E+05	3.69E+03	0.1	0.9	2.4	5.7	4.5	5.9			120.0	45.6	12.3	14.2
MW-32-59	10/25/2016	2.00E+05	5.58E+03	1.4	1.7	1.5	5.7	2.3	6.2			176.0	45.9	16.3	13.4
MW-32-59	11/10/2016	1.05E+06	3.15E+04	-0.4	1.2	0.1	5.3	0.0	9.3			405.0	65.1	108.0	26.7
MW-32-59	11/21/2016	4.39E+05	1.27E+04	-0.6	1.4	5.7	5.6	2.9	6.2			250.0	48.3	31.1	16.4
MW-32-59	12/9/2016	1.78E+05	5.16E+03	1.5	1.9	1.4	5.7	3.2	6.8			170.0	44.7	11.8	10.2
MW-32-59	12/16/2016	3.83E+05	1.15E+04	0.1	1.3	1.2	6.6	3.3	6.9			224.0	51.9	31.1	14.8
MW-32-59	12/20/2016	3.62E+05	1.04E+04	0.5	1.2	2.6	5.4	0.0	7.9			310.0	54.0	32.3	13.1
MW-32-85	1/26/2016	1.91E+04	1.21E+03	0.0	0.9	-0.8	5.9	3.7	3.3			-1.0	17.3	1.7	6.5
MW-32-85	2/4/2016	1.69E+04	1.19E+03	-0.2	1.3	-1.4	7.8	-0.5	5.3			-2.4	17.6	0.2	6.1
MW-32-85	2/8/2016	1.69E+04	1.12E+03	0.0	1.0	3.4	8.1	0.6	6.0			6.5	17.7	0.4	8.4
MW-32-85	2/12/2016	2.07E+04	1.22E+03	0.2	1.0	-5.4	8.2	2.5	6.7			-4.7	16.8	-1.5	8.2
MW-32-85	2/15/2016	2.94E+04	1.57E+03	-0.6	1.0	0.6	6.0	3.8	7.1			4.2	17.6	-0.1	12.5
MW-32-85	2/18/2016	3.64E+04	1.87E+03	0.9	1.6	4.5	12.4	7.1	10.9			-4.4	22.8	-1.0	8.8
MW-32-85	2/22/2016	4.77E+04	2.09E+03	-1.0	1.4	2.8	12.4	4.5	4.3			-1.0	16.9	-1.0	7.7
MW-32-85	2/26/2016	6.44E+04	2.43E+03	0.9	1.8	1.9	5.5	1.7	5.2			-4.7	14.2	0.9	5.8
MW-32-85	2/29/2016	7.15E+04	2.54E+03	0.5	1.2	0.3	7.6	0.3	5.4			-1.3	17.5	-1.1	5.9
MW-32-85	3/3/2016	7.07E+04	7.32E+03	-0.4	1.4	-0.5	8.6	-4.4	9.1			4.1	22.5	-2.9	9.5
MW-32-85	3/7/2016	1.06E+05	3.12E+03	1.2	1.6	-2.6	7.3	0.6	7.1			-0.4	20.9	-1.8	8.3
MW-32-85	3/10/2016	1.24E+05													
MW-32-85	3/15/2016	1.65E+05													
MW-32-85	3/17/2016	1.81E+05	5.46E+03	-0.2	1.2	-0.1	6.0	0.7	6.8			0.4	16.0	2.1	7.2
MW-32-85	3/21/2016	1.80E+05	5.46E+03	-0.9	0.9	3.2	8.0	-3.0	7.7			-3.5	22.0	-13.9	11.9
MW-32-85	3/24/2016	1.92E+05	5.70E+03	-0.1	1.2	-6.3	9.9	-3.7	10.1			3.0	24.8	6.9	10.6
MW-32-85	3/27/2016	2.14E+05													
MW-32-85	4/1/2016	2.73E+05	3.93E+03	-0.4	0.8	0.3	5.3	-1.0	4.2			-0.2	12.8	4.9	8.6
MW-32-85	4/4/2016	2.57E+05	3.87E+03	0.4	1.2	2.4	7.1	4.2	7.4			12.2	19.5	2.5	8.7
MW-32-85	4/7/2016	2.56E+05	3.78E+03	0.2	1.5	-2.0	6.5	-2.5	6.8			-1.3	17.0	-0.5	6.8
MW-32-85	4/11/2016	2.63E+05	3.84E+03	0.4	1.0	-2.0	6.5	-2.6	7.7			3.2	17.6	-2.7	5.6

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-32-85	4/18/2016	2.63E+05	8.31E+03	-0.4	0.9	3.2	7.7	3.6	6.8			11.5	16.8	-2.7	8.2
MW-32-85	4/21/2016	2.50E+05	7.23E+03	0.5	1.3	-3.7	9.0	3.7	9.1			2.3	22.7	1.4	9.9
MW-32-85	4/25/2016	2.67E+05	7.74E+03	-1.1	1.4	0.2	5.0	3.2	4.6			4.7	12.2	1.4	4.8
MW-32-85	6/6/2016	2.62E+05	7.89E+03	0.8	1.4	1.9	5.5	1.4	6.2			0.0	18.9	-0.2	10.1
MW-32-85	8/9/2016	1.95E+05	3.75E+03	0.2	1.0	1.8	6.1	-2.0	6.7			3.4	15.9	2.3	4.1
MW-32-85	9/15/2016	2.02E+05	6.06E+03	0.3	1.4	1.8	6.5	4.5	7.0			4.8	17.8	-2.5	6.6
MW-32-85	11/10/2016	1.99E+05	6.00E+03	0.4	1.6	-1.7	6.6	0.5	4.3			0.6	12.0	0.2	7.3
MW-32-85	12/16/2016	2.17E+05	6.33E+03	1.0	1.1	1.9	5.3	0.8	5.0			-0.2	14.1	1.9	7.2
MW-32-85	12/20/2016	2.48E+05	7.53E+03	0.2	1.0	-6.6	8.6	3.7	4.7			1.8	14.8	0.0	8.6
MW-33	1/20/2016	9.55E+04	2.83E+03	-0.7	1.4	1.5	6.6	0.9	5.6			0.7	17.3	-2.1	8.8
MW-33	2/5/2016	8.94E+04	4.11E+03	-0.8	1.3	2.6	4.8	0.9	4.7			-2.6	13.8	0.6	6.1
MW-33	2/12/2016	1.02E+05	4.38E+03	-0.6	1.0	0.1	8.4	0.4	4.9			0.2	14.5	-0.4	5.9
MW-33	2/18/2016	1.30E+05	3.45E+03	-0.6	1.3	1.8	5.2	-1.5	5.4			0.5	14.3	-0.3	5.9
MW-33	2/24/2016	1.47E+05	3.66E+03	-0.4	1.3	3.2	5.1	-2.1	5.8			2.1	14.8	0.0	5.8
MW-33	3/3/2016	1.76E+05	3.99E+03	0.0	1.4	-0.7	5.2	-0.2	5.5			-0.8	17.1	-1.9	5.5
MW-33	3/8/2016	1.78E+05	1.09E+04	-0.6	1.3	0.4	5.6	-6.4	6.8			2.9	14.5	3.0	11.5
MW-33	3/10/2016	2.23E+05	1.20E+04	-1.1	1.3	0.3	7.6	6.0	11.7			7.3	20.9	-0.9	8.6
MW-33	3/15/2016	2.49E+05	8.13E+03	-0.5	1.1	3.6	5.6	3.8	5.1			-1.0	15.0	0.7	5.1
MW-33	3/24/2016	2.86E+05	8.43E+03	0.5	1.3	-0.5	7.7	0.3	8.5			-8.0	22.4	-2.4	6.8
MW-33	3/29/2016	3.14E+05	9.33E+03	0.2	1.4	-1.9	6.2	4.5	7.2			3.7	16.8	0.3	5.9
MW-33	4/6/2016	2.16E+05	4.47E+03	0.0	1.2	-1.5	6.6	3.1	5.8			0.9	15.9	0.0	6.4
MW-33	4/12/2016	2.05E+05	3.42E+03	-0.5	1.2	2.7	8.8	1.7	6.2			3.6	15.3	-0.3	5.0
MW-33	4/19/2016	2.03E+05	6.54E+03	-0.2	1.3	2.3	7.1	-2.0	7.6			-1.1	22.9	3.4	5.8
MW-33	4/27/2016	2.17E+05	7.29E+03	-0.9	1.4	0.3	6.5	-1.3	5.7			9.3	20.5	-0.8	7.3
MW-33	5/12/2016	2.83E+05	8.22E+03	-1.2	1.3	0.3	6.4	-1.8	5.3	1.1	14.5	1.9	17.6	-0.3	5.9
MW-33	5/25/2016	2.95E+05	8.76E+03	-0.3	1.3	4.1	7.6	-4.4	8.7			11.3	20.3	6.4	7.7
MW-33	6/9/2016	2.98E+05	4.32E+03	-0.3	1.4	-0.6	5.7	-0.8	5.0	4.9	16.2	2.8	13.0	-1.5	6.0
MW-33	6/22/2016	2.14E+05	6.42E+03												
MW-33	7/20/2016	5.38E+04	2.05E+03	-0.3	1.0	-2.2	5.3	1.2	5.8	4.0	18.2	-6.0	11.6	1.4	7.3
MW-33	8/12/2016	4.62E+04	1.75E+03	-0.1	0.8	3.2	7.4	3.3	7.7			3.0	18.2	1.4	6.5



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-36-41	2/23/2016	5.12E+04													
MW-36-41	3/9/2016	9.38E+04													
MW-36-41	3/19/2016	1.16E+05													
MW-36-41	3/26/2016	1.31E+05													
MW-36-41	4/3/2016	1.43E+05													
MW-36-41	4/20/2016	1.31E+05													
MW-36-41	4/26/2016	1.33E+05													
MW-36-41	5/6/2016	1.22E+05	3.06E+03	3.9	2.0	-1.6	6.7	-1.2	4.5			-3.8	15.8	-5.1	8.3
MW-36-41	5/13/2016	1.18E+05													
MW-36-41	5/20/2016	1.14E+05													
MW-36-41	5/27/2016	1.14E+05													
MW-36-41	6/3/2016	9.66E+04													
MW-36-41	6/8/2016	8.12E+04													
MW-36-41	6/16/2016	9.37E+04													
MW-36-41	8/8/2016	1.15E+05	3.00E+03	4.7	1.6	1.2	5.2	0.4	5.4			2.4	12.9	-1.5	4.7
MW-36-41	9/16/2016	1.20E+05	3.96E+03	3.8	1.7	1.0	5.7	-0.1	5.3			6.7	13.2	-1.5	5.8
MW-36-41	11/3/2016	1.29E+05	3.90E+03	4.0	2.0	2.4	4.7	0.2	5.4			-5.4	13.2	2.0	5.6
MW-36-41	11/22/2016	9.54E+04	2.84E+03	3.8	2.1	2.6	6.3	-2.8	6.0			-6.1	15.7	-2.9	8.6
MW-36-41	12/19/2016	6.24E+04	2.05E+03	3.1	1.4										
MW-36-52	1/29/2016	5.36E+03	6.90E+02	4.5	2.0	-1.8	7.9	3.4	6.1			-7.0	17.6	4.1	7.7
MW-36-52	2/10/2016	4.80E+03													
MW-36-52	3/26/2016	4.90E+03													
MW-36-52	5/6/2016	1.22E+04	1.02E+03	5.0	2.2	-2.1	9.9	0.4	5.7			-11.5	15.0	0.1	6.6
MW-36-52	8/8/2016	7.67E+03	8.31E+02	2.0	1.4	3.2	10.5	-1.3	5.2			-2.6	14.7	4.8	5.4
MW-36-52	9/16/2016	9.23E+03	1.17E+03	2.0	1.8	1.4	5.2	-0.4	5.1			-1.8	10.9	-0.1	5.7
MW-36-52	11/3/2016	9.24E+03	8.67E+02	4.5	2.2	0.6	4.6	-1.5	4.5			-7.8	14.6	-2.1	6.4
MW-36-52	12/19/2016	1.20E+04	9.69E+02	3.2	1.5										
MW-37-22	2/3/2016	2.75E+03	6.00E+02	6.8	1.8	2.9	9.3	-0.3	6.5			0.1	15.5	0.8	6.7
MW-37-22	3/26/2016	5.10E+03													
MW-37-22	5/5/2016	2.41E+04	1.44E+03	8.3	2.4	-1.3	4.3	-1.2	6.0			-0.8	13.7	-1.8	4.9







Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-39-183	6/9/2016	4.62E+01	3.12E+02	0.0	0.6	-0.7	6.8	0.7	8.0			0.7	19.9	5.9	7.1
MW-39-183	10/18/2016	1.72E+02	3.78E+02	0.2	0.8	-1.6	7.4	-12.1	18.6			0.2	18.2	0.5	7.9
MW-39-195	2/17/2016	3.00E+02													
MW-39-195	2/22/2016	3.00E+02													
MW-39-195	6/9/2016	3.40E+01	3.15E+02	0.5	1.2	-5.4	6.5	-0.6	5.8			2.7	14.7	0.0	7.1
MW-39-195	10/18/2016	2.84E+02	3.84E+02	0.1	0.7	2.0	6.4	-2.7	5.9			3.8	17.6	-0.4	7.7
MW-39-67	2/17/2016	3.00E+02													
MW-39-67	2/22/2016	3.00E+02													
MW-39-67	6/9/2016	1.41E+02	3.21E+02	0.1	1.3	-3.9	7.4	3.6	5.0			4.9	12.5	0.1	5.5
MW-39-67	10/18/2016	3.90E+02	3.96E+02	1.3	1.3	-1.6	5.8	0.0	4.4			-6.9	16.5	-3.5	7.3
MW-39-84	2/17/2016	3.00E+02													
MW-39-84	6/9/2016	8.02E+01	3.15E+02	0.7	1.5	0.3	6.1	0.7	6.6			-2.8	16.5	-6.7	11.6
MW-39-84	10/18/2016	3.21E+02	3.87E+02	0.6	0.9	0.2	6.9	1.2	4.9			-2.5	14.7	-0.7	6.6
MW-40-100	3/24/2016	1.26E+02	2.76E+02	-1.1	1.4	-1.5	8.1	6.4	8.2			16.0	36.3	-0.1	8.0
MW-40-100	6/29/2016	1.44E+02	4.26E+02	-0.5	1.5	0.4	7.6	2.3	8.9			4.1	21.0	4.1	10.1
MW-40-100	8/24/2016	1.72E+02	4.32E+02	-0.1	1.1	1.1	5.4	-1.4	4.6			4.7	14.0	-2.7	6.0
MW-40-100	11/1/2016	4.23E+01	3.60E+02	0.1	1.5	0.9	3.8	-2.4	3.6			-1.2	9.9	1.9	4.4
MW-40-127	3/24/2016	2.00E+02	2.84E+02	-0.3	1.1	-4.8	6.2	0.5	6.8			2.0	16.5	-1.4	8.3
MW-40-127	6/29/2016	1.45E+02	4.23E+02	-0.4	0.7	-0.9	6.5	3.5	7.2			-4.3	17.7	-2.1	8.3
MW-40-127	8/24/2016	2.72E+02	4.41E+02	-0.3	0.9	0.9	4.9	0.6	4.9			6.1	11.6	0.3	5.3
MW-40-127	11/1/2016	1.64E+02	3.78E+02	1.0	1.5	0.5	5.6	1.0	4.6			0.0	13.7	-2.5	6.4
MW-40-162	3/24/2016	-8.90E+01	3.48E+02	1.3	1.7	3.4	8.2	-0.5	7.4			-4.1	20.6	-2.2	7.7
MW-40-162	6/29/2016	4.02E+01	4.20E+02	0.6	1.5	-3.2	9.5	-0.2	8.4			3.3	19.7	0.9	10.2
MW-40-162	8/24/2016	1.20E+02	4.29E+02	0.2	1.4	0.2	5.6	1.7	5.3			-5.5	18.5	2.6	6.1
MW-40-162	11/1/2016	5.08E+00	3.54E+02	0.5	1.3	0.0	5.2	-1.6	5.9			-6.8	12.6	1.9	5.9
MW-40-27	3/24/2016	1.06E+02	2.77E+02	-0.1	1.5	-0.5	7.6	-3.5	7.6			10.4	18.7	-5.5	7.7
MW-40-27	6/29/2016	-1.35E+02	3.60E+02	0.3	1.1	3.0	6.8	-0.4	6.3			-0.4	20.4	3.2	9.3
MW-40-27	8/24/2016	-5.85E+01	4.05E+02	0.8	1.3	1.1	4.4	2.0	4.3			3.4	10.7	1.5	5.1
MW-40-27	11/1/2016	9.67E+00	3.51E+02	1.3	1.7	-1.2	5.3	-0.7	5.4			-6.1	11.6	-1.1	5.9
MW-40-46	3/24/2016	2.16E+02	2.91E+02	0.2	1.6	2.6	8.3	-0.3	6.8			0.4	19.1	0.3	7.6



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		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-42-78	4/6/2016	4.00E+03													
MW-42-78	5/26/2016	1.18E+04	9.90E+02	0.0	1.7	2.1	5.9	1.7	5.8	10.2	12.4	2.1	18.0	-0.4	6.3
MW-42-78	8/11/2016	7.77E+03	7.59E+02	0.0	1.5	2.5	4.9	3.0	6.3	6.7	16.0	-2.7	11.8	0.7	5.1
MW-42-78	9/19/2016	4.51E+03	6.45E+02	-0.4	0.7	2.5	4.2	-1.4	4.0			-7.2	10.5	0.0	4.4
MW-42-78	11/7/2016	5.85E+03	7.02E+02	-0.1	1.3	4.9	16.3	4.5	6.0	-5.0	20.2	-6.7	16.9	0.5	6.5
MW-42-78	12/13/2016	5.82E+03	7.50E+02	1.5	1.7	2.8	6.2	2.2	5.4	-6.6	21.9	2.7	11.9	-0.8	5.9
MW-43-28	3/24/2016	4.07E+02	3.99E+02	-0.6	1.3	2.6	6.5	1.1	7.4			2.8	16.5	-3.3	7.5
MW-43-28	6/13/2016	3.56E+02	3.42E+02	-0.2	1.3	1.9	5.3	-2.3	5.5			10.7	17.3	-3.4	6.5
MW-43-28	8/22/2016	5.53E+01	3.27E+02	0.5	1.4	-1.2	4.8	1.7	4.3			-1.5	13.1	3.0	6.5
MW-43-28	10/17/2016	2.77E+02	3.39E+02	-0.5	0.6	-1.5	7.3	-0.3	6.1			-11.1	16.9	-2.6	8.3
MW-43-62	3/24/2016	1.77E+02	3.93E+02	-0.1	1.3	-0.6	11.8	1.5	12.9			-11.5	28.7	-1.6	12.8
MW-43-62	6/13/2016	2.40E+02	3.27E+02	-0.8	1.0	-1.3	5.2	-3.9	5.3			3.2	13.4	0.8	6.6
MW-43-62	8/22/2016	-1.27E+02	3.33E+02	-0.5	1.4	-2.1	5.7	3.9	5.8			2.3	15.8	0.7	8.3
MW-43-62	10/17/2016	1.40E+02	3.21E+02	0.6	1.1	2.8	7.1	-2.8	9.5			-4.8	18.1	0.8	6.9
MW-44-102	3/30/2016	2.17E+02	3.63E+02	-0.6	1.4	-0.7	8.8	-3.5	7.7			2.2	23.8	-0.4	8.8
MW-44-102	6/13/2016	3.50E+02	3.42E+02	0.3	1.4	-0.2	7.8	-1.5	8.4			-1.5	20.2	-1.6	10.1
MW-44-102	8/22/2016	3.53E+02	3.69E+02	-0.3	0.7	2.5	5.1	1.2	6.0			-1.7	12.1	-3.3	6.6
MW-44-102	10/18/2016	4.24E+02	4.65E+02	0.8	1.0	0.2	9.2	-2.1	4.7			2.6	12.8	0.8	6.8
MW-44-66	6/13/2016	3.22E+02	3.45E+02	0.1	1.4	2.1	7.1	1.8	6.7			-11.1	18.6	2.7	7.9
MW-44-66	8/22/2016	1.41E+02	3.36E+02	0.0	1.6	-5.1	10.0	3.0	7.2			-2.5	18.4	3.4	8.6
MW-44-66	10/18/2016	2.87E+02	3.75E+02	0.9	1.4	2.1	6.0	3.5	6.8			-3.8	16.0	1.3	8.3
MW-45-42	3/2/2016	8.16E+02	4.29E+02	-0.3	1.3	0.0	7.9	2.9	10.1			-11.3	20.1	-0.7	7.9
MW-45-42	5/18/2016	2.11E+03	5.31E+02	-0.2	1.0	1.4	5.2	1.5	6.3			-6.3	13.7	1.6	6.2
MW-45-42	8/3/2016	8.43E+02	4.59E+02	-0.3	0.7	1.6	5.8	0.1	5.7			-1.1	13.5	-0.9	6.8
MW-45-42	10/19/2016	1.06E+03	4.59E+02	-0.5	0.9	2.7	7.1	-2.7	6.0			-1.2	16.2	-1.0	8.6
MW-45-61	3/2/2016	9.64E+02	5.13E+02	-0.9	1.4	2.0	7.4	1.3	7.3			5.5	17.9	-0.7	7.6
MW-45-61	5/17/2016	1.04E+03	4.29E+02	0.0	1.0	-3.6	6.1	-2.9	7.8			-12.7	17.8	-0.6	10.3
MW-45-61	8/2/2016	4.10E+03	6.78E+02	-0.6	0.9	-0.7	6.2	1.1	5.5			-7.3	13.2	0.9	5.0
MW-45-61	10/19/2016	6.07E+03	7.92E+02	0.6	1.0	0.8	6.8	1.2	5.1			-5.2	16.0	0.6	7.6
MW-46	1/22/2016	1.08E+03	4.20E+02	-0.5	0.8	0.6	6.3	-0.9	7.2			-1.4	18.1	0.5	7.2

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-46	6/2/2016	1.28E+03	4.47E+02	0.9	1.4	-2.4	8.8	4.4	8.3			6.5	18.6	1.6	9.9
MW-46	8/17/2016	1.14E+03	4.17E+02	-0.1	0.8	2.7	4.4	-2.2	4.5			0.8	12.8	-0.8	4.4
MW-46	10/17/2016	1.03E+03	4.05E+02	0.9	1.0	-0.4	5.7	-5.2	6.3			-5.8	13.7	0.6	8.1
MW-47-56	2/16/2016	6.13E+02	3.75E+02	0.6	1.3	-4.8	9.0	0.9	5.1			-4.4	15.8	3.7	6.0
MW-47-56	3/9/2016	3.00E+02													
MW-47-80	2/16/2016	1.81E+03	5.13E+02	0.2	1.3	3.7	5.9	0.0	5.5			2.2	13.1	-0.9	5.7
MW-47-80	3/9/2016	3.60E+03													
MW-49-26	2/9/2016	2.87E+03	5.55E+02	11.8	2.7	-2.3	6.3	7.4	6.9	-8.5	14.6	-2.2	16.4	1.2	6.5
MW-49-26	3/1/2016	3.80E+03													
MW-49-26	3/11/2016	3.80E+03													
MW-49-26	3/23/2016	4.30E+03													
MW-49-26	4/2/2016	4.50E+03													
MW-49-26	4/20/2016	5.00E+03													
MW-49-26	5/19/2016	7.06E+03	7.32E+02	12.9	2.9	0.0	8.0	5.9	6.3	2.8	14.4	2.1	17.3	-2.0	8.3
MW-49-26	6/14/2016	9.40E+03													
MW-49-26	8/25/2016	1.14E+04	1.05E+03	13.2	3.0	-1.1	8.1	2.1	5.4	3.0	13.4	3.4	14.6	-2.4	8.0
MW-49-26	9/20/2016	1.20E+04	1.32E+03	16.0	3.2	0.3	8.3	-1.2	5.9			-2.7	17.3	0.9	7.5
MW-49-26	10/31/2016	1.46E+04	1.07E+03	14.2	4.6	-0.1	8.4	2.8	7.1	11.7	16.5	-2.3	18.7	-0.3	9.5
MW-49-26	12/6/2016	1.57E+04													
MW-49-42	2/9/2016	4.53E+03	6.51E+02	18.5	3.1	0.0	5.8	-2.2	7.3	-6.7	15.2	-1.6	16.9	-0.6	5.8
MW-49-42	3/1/2016	4.80E+03													
MW-49-42	3/11/2016	4.90E+03													
MW-49-42	3/23/2016	4.90E+03													
MW-49-42	4/2/2016	5.10E+03													
MW-49-42	4/20/2016	6.30E+03													
MW-49-42	5/19/2016	1.00E+04	8.64E+02	16.4	3.0	-3.8	9.2	1.8	8.0	-1.1	14.2	6.8	18.5	-1.7	8.7
MW-49-42	6/14/2016	1.17E+04													
MW-49-42	8/25/2016	1.74E+04	1.28E+03	11.7	2.9	0.0	4.9	-2.9	5.4	7.4	14.7	0.4	13.8	-0.6	6.5
MW-49-42	9/20/2016	1.53E+04	1.44E+03	14.9	3.0	-1.6	5.2	-0.1	5.9			-4.1	14.3	-0.4	6.7
MW-49-42	10/31/2016	1.75E+04	1.14E+03	17.0	3.4	1.3	5.1	-1.1	4.4	12.0	18.2	-0.6	13.2	1.7	4.9

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-49-42	12/6/2016	1.70E+04													
MW-49-65	2/9/2016	3.50E+03	6.09E+02	9.5	2.7	-1.5	5.2	-1.3	5.4	-4.0	13.5	-3.7	13.7	-0.8	5.2
MW-49-65	5/19/2016	5.22E+03	6.48E+02	11.3	2.7	2.7	7.1	-0.8	7.1	2.1	16.2	-3.5	18.2	-0.6	6.8
MW-49-65	8/25/2016	9.48E+03	9.69E+02	9.0	2.6	1.6	5.6	-0.8	4.7	1.6	13.3	-4.6	19.3	-0.5	5.9
MW-49-65	10/31/2016	1.19E+04	9.84E+02	10.9	2.9	-3.7	4.7	5.2	6.6	-7.5	19.0	4.2	13.2	0.0	9.7
MW-50-42	1/29/2016	3.15E+02	4.08E+02	1.1	1.2	1.9	6.0	0.3	6.7			2.8	17.8	-3.9	6.8
MW-50-42	2/17/2016	1.06E+03	4.32E+02	0.3	1.1	0.4	5.2	3.5	6.8	-5.6	13.3	2.3	14.6	-1.3	5.7
MW-50-42	3/2/2016	3.50E+03													
MW-50-42	3/17/2016	3.54E+04													
MW-50-42	3/31/2016	3.58E+04													
MW-50-42	4/12/2016	2.95E+04													
MW-50-42	4/26/2016	2.20E+04	1.35E+03	4.9	2.0	0.7	8.0	2.1	7.7	-3.6	20.1	-3.6	20.0	2.9	11.6
MW-50-42	5/9/2016	5.89E+03	7.65E+02			4.9	7.7	2.2	5.7			7.2	13.6	0.4	5.2
MW-50-42	5/26/2016	1.20E+03													
MW-50-42	6/8/2016	1.60E+03													
MW-50-42	6/21/2016	5.00E+02													
MW-50-42	8/25/2016	9.28E+03	9.66E+02	4.7	2.1	1.6	5.4	0.8	4.6	-1.7	12.5	-14.1	17.9	1.9	6.3
MW-50-42	9/21/2016	4.66E+03	6.69E+02	3.8	2.2	-1.1	5.4	0.3	5.5			0.8	12.7	0.4	4.6
MW-50-42	11/4/2016	1.33E+04	1.08E+03	6.2	1.5	5.3	10.0	-1.3	4.9	12.3	17.6	-3.5	12.7	5.9	19.1
MW-50-66	1/29/2016	6.35E+03	7.77E+02	21.9	3.2	-2.6	6.7	1.1	6.5			-10.2	18.3	3.7	7.2
MW-50-66	2/17/2016	7.89E+03	7.65E+02	23.1	3.6	-1.1	5.6	2.1	6.7	-0.2	19.2	-7.1	14.4	-1.4	5.8
MW-50-66	3/2/2016	8.70E+03													
MW-50-66	3/17/2016	1.07E+04													
MW-50-66	3/31/2016	8.80E+03													
MW-50-66	4/12/2016	1.16E+04													
MW-50-66	4/26/2016	1.73E+04	1.23E+03	24.6	4.0	1.4	8.0	2.8	7.9	-8.6	14.4	-3.0	16.4	-2.6	8.8
MW-50-66	8/25/2016	3.44E+04	1.76E+03	27.0	4.4	1.4	4.7	1.5	4.2	10.1	14.3	1.8	11.0	0.0	5.4
MW-50-66	11/4/2016	3.81E+04	2.76E+03	18.6	2.3	-2.7	5.1	-0.9	3.6	11.5	17.8	5.8	12.1	-0.4	5.9
MW-51-104	3/24/2016	-2.78E+01	3.84E+02	0.0	1.3	3.8	7.7	1.5	7.6			-3.6	21.5	0.0	21.1
MW-51-104	6/28/2016	7.87E+01	3.99E+02	0.6	1.1	3.5	6.2	2.7	6.3			-1.4	14.1	1.1	8.1

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		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-51-104	8/24/2016	2.31E+02	4.47E+02	0.1	1.3	2.1	4.6	0.7	4.9			-7.4	9.8	-0.3	4.8
MW-51-104	11/2/2016	1.84E+02	3.48E+02	0.3	1.1	1.5	4.7	2.8	4.6			-0.9	9.6	0.4	5.2
MW-51-135	3/24/2016	-1.15E+02	3.72E+02	0.1	1.3	0.9	6.0	1.5	6.2			5.1	16.8	-2.2	6.9
MW-51-135	6/28/2016	-3.97E+01	4.02E+02	-0.4	1.2	2.2	8.0	-1.7	8.5			-3.2	21.2	-0.8	10.0
MW-51-135	8/24/2016	6.31E+01	3.78E+02	-0.2	1.2	-0.9	8.2	1.2	5.8	5.2	14.2	-7.1	15.6	2.7	7.4
MW-51-135	11/2/2016	1.68E+02	3.48E+02	0.3	0.7	-9.2	8.9	-1.7	6.5			-4.7	16.5	-3.7	6.8
MW-51-163	3/24/2016	9.88E-01	3.75E+02	0.4	1.2	0.8	8.3	-0.3	7.6			0.1	17.2	-3.8	6.6
MW-51-163	6/28/2016	3.29E+01	4.17E+02	-0.2	1.2	0.0	8.7	2.0	6.4			-8.5	17.0	-0.6	7.2
MW-51-163	8/24/2016	-9.94E+01	3.60E+02	0.3	1.3	1.5	6.0	4.1	11.9	4.7	13.0	-0.4	15.0	2.4	6.5
MW-51-163	11/2/2016	1.57E+02	3.39E+02	0.4	0.9	-2.5	5.6	-0.2	5.3			-7.4	12.8	-2.9	6.7
MW-51-189	3/24/2016	2.84E+01	3.69E+02	0.4	1.4	0.0	9.2	1.6	5.7			-4.7	14.2	1.0	5.9
MW-51-189	6/28/2016	4.93E+01	4.26E+02	0.0	0.9	0.5	8.6	-0.8	7.1			-2.5	22.4	0.3	10.8
MW-51-189	8/24/2016	-1.07E+02	3.60E+02	-0.4	1.2	1.0	4.7	0.1	5.3	4.2	14.1	-0.3	13.8	-1.6	5.3
MW-51-189	11/2/2016	1.19E+02	3.39E+02	0.0	1.0	0.0	8.6	0.7	4.2			-1.6	12.3	0.8	5.0
MW-51-40	3/24/2016	1.06E+02	3.75E+02	-1.0	1.1	1.1	7.1	2.6	7.4			-1.6	20.8	-2.0	8.7
MW-51-40	6/28/2016	-1.43E+01	3.99E+02	-0.6	1.2	3.4	6.2	-0.1	6.2			-0.4	15.5	-3.4	6.4
MW-51-40	8/24/2016	3.62E+02	4.50E+02	-0.4	1.0	0.7	5.5	1.6	4.7			-1.3	14.5	-2.5	7.2
MW-51-40	11/2/2016	1.17E+02	3.27E+02	0.1	0.6	2.7	4.6	1.7	4.5			-1.5	13.2	4.0	5.3
MW-51-79	3/24/2016	1.80E+02	3.99E+02	-0.2	0.9	-0.2	6.0	-1.3	6.1			-1.2	16.6	-6.4	6.8
MW-51-79	6/28/2016	8.82E+01	4.14E+02	0.5	1.0	0.6	6.8	2.4	6.5			0.7	16.3	2.4	8.1
MW-51-79	8/24/2016	2.00E+02	4.44E+02	0.4	1.3	0.5	5.3	2.2	4.7			1.8	14.7	1.1	5.3
MW-51-79	11/2/2016	9.16E+01	3.18E+02	-0.4	0.8	3.1	7.4	-3.5	8.2			-3.9	15.8	-2.7	9.6
MW-52-122	2/25/2016	3.00E+02													
MW-52-122	5/5/2016	1.19E+02	3.21E+02	-0.4	1.3	-1.1	7.4	1.0	8.9			4.7	19.7	2.0	8.4
MW-52-122	11/4/2016	-3.84E+01	3.63E+02	0.9	1.6	1.9	5.9	0.2	4.2			-1.2	11.3	3.5	5.3
MW-52-162	2/25/2016	3.00E+02													
MW-52-162	5/5/2016	2.44E+02	4.17E+02	-0.8	1.4	-2.1	10.7	-1.6	5.7			-0.4	16.7	-0.3	6.4
MW-52-162	11/4/2016	2.32E+02	3.63E+02	0.6	0.7	-1.2	5.4	-2.9	6.4			1.9	12.1	0.2	6.5
MW-52-18	2/25/2016	3.00E+02													
MW-52-18	5/5/2016	3.14E+03	5.79E+02	-0.5	1.1	2.1	5.4	5.3	5.9			-2.3	14.1	-2.9	6.3



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-53-82	4/13/2016	7.60E+03													
MW-53-82	5/10/2016	3.40E+03													
MW-53-82	5/25/2016	2.15E+04	1.35E+03	0.0	1.6	2.3	6.3	0.1	6.0	2.1	11.7	10.6	14.9	2.1	5.8
MW-53-82	8/16/2016	3.37E+03	5.61E+02	0.1	0.6	2.9	4.3	2.0	5.1	15.1	17.2	4.4	11.9	0.3	3.8
MW-53-82	9/19/2016	3.16E+04	1.53E+03	0.5	1.1	0.0	10.7	1.2	3.6			1.2	13.0	0.8	4.7
MW-53-82	11/7/2016	4.21E+03	6.99E+02	0.9	1.5	-1.5	6.8	0.8	6.5	-17.7	19.4	6.6	18.5	-1.3	7.2
MW-53-82	12/13/2016	7.91E+02	4.41E+02	0.2	1.1	-1.7	6.7	-0.6	6.0			5.0	12.5	0.9	6.7
MW-53-82	12/21/2016	1.88E+03	4.89E+02	0.7	1.3										
MW-54-123	2/3/2016	6.66E+03	7.86E+02	1.2	1.8	1.1	5.3	0.4	6.4	-5.2	12.7	2.1	14.9	-4.0	5.9
MW-54-123	5/16/2016	4.97E+03	7.23E+02	0.5	1.2	-0.1	7.8	-2.3	6.8	-1.1	13.6	-0.9	19.4	-5.8	8.8
MW-54-123	8/15/2016	5.14E+03	6.51E+02	0.7	1.0	-1.8	7.4	-0.2	6.2	-10.5	14.7	0.9	13.3	2.3	5.5
MW-54-123	11/3/2016	4.53E+03	9.87E+02	1.1	1.0	0.9	7.0	0.9	5.9	14.9	16.7	8.4	27.3	-2.5	6.3
MW-54-144	2/3/2016	5.56E+03	7.38E+02	4.4	1.7	1.2	5.6	5.6	6.0	0.9	13.6	2.3	15.5	0.7	5.9
MW-54-144	2/18/2016	4.70E+03													
MW-54-144	3/3/2016	5.10E+03													
MW-54-144	3/15/2016	1.01E+04													
MW-54-144	3/31/2016	5.90E+03													
MW-54-144	4/12/2016	5.90E+03													
MW-54-144	5/16/2016	7.78E+03	8.52E+02	5.5	1.8	-3.0	6.7	5.6	8.6	-0.9	13.9	1.5	18.2	0.4	7.7
MW-54-144	8/15/2016	1.22E+04	9.15E+02	5.8	1.8	0.0	11.4	-1.3	5.1	13.1	17.9	-3.6	16.9	2.7	5.8
MW-54-144	11/3/2016	1.19E+04	1.58E+03	7.8	1.7	-0.7	5.3	-3.4	4.7	11.2	18.3	2.9	12.8	0.1	5.3
MW-54-173	2/3/2016	4.27E+03	6.78E+02	2.5	1.3	0.3	5.2	0.4	3.8	1.5	15.3	-2.1	12.0	-3.1	5.0
MW-54-173	5/16/2016	4.23E+03	6.72E+02	1.7	1.3	0.6	5.7	-5.9	7.9	-5.2	14.6	-4.4	15.6	0.4	6.2
MW-54-173	8/15/2016	4.19E+03	6.09E+02	2.4	1.4	1.5	5.6	3.2	6.6	15.4	17.9	9.0	15.3	-3.2	6.5
MW-54-173	11/3/2016	4.79E+03	1.01E+03	3.6	1.4	0.6	5.0	2.8	5.2	15.9	18.6	4.9	12.4	0.7	4.8
MW-54-190	2/3/2016	5.17E+03	7.14E+02	11.7	2.5	0.7	5.7	3.6	5.5	4.5	13.5	4.9	14.5	0.7	6.3
MW-54-190	5/16/2016	4.44E+03	6.90E+02	12.0	2.2	2.0	6.0	-0.9	6.4	-0.2	14.3	9.5	15.5	-3.4	6.8
MW-54-190	8/15/2016	1.08E+04	8.73E+02	10.6	2.3	-1.1	4.6	-0.3	5.1	13.9	17.7	8.6	21.1	-0.8	5.3
MW-54-190	11/3/2016	1.58E+04	1.82E+03	11.7	2.1	0.4	7.8	2.4	9.6	17.5	18.3	-0.3	16.6	-0.6	7.6
MW-54-37	2/3/2016	2.53E+03	5.25E+02	2.7	1.6	-0.7	5.3	0.1	5.0	8.2	17.0	0.8	14.9	-2.4	5.9



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-54-37	2/18/2016	2.50E+03													
MW-54-37	3/3/2016	2.30E+03													
MW-54-37	3/15/2016	2.80E+03													
MW-54-37	3/31/2016	3.40E+03													
MW-54-37	4/12/2016	2.30E+03													
MW-54-37	5/16/2016	3.20E+03	6.15E+02	3.1	1.5	-1.3	5.6	0.5	6.9	-3.9	14.1	-1.0	13.6	2.7	6.4
MW-54-37	8/15/2016	4.24E+03	6.00E+02	2.4	1.6	2.3	5.2	0.9	4.7	10.2	20.0	0.8	12.9	-0.9	4.9
MW-54-37	11/3/2016	4.50E+03	9.90E+02	3.2	1.3	-2.3	5.0	2.5	5.3	16.6	18.3	2.0	11.8	3.7	9.3
MW-54-58	2/3/2016	4.50E+03	6.24E+02	0.2	1.6	5.6	8.7	-3.0	8.4	1.2	13.0	-0.2	14.3	0.5	5.5
MW-54-58	2/18/2016	4.20E+03													
MW-54-58	3/3/2016	3.90E+03													
MW-54-58	3/15/2016	4.60E+03													
MW-54-58	3/31/2016	4.30E+03													
MW-54-58	4/12/2016	4.10E+03													
MW-54-58	5/16/2016	3.92E+03	6.69E+02	1.4	1.6	-1.6	7.7	0.9	8.5	-1.9	14.7	7.2	19.1	0.3	7.3
MW-54-58	8/15/2016	3.93E+03	5.91E+02	-0.1	1.4	1.2	6.1	0.4	5.9	8.3	16.8	-9.6	16.8	0.0	8.0
MW-54-58	11/3/2016	3.58E+03	8.64E+02	3.5	2.2	-2.0	5.9	-1.7	5.6	9.0	16.1	9.1	14.2	1.7	5.9
MW-55-24	1/20/2016	1.48E+04	1.13E+03	24.1	3.7	-0.6	8.0	-6.2	9.3	-0.1	12.6	-4.9	16.1	-3.9	7.6
MW-55-24	2/9/2016	1.58E+04													
MW-55-24	2/23/2016	5.16E+04													
MW-55-24	3/30/2016	4.34E+04													
MW-55-24	4/6/2016	3.97E+04													
MW-55-24	4/19/2016	3.18E+04													
MW-55-24	4/28/2016	1.10E+05	1.56E+03	18.5	3.4	1.4	6.1	-1.0	5.2	-1.3	15.9	-1.8	15.5	5.1	7.2
MW-55-24	5/2/2016			18.4	3.6										
MW-55-24	8/12/2016	4.37E+04	1.79E+03	15.3	2.7	1.2	5.8	-1.3	7.0	13.7	18.6	2.5	13.7	-1.6	6.5
MW-55-24	9/16/2016	3.20E+04	2.06E+03	13.0	2.9	0.3	5.7	0.9	6.4			-5.1	17.8	-1.3	8.2
MW-55-24	11/7/2016	3.61E+04	1.59E+03	22.2	4.1	3.2	4.4	0.2	4.7	9.4	16.4	-7.5	13.9	-0.3	5.5
MW-55-24	12/14/2016	2.95E+04	1.44E+03	12.9	3.2										
MW-55-35	1/20/2016	1.47E+04	1.13E+03	29.7	3.7	1.6	5.0	-0.3	4.5	0.1	13.3	5.7	14.5	-2.1	7.0

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-55-35	2/9/2016	1.16E+04													
MW-55-35	4/28/2016	2.84E+04	1.55E+03	28.1	4.1	-1.6	8.5	0.0	5.9	-4.2	15.3	-3.7	15.1	-3.4	7.2
MW-55-35	5/2/2016			14.9	3.0										
MW-55-35	8/12/2016	4.66E+04	1.82E+03	20.1	3.2	1.5	5.0	1.1	5.4	11.3	17.6	4.7	11.8	-3.0	5.0
MW-55-35	9/16/2016	4.82E+04	2.55E+03	23.2	3.4	-0.2	5.6	0.8	4.8			-0.7	12.4	3.9	5.9
MW-55-35	11/7/2016	3.85E+04	1.67E+03	21.8	3.8	-3.5	6.6	-1.6	7.7	10.3	17.3	1.8	17.5	3.0	6.0
MW-55-35	12/14/2016	3.23E+04	1.52E+03	22.2	3.9										
MW-55-54	1/20/2016	2.02E+04	1.29E+03	13.0	2.5	1.3	5.1	-2.8	5.9	9.4	13.1	1.7	14.0	-0.8	6.3
MW-55-54	2/9/2016	3.53E+04													
MW-55-54	2/23/2016	7.58E+04													
MW-55-54	3/30/2016	1.08E+05													
MW-55-54	4/6/2016	1.20E+05													
MW-55-54	4/19/2016	1.17E+05													
MW-55-54	4/28/2016	1.03E+05	3.12E+03	11.8	2.7	3.5	7.3	-0.1	7.1	-6.8	16.0	-4.3	18.4	-1.7	8.9
MW-55-54	5/2/2016	1.16E+05		13.9	2.9										
MW-55-54	5/12/2016	1.23E+05													
MW-55-54	5/18/2016	1.27E+05													
MW-55-54	5/25/2016	1.24E+05													
MW-55-54	6/2/2016	1.20E+05													
MW-55-54	6/9/2016	1.20E+05													
MW-55-54	6/14/2016	1.15E+05													
MW-55-54	6/22/2016	1.08E+05													
MW-55-54	7/20/2016	9.39E+04													
MW-55-54	8/12/2016	8.17E+04	2.30E+03	12.4	2.7	-0.5	4.2	0.5	4.4	19.3	18.7	0.8	10.8	2.0	5.3
MW-55-54	9/16/2016	7.07E+04	3.06E+03	13.7	2.8	0.9	7.1	0.4	5.6			4.1	21.3	1.2	5.1
MW-55-54	10/7/2016	6.62E+04													
MW-55-54	10/26/2016	6.75E+04													
MW-55-54	11/7/2016	5.95E+04	2.07E+03	11.4	2.9	1.3	6.3	0.1	5.9	7.4	26.2	1.3	13.8	2.0	6.6
MW-55-54	12/14/2016	4.68E+04	1.81E+03	7.7	2.2										
MW-56-53	5/18/2016	1.42E+04	1.05E+03	1.2	1.5	2.0	7.4	3.3	8.3			14.2	19.4	3.3	8.5

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-56-53	7/25/2016	4.93E+02	4.29E+02	0.2	1.0	-0.6	8.0	-2.0	9.4	0.0	19.1	-10.5	21.2	2.7	9.2
MW-56-53	10/20/2016	3.92E+03	6.75E+02	-0.8	1.3	-2.1	5.3	-0.6	5.2			-6.6	12.9	-3.0	5.6
MW-56-83	5/18/2016	2.22E+03	5.58E+02	-0.1	1.1	-2.7	6.5	-1.2	9.3			5.0	18.5	1.6	7.7
MW-56-83	7/25/2016	2.72E+03	6.30E+02	0.1	1.5	0.5	5.8	1.8	4.5	5.8	20.8	4.5	12.2	1.5	6.2
MW-56-83	10/19/2016	1.67E+03	4.80E+02	1.2	1.4	-3.6	5.9	0.5	6.0			5.8	12.9	2.6	5.8
MW-57-11	2/10/2016	4.44E+04													
MW-57-11	2/17/2016	9.12E+04	2.69E+03	12.8	2.3	2.9	9.0	2.4	4.6			-6.6	15.8	-2.2	6.4
MW-57-11	3/2/2016	6.59E+04													
MW-57-11	3/15/2016	8.42E+04	2.78E+03	13.1	3.0	2.7	8.2	2.6	6.0			-4.5	14.7	-4.2	6.1
MW-57-11	3/27/2016	3.84E+04	1.80E+03	16.6	3.4	3.7	8.3	1.2	6.8			-3.3	14.7	0.5	5.8
MW-57-11	4/12/2016	5.85E+04	2.44E+03	16.0	3.2	-1.7	8.3	-5.7	7.1			3.4	15.1	3.0	5.6
MW-57-11	4/26/2016	6.91E+04	2.33E+03			5.8	7.9	-2.8	6.6			5.6	14.5	0.5	7.6
MW-57-11	5/6/2016	1.05E+05	2.89E+03			2.3	8.4	-2.7	8.4			-3.3	20.3	1.0	8.8
MW-57-11	5/13/2016	9.55E+04	2.82E+03	18.0	2.8	3.8	9.0	-3.0	8.8	-2.5	14.9	-5.1	18.1	4.4	9.0
MW-57-11	5/20/2016	8.53E+04	2.57E+03			4.9	8.5	0.0	7.3			10.3	19.7	-1.5	11.0
MW-57-11	5/27/2016	8.72E+04													
MW-57-11	6/3/2016	8.20E+04	2.30E+03	17.0	3.6	4.7	7.4	1.3	5.1	9.3	19.3	5.3	13.3	-1.9	6.1
MW-57-11	6/8/2016	9.72E+04	2.43E+03												
MW-57-11	6/16/2016	8.01E+04	2.23E+03	13.5	3.9	-5.2	7.6	0.0	4.4	-2.2	18.0	-3.1	13.4	0.7	5.7
MW-57-11	6/22/2016	7.57E+04	2.30E+03												
MW-57-11	7/21/2016	6.30E+04	2.41E+03	12.9	3.2	2.3	6.5	-0.2	6.4	2.1	17.9	0.0	35.1	2.0	8.5
MW-57-11	8/19/2016	4.49E+04	1.95E+03			0.2	6.2	-0.2	4.9			8.6	14.7	-2.4	6.9
MW-57-11	9/12/2016	4.72E+04	1.85E+03			5.2	8.0	-0.7	6.6			2.6	16.5	1.4	8.0
MW-57-11	10/7/2016	4.10E+04													
MW-57-11	10/26/2016	3.34E+04													
MW-57-11	12/27/2016	2.57E+04													
MW-57-20	2/10/2016	1.40E+03													
MW-57-20	5/13/2016	1.90E+03	5.07E+02	-0.3	1.0	0.0	6.5	-2.9	8.4	-1.2	13.8	-3.1	19.5	2.7	9.5
MW-57-45	2/10/2016	1.40E+03													
MW-57-45	5/13/2016	1.48E+03	4.74E+02	1.0	1.1	2.8	7.3	-5.9	7.5	2.7	14.3	-2.5	20.3	4.6	8.9



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-62-138	3/17/2016	1.60E+03													
MW-62-138	3/23/2016	2.00E+03													
MW-62-138	3/31/2016	1.80E+03													
MW-62-138	4/7/2016	2.00E+03													
MW-62-138	4/13/2016	1.10E+03													
MW-62-138	4/20/2016	1.50E+03													
MW-62-138	4/27/2016	1.80E+03													
MW-62-138	5/10/2016	1.70E+03													
MW-62-138	5/23/2016	1.68E+03	5.19E+02	1.4	1.8	0.9	8.9	-0.3	8.6			12.7	20.4	-0.5	10.0
MW-62-138	6/10/2016	1.90E+03													
MW-62-138	6/21/2016	1.50E+03													
MW-62-138	7/6/2016	1.60E+03													
MW-62-138	8/3/2016	1.60E+03													
MW-62-138	8/19/2016	1.36E+03	4.41E+02	1.2	1.7	-2.5	6.9	0.5	5.3			-1.0	16.4	-2.9	8.7
MW-62-138	9/12/2016	1.60E+03													
MW-62-138	10/13/2016	1.70E+03													
MW-62-138	10/28/2016	1.74E+03	4.74E+02	0.7	1.2	-0.8	5.2	0.2	4.5	-5.9	22.7	3.3	12.5	-0.9	6.9
MW-62-138	12/5/2016	1.70E+03													
MW-62-18	1/18/2016	9.49E+01	3.81E+02	-0.5	1.2	0.6	7.4	1.5	8.3			-2.2	22.6	-1.9	8.6
MW-62-18	5/23/2016	1.41E+02	3.99E+02	-0.5	1.3	1.3	5.2	0.5	4.5			-4.4	13.7	-1.8	5.7
MW-62-18	8/19/2016	7.59E+02	3.66E+02	-0.7	1.3	-1.0	3.8	-0.5	3.3			-0.3	9.8	-0.8	5.0
MW-62-18	10/28/2016	6.28E+02	3.87E+02	1.1	1.3	5.1	5.9	1.0	6.2	-6.4	20.7	-4.8	14.0	-1.6	7.8
MW-62-182	1/18/2016	1.69E+03	4.35E+02	-0.4	0.9	2.8	7.6	-1.4	6.8			-2.2	18.2	2.3	9.4
MW-62-182	5/23/2016	1.42E+03	5.16E+02	-0.7	1.1	-1.1	5.6	2.8	3.3			-6.7	15.0	1.7	6.0
MW-62-182	8/19/2016	1.45E+03	4.59E+02	-0.5	1.4	0.5	4.7	1.8	4.8			-0.8	10.6	-0.3	5.6
MW-62-182	10/28/2016	1.55E+03	4.44E+02	0.1	1.0	2.9	6.6	-0.3	6.5	10.7	26.7	8.4	17.9	-1.9	7.9
MW-62-37	1/18/2016	1.33E+03	4.08E+02	0.1	0.8	0.6	7.7	1.1	6.5			2.0	17.9	0.3	8.8
MW-62-37	5/23/2016	9.08E+02	4.74E+02	-0.3	1.3	1.8	4.8	-0.2	4.6			-7.9	13.8	-2.6	5.8
MW-62-37	8/19/2016	1.13E+03	4.32E+02	0.7	1.1	-0.5	5.7	-1.6	4.9			2.8	13.4	2.9	6.4
MW-62-37	10/28/2016	9.48E+02	4.08E+02	0.2	0.8	0.4	4.3	3.7	5.0	-7.7	23.0	3.2	11.5	1.4	4.0



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-63-112	2/2/2016	9.99E+02	4.11E+02	-0.1	0.9	4.3	6.8	-1.7	5.9			-2.1	19.8	2.9	6.6
MW-63-112	6/7/2016	1.06E+03	4.14E+02	0.3	0.8	-2.7	8.3	2.5	6.4			3.2	19.7	4.3	8.1
MW-63-112	8/1/2016	1.17E+03	5.16E+02	-0.5	1.4	1.2	5.7	-0.5	4.7	1.6	17.8	1.4	14.5	-2.6	8.9
MW-63-112	10/20/2016	1.52E+03	4.89E+02	-0.3	1.0	0.0	6.9	0.3	5.8			11.5	15.1	0.4	6.2
MW-63-121	2/2/2016	1.30E+03	4.29E+02	0.0	1.2	4.1	8.1	2.5	9.8			-2.8	20.2	-0.4	8.0
MW-63-121	6/7/2016	1.39E+03	4.41E+02	-0.3	1.3	-3.3	5.4	-1.9	5.9			-3.9	12.3	-1.9	7.3
MW-63-121	8/1/2016	1.23E+03	5.13E+02	0.9	1.5	-3.0	6.1	0.4	6.2	-4.0	17.8	2.2	14.6	-1.8	5.6
MW-63-121	10/20/2016	1.16E+03	5.82E+02	0.4	1.2	-0.3	6.3	-8.5	18.2			-1.4	14.6	-1.0	6.9
MW-63-163	2/2/2016	1.06E+03	4.17E+02	-0.3	1.5	3.8	7.6	-2.6	7.7			8.2	19.8	-1.2	8.6
MW-63-163	6/7/2016	9.37E+02	4.14E+02	0.6	1.5	2.7	6.6	1.0	8.2			-2.7	18.6	-2.5	10.9
MW-63-163	8/1/2016	1.02E+03	4.92E+02	-0.5	0.9	0.5	6.2	-0.9	4.7	2.7	17.2	2.0	16.1	-0.7	6.9
MW-63-163	10/20/2016	1.05E+03	5.61E+02	0.6	1.3	1.3	5.9	-0.3	7.6			3.3	14.9	-2.6	6.2
MW-63-174	2/2/2016	1.38E+03	4.41E+02	0.2	0.8	1.0	5.8	-2.3	7.1			2.6	14.6	-2.3	6.2
MW-63-174	6/7/2016	8.11E+02	4.02E+02	0.0	1.7	-0.7	6.8	3.6	7.4			-9.1	19.7	0.0	7.6
MW-63-174	8/1/2016	1.18E+03	5.07E+02	-0.9	1.4	3.4	5.9	0.6	4.7	2.6	17.9	-1.1	16.2	-2.1	6.6
MW-63-174	10/20/2016	8.89E+02	4.92E+02	1.5	1.8	2.1	6.5	-1.3	6.6			8.3	17.4	-5.2	7.5
MW-63-18	2/2/2016	4.42E+02	3.66E+02	-0.3	1.0	2.4	8.2	-0.9	10.4			-7.5	18.5	6.9	6.3
MW-63-18	6/7/2016	5.21E+02	3.78E+02	-0.4	1.6	1.3	6.0	1.1	6.2			3.4	16.5	-3.4	6.3
MW-63-18	8/1/2016	5.31E+02	4.47E+02	0.5	1.5	0.9	5.1	2.8	7.2	-1.0	17.9	-6.7	12.6	0.6	6.1
MW-63-18	10/20/2016	7.46E+02	4.23E+02	1.0	1.2	0.8	6.8	1.3	5.3			8.6	16.2	-1.9	8.4
MW-63-34	2/2/2016	6.35E+02	3.93E+02	-0.2	1.1	-0.6	6.3	-0.3	6.3			0.4	17.3	1.0	6.4
MW-63-34	6/7/2016	5.25E+02	3.72E+02	-1.3	1.3	4.3	8.8	0.1	8.6			-3.0	25.4	-1.2	12.5
MW-63-34	8/1/2016	6.67E+02	4.65E+02	0.1	0.6	0.9	5.0	1.7	5.4	-4.4	17.4	-3.8	11.3	-1.6	5.6
MW-63-34	10/20/2016	9.08E+02	4.38E+02	-0.3	1.0	-1.2	4.6	-1.1	4.9			2.5	12.8	1.4	6.9
MW-63-50	2/2/2016	7.79E+02	3.93E+02	-0.7	0.7	-2.6	7.6	1.1	6.8			6.4	22.4	3.5	8.9
MW-63-50	6/7/2016	5.01E+02	3.81E+02	0.3	1.6	2.7	5.6	2.5	5.9			-12.7	15.3	-0.7	7.8
MW-63-50	8/1/2016	6.47E+02	4.47E+02	0.1	0.6	3.2	4.1	0.4	4.5	10.4	17.5	-1.1	11.0	0.7	4.9
MW-63-50	10/20/2016	9.92E+02	4.44E+02	0.6	1.2	-5.0	5.8	2.1	4.1			-2.8	12.8	0.6	5.9
MW-63-93	2/2/2016	7.40E+02	3.93E+02	-0.2	0.9	-0.9	6.2	0.7	5.6			-1.5	15.9	2.0	5.7
MW-63-93	6/7/2016	4.90E+02	3.87E+02	-0.3	0.7	5.8	7.4	5.0	6.9			-7.5	19.9	-3.1	9.4

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
MW-63-93	8/1/2016	6.82E+02	4.44E+02	0.2	1.0	4.5	9.2	0.0	4.4	-3.9	17.8	-3.6	12.0	0.1	4.7
MW-63-93	10/20/2016	6.68E+02	4.23E+02	1.0	1.5	-2.0	7.2	-0.3	5.2			0.2	17.9	1.6	7.9
MW-66-21	2/2/2016	5.38E+02	3.75E+02	0.7	1.0	-1.3	7.4	3.7	6.1	0.9	14.9	-5.8	19.1	-2.6	7.3
MW-66-21	2/10/2016	3.00E+02													
MW-66-21	2/17/2016	7.32E+02	4.14E+02	1.0	1.6	-2.2	6.2	-1.4	7.6			-0.4	15.3	-2.5	6.1
MW-66-21	3/1/2016	5.00E+02													
MW-66-21	3/11/2016	3.00E+02													
MW-66-21	3/16/2016	3.00E+02													
MW-66-21	3/23/2016	3.00E+02													
MW-66-21	3/31/2016	3.00E+02													
MW-66-21	4/7/2016	3.00E+02													
MW-66-21	4/13/2016	3.00E+02													
MW-66-21	4/19/2016	3.00E+02													
MW-66-21	5/24/2016	5.32E+02	4.14E+02	-0.2	1.4	2.1	5.8	2.6	6.8	9.4	14.3	2.4	15.8	-2.0	6.9
MW-66-21	8/18/2016	1.52E+03	4.20E+02	0.4	1.5	1.7	5.5	2.0	4.2	-3.6	14.4	-4.4	16.1	-1.2	7.9
MW-66-21	10/27/2016	1.57E+03	4.98E+02	1.0	1.2	-1.3	5.2	0.1	4.4	-12.1	20.3	0.5	12.9	2.7	4.4
MW-66-36	2/2/2016	1.36E+03	4.77E+02	9.2	2.5	-2.0	5.8	2.5	6.3	-5.8	13.3	4.9	13.2	-2.0	5.5
MW-66-36	2/10/2016	1.70E+03													
MW-66-36	2/17/2016	1.35E+03	4.71E+02	7.7	2.3	-3.8	8.4	3.8	5.9			7.8	19.2	0.0	6.7
MW-66-36	3/1/2016	1.30E+03													
MW-66-36	3/11/2016	4.40E+03													
MW-66-36	3/16/2016	1.60E+03													
MW-66-36	3/23/2016	1.60E+03													
MW-66-36	3/31/2016	1.80E+03													
MW-66-36	4/7/2016	1.70E+03													
MW-66-36	4/13/2016	1.30E+03													
MW-66-36	4/19/2016	1.50E+03													
MW-66-36	4/27/2016	1.60E+03													
MW-66-36	5/10/2016	1.70E+03													
MW-66-36	5/24/2016	1.59E+03	5.01E+02	9.0	2.8	-2.2	5.9	-0.1	7.1	6.7	13.2	7.6	30.6	0.2	7.5





Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-67-105	6/27/2016	2.37E+03	5.10E+02												
MW-67-105	7/5/2016	2.38E+03	5.16E+02												
MW-67-105	7/18/2016	2.15E+03	6.00E+02	0.5	1.1	-0.4	6.8	1.7	5.5	11.8	19.0	-4.8	16.0	0.4	9.7
MW-67-105	8/3/2016	2.17E+03	6.15E+02	1.3	1.4	0.6	4.5	0.4	3.5	1.7	17.3	5.7	11.1	0.3	5.0
MW-67-105	8/18/2016	2.92E+03	5.10E+02	1.5	1.7	3.0	6.5	1.4	6.6	-0.7	13.6	10.1	19.0	1.9	9.3
MW-67-105	8/29/2016	2.49E+03	5.76E+02			-1.4	4.4	4.5	7.5			0.8	11.0	1.3	4.2
MW-67-105	9/12/2016	2.80E+03	5.79E+02			-0.1	6.2	-1.5	7.1			-2.0	22.0	-5.3	9.1
MW-67-105	9/27/2016	2.56E+03	5.25E+02	1.0	1.1	-0.1	7.1	1.5	5.6	-16.4	21.8	-2.2	14.3	-2.7	8.9
MW-67-105	10/13/2016	2.50E+03													
MW-67-105	10/27/2016	2.47E+03	5.31E+02	0.6	0.8	-0.9	3.8	0.1	3.2	8.3	22.0	0.3	9.6	0.0	4.4
MW-67-105	11/9/2016	2.00E+03													
MW-67-105	11/22/2016	2.30E+03													
MW-67-105	12/5/2016	2.10E+03													
MW-67-105	12/20/2016	1.70E+03													
MW-67-173	1/25/2016	9.67E+02	4.50E+02	-0.1	1.0	3.3	7.6	-0.6	7.2	2.8	8.3	0.7	16.5	1.4	7.5
MW-67-173	2/10/2016	7.00E+02													
MW-67-173	5/24/2016	8.38E+02	4.38E+02	-0.8	1.0	1.4	8.0	4.3	5.6	7.5	11.2	-5.3	18.5	-0.7	8.3
MW-67-173	8/18/2016	9.30E+02	3.78E+02	0.0	1.4	1.3	7.6	1.5	6.1	-8.0	16.7	-3.1	16.0	6.3	8.1
MW-67-173	10/27/2016	9.11E+02	4.47E+02	0.3	0.9	-1.3	5.2	3.4	4.4	-3.6	23.6	3.4	14.1	2.3	5.9
MW-67-219	1/25/2016	1.24E+03	4.80E+02	-0.6	0.7	-0.5	6.5	-0.3	6.7	11.8	14.6	-4.4	19.2	-2.3	6.7
MW-67-219	2/10/2016	7.00E+02													
MW-67-219	5/24/2016	9.46E+02	4.38E+02	0.2	1.5	1.9	7.1	-6.7	8.7	11.7	11.6	-4.0	17.4	-0.7	7.9
MW-67-219	8/18/2016	1.29E+03	4.08E+02	-0.8	1.2	2.5	5.4	-1.4	5.1	3.5	14.8	-2.2	12.5	-1.0	6.6
MW-67-219	10/27/2016	1.02E+03	4.59E+02	1.5	1.6	1.2	7.5	1.2	7.3	-7.3	22.7	-2.6	19.7	1.1	7.3
MW-67-276	1/25/2016	9.88E+02	4.59E+02	0.1	0.9	3.0	7.2	-4.2	7.7	9.7	13.6	-4.5	16.7	0.3	8.9
MW-67-276	2/10/2016	8.00E+02													
MW-67-276	2/19/2016	7.53E+02	5.01E+02	-0.9	1.4	-0.8	11.6	-2.3	6.2	14.2	14.0	-5.7	16.9	3.9	8.1
MW-67-276	3/1/2016	8.44E+02	5.07E+02	-0.2	1.0	0.7	6.4	-3.4	5.9	7.6	14.3	0.9	18.8	0.9	7.4
MW-67-276	3/11/2016	6.88E+02	4.26E+02	-0.9	1.1	-2.0	7.5	5.4	9.5			4.7	19.6	-1.9	9.4
MW-67-276	3/18/2016	8.92E+02	4.77E+02	0.3	1.7	0.5	5.5	-1.3	6.3	4.8	16.1	5.0	15.0	1.1	5.6



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ	Result	3 σ
MW-67-340	5/24/2016	6.98E+02	4.17E+02	-1.0	1.4	1.4	8.7	5.0	9.5	8.2	12.0	-0.2	20.4	2.8	11.0
MW-67-340	8/18/2016	5.71E+02	3.36E+02	-0.3	1.4	0.4	5.5	-2.4	6.6	-2.9	10.6	-1.4	13.0	0.0	7.1
MW-67-340	10/27/2016	5.25E+02	3.81E+02	1.0	1.1	1.6	6.1	-1.5	4.6	-20.3	21.0	-0.6	12.7	2.0	5.8
MW-67-39	1/25/2016	1.39E+03	4.83E+02	6.6	2.0	1.1	5.3	1.0	4.9	-1.1	13.4	8.6	13.3	1.1	6.6
MW-67-39	2/10/2016	1.30E+03													
MW-67-39	2/19/2016	1.82E+03	6.03E+02	3.6	2.0	-1.0	6.3	0.9	6.5	-5.4	13.5	-7.2	17.0	-5.0	8.0
MW-67-39	3/1/2016	1.69E+03	5.34E+02	4.9	2.4	1.9	5.6	1.3	4.9	3.5	14.0	1.4	16.5	3.2	6.5
MW-67-39	3/11/2016	1.52E+03	4.68E+02	3.9	1.8	-0.4	6.1	2.3	6.8			-16.3	16.7	2.5	7.1
MW-67-39	3/18/2016	1.57E+03	5.28E+02	5.0	1.8	0.0	10.8	0.5	4.9	4.1	17.2	-2.3	13.8	-0.9	5.5
MW-67-39	3/23/2016	1.81E+03	5.28E+02	5.2	1.4	2.4	6.6	0.8	6.1	1.1	15.5	6.7	17.9	-2.4	6.8
MW-67-39	3/29/2016	1.70E+03	4.68E+02	4.7	1.8	-3.3	10.0	1.2	9.4	5.4	13.6	5.8	20.4	-1.7	9.7
MW-67-39	4/7/2016	1.78E+03	6.36E+02	6.4	2.3	0.9	6.5	-2.0	6.3			3.3	15.1	0.9	7.1
MW-67-39	4/13/2016	1.90E+03	5.61E+02												
MW-67-39	4/21/2016	2.14E+03	4.83E+02												
MW-67-39	4/27/2016	2.88E+03	6.24E+02												
MW-67-39	5/4/2016	2.70E+03	6.00E+02												
MW-67-39	5/10/2016	3.36E+03	6.24E+02												
MW-67-39	5/19/2016	4.06E+03	5.88E+02												
MW-67-39	5/24/2016	4.56E+03	6.81E+02	6.9	2.5	1.5	6.6	0.5	6.0	1.9	12.5	-1.7	17.9	-2.9	6.8
MW-67-39	6/2/2016	4.89E+03	6.51E+02			6.5	10.1	0.9	7.6			-26.0	21.1	3.2	8.4
MW-67-39	6/10/2016	5.50E+03	6.66E+02												
MW-67-39	6/14/2016	6.40E+03	7.65E+02												
MW-67-39	6/21/2016	6.26E+03	7.23E+02												
MW-67-39	6/27/2016	6.92E+03	7.62E+02												
MW-67-39	7/5/2016	6.93E+03	7.77E+02												
MW-67-39	7/18/2016	6.74E+03	9.48E+02	6.6	1.7	3.7	10.6	-0.3	4.4	6.2	13.9	1.5	11.6	2.8	7.0
MW-67-39	8/3/2016	5.50E+03	8.31E+02	5.7	2.0	0.5	4.4	1.4	4.0	4.7	14.0	0.1	10.6	-0.3	5.1
MW-67-39	8/18/2016	5.80E+03	6.69E+02	4.8	2.3	1.5	4.7	-0.7	4.3	-2.6	9.4	2.9	13.2	-1.6	6.1
MW-67-39	8/29/2016	6.24E+03	8.40E+02			0.4	4.3	-0.4	4.3			-5.5	13.8	-0.6	4.7
MW-67-39	9/12/2016	6.88E+03	7.83E+02			2.6	6.6	1.0	4.5			-2.3	10.2	1.1	4.4



Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
U1-CSS	3/19/2016	3.50E+03													
U1-CSS	4/2/2016	4.46E+04													
U1-CSS	4/14/2016	4.70E+04													
U1-CSS	4/26/2016	5.97E+04	2.24E+03	15.3	3.1	1.5	6.1	5.4	4.5	-5.1	15.2	14.4	16.4	0.3	8.3
U1-CSS	5/26/2016	5.07E+04	1.84E+03	13.7	2.3	0.7	5.5	0.9	6.8			-3.9	13.6	-1.0	5.9
U1-CSS	6/22/2016	6.82E+04													
U1-CSS	6/27/2016	7.32E+04	2.26E+03	12.8	2.7	2.6	6.3	-1.2	6.1	-8.8	15.5	-5.4	17.1	-3.9	8.8
U1-CSS	7/21/2016	8.05E+04	2.54E+03	17.3	3.4	0.0	7.8	-1.4	7.5	7.6	19.2	6.2	16.5	1.1	9.5
U1-CSS	11/9/2016	9.36E+03	9.09E+02	7.1	2.5	6.3	11.6	0.4	6.5	-2.5	21.8	-7.7	15.8	-0.1	10.4
U1-NCD	2/9/2016	2.45E+05	4.14E+03	16.4	3.0	12400.0	156.6	2.0	5.8	234.0	17.5	18.1	78.3	-1.4	6.5
U1-NCD	4/4/2016	1.32E+05	4.02E+03	28.9	3.3	9830.0	139.8	-0.4	6.6	194.0	18.5	-21.4	73.8	1.8	12.1
U1-NCD	9/22/2016	6.28E+04	2.25E+03	32.8	5.1	12300.0	161.7	-1.5	6.0	231.0	28.5	-16.7	60.9	0.6	5.8
U1-NCD	12/14/2016	5.26E+04	1.85E+03	31.4	4.3	19600.0	261.3	1.1	6.4	423.0	42.6	15.2	102.0	1.1	8.3
U1-SFDS	1/13/2016	1.20E+02	4.02E+02	1.8	1.4	3.7	8.5	6.7	7.4	2.8	16.1	-10.3	17.7	3.7	8.7
U1-SFDS	4/6/2016	7.83E+02	4.32E+02	1.6	1.5	0.0	7.7	2.0	5.7	7.1	13.9	-1.7	14.6	-0.2	9.4
U1-SFDS	6/30/2016	9.14E+02	4.47E+02	2.6	1.6	5.1	7.9	-2.9	5.9			-3.9	17.0	-0.6	8.4
U1-SFDS	9/22/2016	1.35E+03	4.77E+02	6.6	1.9	5.6	7.0	0.9	7.5	2.3	18.7	12.5	16.4	-3.2	7.6
U1-SFDS	12/14/2016	3.71E+02	3.96E+02	4.3	2.0	4.3	7.7	-0.9	4.8	-0.2	23.4	-5.7	11.9	1.6	6.2
U3-4D	3/18/2016	4.93E+02	4.44E+02	0.5	1.7	-1.3	6.6	-0.4	6.3			-3.8	15.7	-1.5	6.9
U3-4D	5/23/2016	7.10E+02	4.29E+02	-0.6	1.0	-1.6	6.5	1.1	6.5			2.0	17.4	0.3	9.9
U3-4D	8/11/2016	6.66E+02	3.63E+02	-0.3	0.7	4.7	6.4	-0.5	6.4			5.4	21.6	0.9	6.9
U3-4D	10/19/2016	5.42E+02	3.84E+02	0.1	1.1	-0.2	6.6	2.0	4.9			-0.6	11.6	0.1	5.6
U3-4S	3/17/2016	1.91E+02	4.20E+02	1.2	1.3	-2.4	5.9	0.6	5.8			3.2	13.1	0.9	5.8
U3-4S	5/19/2016	8.54E+02	4.41E+02	0.1	1.6	0.4	6.6	-1.0	5.6			-11.7	15.8	0.2	6.2
U3-4S	8/10/2016	4.03E+02	3.51E+02	0.3	1.1	2.0	12.1	-0.4	5.2			-3.8	11.7	3.9	4.7
U3-4S	10/18/2016	4.96E+02	3.93E+02	-0.3	0.8	0.0	11.6	2.2	6.2			-3.7	18.3	1.9	8.1
U3-T1	3/17/2016	1.22E+03	5.07E+02	-0.8	1.4	-0.7	5.8	2.1	5.3			7.5	13.1	-0.4	4.6
U3-T1	6/1/2016	1.21E+03	4.26E+02	0.5	1.3	-1.7	6.2	-0.2	7.2			4.0	15.3	-3.1	7.4
U3-T1	8/11/2016	1.12E+03	4.05E+02	-0.9	1.2	-0.7	5.7	0.5	4.7			-2.5	12.8	3.0	5.1
U3-T1	10/24/2016	9.42E+02	4.29E+02	0.8	1.1	0.9	7.4	3.7	5.9			2.6	16.4	-2.7	7.1

Well ID	Date	2016 Laboratory Analytical Results													
		H3 (pCi/L)		Sr-90 (pCi/L)		Cs-137 (pCi/L)		Co-60 (pCi/L)		Ni-63 (pCi/L)		Sb-125 (pCi/L)		Co-58 (pCi/L)	
		Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$	Result	3 $\sigma$
U3-T2	3/17/2016	9.41E+02	4.77E+02	0.1	1.6	0.8	4.9	2.0	5.3			1.7	13.4	-1.9	5.0
U3-T2	6/1/2016	1.22E+03	4.38E+02	0.0	1.3	-2.6	5.1	1.8	5.3			2.1	12.6	1.5	4.6
U3-T2	8/11/2016	1.63E+03	4.38E+02	0.7	1.5	1.9	5.4	-1.9	4.6			-0.3	12.6	0.6	6.8
U3-T2	10/24/2016	1.28E+03	4.50E+02	0.7	0.8	3.6	4.7	2.1	6.1			-1.4	14.0	-0.7	6.8