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RBG-48019

April 30, 2020

Attn: Document Control Desk
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Subject: 2019 Annual Radioactive Effluent Release Report
River Bend Station – Unit 1
License No. NPF-47
Docket No. 50-458

Enclosed is the River Bend Station (RBS) Annual Radioactive Effluent Release Report for the period of January 1, 2019 through December 31, 2019. This report is submitted in accordance with the RBS Technical Specifications, Section 5.6.3.

Should you have any questions regarding the enclosed, please contact Tim Schenk, at (225) 381-4177.

Sincerely,

Tim Schenk Digitally signed by Tim Schenk
Date: 2020.04.30 13:35:19
-05'00'

Tim Schenk

TAS/tf

Enclosure: 2019 Annual Radioactive Effluent Release Report

cc: NRC Region IV Regional Administrator, w/o Enclosure
NRC Senior Resident Inspector – River Bend Station, Unit 1
Ji Young Wiley, Department of Environmental Quality, Office of Environmental Compliance, Radiological Emergency Planning and Response Section
Public Utility Commission of Texas, Attn: PUC Filing Clerk
NRC Project Manager

Enclosure
2019 Annual Radioactive Effluent Release Report



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Annual Radioactive Effluent Release Report**1.0 INTRODUCTION**

This is the Annual Radioactive Effluent Release Report for the period of January 1, 2019, through December 31, 2019. This report is submitted in accordance with Technical Specification 5.6.3 of Appendix A to River Bend Station (RBS) License Number NPF-47.

2.0 SUPPLEMENTAL INFORMATION**2.1 Regulatory Limits****2.1.1 10CFR50, Appendix I Limits**

1. Fission and activation gases:
 - a. In accordance with Technical Requirement (TR) 3.11.2.2, the air dose due to noble gases released in gaseous effluent to areas at and beyond the SITE BOUNDARY shall be limited to:
 - 1) Quarterly
 - Less than or equal to 5 mrad gamma
 - Less than or equal to 10 mrad beta
 - 2) Yearly
 - Less than or equal to 10 mrad gamma
 - Less than or equal to 20 mrad beta
2. Iodine, tritium, and all radionuclides in particulate form with half-lives greater than 8 days.
 - a. In accordance with Technical Requirement 3.11.2.3, the dose to a MEMBER OF THE PUBLIC from radioiodines (I-131 and I-133), tritium (H-3) and all radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluent releases to areas at and beyond the SITE BOUNDARY shall be limited to:
 - 1) Quarterly
 - Less than or equal to 7.5 mrem to any organ
 - 2) Yearly
 - Less than or equal to 15 mrem to any organ

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3. Liquid Effluents Dose
 - a. In accordance with Technical Requirement 3.11.1.2, the dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluent released to UNRESTRICTED AREAS shall be limited to:
 - 1) Quarterly
 - Less than or equal to 1.5 mrem total body
 - Less than or equal to 5 mrem critical organ
 - 2) Yearly
 - Less than or equal to 3 mrem total body
 - Less than or equal to 10 mrem critical organ
4. Total Dose (40CFR190)
 - a. In accordance with Technical Requirement 3.11.4, the annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC, due to releases of radioactivity and to radiation from uranium fuel cycle sources, shall be limited to:
 - Less than or equal to 25 mrem, Total Body or any Organ except Thyroid.
 - Less than or equal to 75 mrem, Thyroid

2.1.2 Miscellaneous Limits

1. Technical Requirement 3.11.2.1 - Fission and Activation Gases
 - a. In accordance with Technical Requirement 3.11.2.1, the dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be:
 - Less than or equal to 500 mrem/year to the total body
 - Less than or equal to 3000 mrem/year to the skin
2. Technical Requirement 3.11.2.1 - Radioiodine (I-131 & I-133) and Particulate
 - a. In accordance with Technical Requirement 3.11.2.1, the dose rate due to radioiodines, tritium, and all radionuclides in particulate form with half-lives greater than 8 days released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be limited to:
 - Less than or equal to 1500 mrem/yr to any organ

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3. Technical Requirement 3.11.1.1 - Liquid Effluent
 - a. In accordance with Technical Requirement 3.11.1.1, the concentration of radioactive material released in liquid effluent to UNRESTRICTED AREAS shall be limited to ten times the concentrations specified in 10CFR20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-04 microcuries/milliliter total concentration.
4. Technical Requirement 3.11.2.5 - Ventilation Exhaust Treatment
 - a. In accordance with Technical Requirement 3.11.2.5, the VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses, due to gaseous effluent releases to areas and beyond the SITE BOUNDARY would exceed 0.3 mrem to any organ in a 31-day period.
5. Technical Requirement 3.11.1.3 - Liquid Radwaste Treatment System
 - a. In accordance with Technical Requirement 3.11.1.3, the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid waste prior to their discharge when the projected doses, due to the liquid effluent, to UNRESTRICTED AREAS would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31-day period.

2.2 Effluent Concentration Limits

1. Gaseous Releases
 - a. The concentrations of radioactive gaseous releases are based on the dose rate restrictions in RBS Technical Requirements, rather than the Effluent Concentration Limits (ECL) listed in 10CFR20 Appendix B, Table 2, Column 1.
2. Liquid Releases
 - a. The Effluent Concentration Limits of radioactive materials in liquid effluents are limited to ten times 10CFR20, Appendix B, Table 2, Column 2.

2.3 Measurements & Approximations of Total Radioactivity

1. Gaseous Effluent
 - a. Fission & activation gases

Periodic grab samples are obtained from the Main Plant Exhaust Duct, Fuel Building Exhaust Vent and Radwaste Building Exhaust Vent. These samples are analyzed using high purity germanium detectors coupled to computerized pulse height analyzers. The sampling and analysis frequencies are described in Table 4.

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Sampling and analysis of these effluent streams provide noble gas radionuclide relative abundance that can then be applied to the noble gas gross activity and gross activity release rate to obtain nuclide specific activities and release rates. The noble gas gross activity released within a specific time period is determined by integrating the stack monitor release rate over the considered time period. If no activity was detected between the stack grab sample and a significant increase in hourly averages was recorded, the nuclide relative abundance of the last sample (or the last similar event), which indicated the presence of activity, was used to obtain nuclide specific activities. Correction factors for the monitors are derived and applied for each sampling period whenever noble gas radionuclides are detected in the effluent stream.

b. Particulate and Radioiodine (I-131 & I-133)

Particulates, Iodine-131 and Iodine-133 are continuously sampled from the three release points using a particulate filter and charcoal cartridge in line with a sample pump (stack monitor pump). These filters and charcoal cartridges are removed and analyzed in accordance with the frequencies specified in Table 4. Analysis is performed to identify and quantify radionuclides using high purity germanium detectors coupled to computerized pulse height analyzers. Given the nuclide specific activity concentrations, process flow rate, and duration of the sample, the nuclide specific activity released to the environment can be obtained. Due to the continuous sampling process, it is assumed that the radioactive material is released to the environment at a constant rate within the sampling period. Strontium-89 and Strontium-90 (Sr-89 and Sr-90) are quantitatively analyzed by counting by gas flow proportional counting. Gross alpha analysis is performed using a zinc sulfide scintillation counter.

c. Tritium

Tritium grab samples are obtained from the three gaseous release points at the specified frequencies listed in Table 4 using an ice bath condensation collection method. The collected sample is then analyzed using a liquid scintillation counter. Given the tritium concentration, process flow rate, and time period for which the sample is obtained, the tritium activity released to the environment can be determined. Due to the frequency of sampling, it is assumed that the tritium is released to the environment at a constant rate within the time period for which the sample is obtained.

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d. Carbon-14

The bounding annual dose from C-14 was calculated using guidance from Regulatory Guide 1.21, Revision 2, NUREG-0016, and the methodology in Regulatory Guide 1.109. The results of this calculation are listed in Table 13. The C-14 source term of 11 curies was taken from the site calculation PR(C)-359-3A, Gaseous Releases per NUREG-0016 Revision 1. Carbon-14 does not have dose factors associated with standing on contaminated ground; therefore, no ground plane dose was calculated. There is no milk pathway within five miles of River Bend Station so this pathway is not evaluated. RBS does not take credit for decay in the X/Q. This calculation assumes the inhalation, meat and vegetation pathways are at the site boundary in the sector with the highest X/Q. The dose from liquid effluents is not calculated as the dose contribution from C-14 is considered to be insignificant as indicated in Regulatory Guide 1.21, Revision 2. According to EPRI 1021106, Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents, 95% of the carbon released is in the form of carbon dioxide and this contributes the highest dose to man. The ingestion pathway, specifically vegetation, is the most likely route of intake for man. An assumption has been made for gaseous releases that plants obtain all of their C-14 from carbon dioxide.

e. Nickel-63

No Nickel-63 was quantified in 2019.

f. Gaseous Effluent Summary Information

Gaseous effluent summary information is located in Table 1, Table 2, and Table 3. It should be noted that an entry of "0.00E+00" Curie (Ci) or microcurie/second ($\mu\text{Ci}/\text{sec}$) in this section indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 4. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

2. Liquid Effluents

- a. Representative grab samples are obtained from the appropriate sample recovery tank and analyzed prior to release of the tank in accordance with the frequencies listed in Table 8. Analysis for gamma emitting nuclides (including dissolved and entrained noble gases) is performed using a high purity germanium detector coupled to a computerized pulse height analyzer. Tritium concentration is determined using a liquid scintillation counter. Strontium-89 and Strontium-90 are quantitatively analyzed by scintillation techniques (Cherenkov counting). Iron-55 is counted with a liquid scintillation counter after digestion of the iron. Gross alpha analysis is performed using a zinc sulfide scintillation counter. The activity of each nuclide released to the environment is determined from the nuclide specific concentration and total tank volume released.

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- b. Liquid effluent summation information is located in Table 5 and Table 6. It should be noted that an entry of "0.00E+00" Ci or uCi/ml in this section indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 8. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

3. Estimate of Total Error

a. Liquid

The maximum error associated with sample collection, laboratory analysis, and discharge volume is collectively estimated to be:

Fission and Activation Products	± 14.2%
Tritium	± 14.2%
Dissolved and Entrained Noble Gases	± 14.2%
Gross Alpha Radioactivity	± 14.2%

b. Gaseous

The maximum error (not including sample line loss) associated with sample flow, process flow, sample collection, monitor accuracy and laboratory analysis are collectively estimated to be:

Noble Gases	± 37.0%
Iodines	± 18.6%
Particulate	± 18.6%
Tritium	± 18.2%

c. Determination of Total Error

The total error (i.e., collective error due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.) is calculated using the following equation:

$$E_T = \sqrt{[(E_1)^2 + (E_2)^2 + \dots + (E_n)^2]}$$

Where:

E_T = total error

$E_1 \dots E_n$ = individual errors due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.

Annual Radioactive Effluent Release Report**2.4 Batch Releases:****2.4.1 Liquid**

Batch releases and receiving stream flow from River Bend Station during the reporting period of January 1, 2019, through December 31, 2019 are shown in Table 7.

The Mississippi River stream flow is obtained by averaging data from the U. S. Army Corp of Engineers website using flow gauge data at Tarbert Landing.

2.4.2 Gaseous

There were no routine batch releases of gaseous effluents from River Bend Station during the reporting period of January 1, 2019, through December 31, 2019.

2.5 Abnormal Releases

There were no abnormal releases in 2019.

2.6 Major Changes to Radioactive Liquid, Gaseous, and Solid Waste Treatment Systems

Engineering performed a review of the Asset Suite database to evaluate non-administrative design changes completed or partially completed during 2019 involving the subject systems (i.e. changes classified as evaluations or nuclear changes). These design changes were then reviewed to determine if there have been any major changes to the subject systems. The review was based on a major change being defined as a modification which affected the method of processing or the effluent from the system. Also, to be a "major change" the change must have affected the Updated Safety Analysis Report (USAR).

The Engineering Changes (EC's) to liquid, solid or gaseous radwaste systems implemented during this time period were:

EC-53367 – Liquid Radwaste Piping Replacement

River Bend Station (RBS) Condition Report CR-RBS-2000-2033 identified leakage on 2" diameter Liquid Waste System (LWS) discharge line LWS-002-615-4, leading to elevated levels of radioactive material in the soil adjacent to the buried portion of piping. This line functions in parallel with a 3" diameter Service Water Piping (SWP) line, SWP-003-1043-4. Line SWP-003-1043-4 was dedicated to the LWS by M86-0156 in order to increase the discharge capacity to the Circulating Water System (CWS).

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This EC removes a portion of discharge line LWS-002-615-4, and all of lines LWS-003-1000-4 and LWS-002-640-4 from 2" valve LWS-AOV257 to the CWS blowdown pit. The segment of line SWP-003-1043-4 routed inside the plant is also removed by this modification. Line LWS-002-640-4 and the buried segment of SWP-003-1043-4 are retired-in-place by filling the lines with a flowable grout and installing blind flanges on the ends. The existing lines are replaced by approximately 100 feet of 2" diameter piping and approximately 1000 feet of 4" diameter piping. The new LWS piping utilizes the existing LWS/SWP pipe routing and existing pipe supports, where possible, for the portion of piping inside the piping tunnels.

A new engineered trench configuration is installed for the exterior portion of piping in the site yard, from the Turbine Building (TB) to the CWS blowdown pit. Stainless steel pipe is used for the in-plant piping and heat fusion joined High Density Polyethylene (HDPE) pipe is used for the exterior piping that is routed inside the concrete trench. Flanges are installed at the stainless steel/HDPE piping interface. Inside the CWS blowdown pit, the new 4" diameter LWS line connects to line CWS-020-35-4 via new 4" diameter CWS valve and line. The new 4" diameter CWS valve and line is installed by performing a 'hot tap' on line CWS-020-35-4.

Two (2) new, 6" diameter wall penetrations are installed to route the 4" diameter HDPE piping. The first new penetration is installed at El. 93' on the south wall of the Turbine Building, near existing penetrations for lines LWS-002-615-4 and SWP-003-1043-4. The second penetration is installed at El. 90.67' on the west wall of the CWS Blowdown Pit, approximately 27'-9" from the south edge.

There is no impact to the method of liquid waste processing or system effluent as a result of this change.

EC-79510 -REPLACEMENT OF RECORDER WTW-FR117 WITH YOKOGAWA DX364

Administrative engineering change EC 79150 has been created to incorporate configuration management document updates for the replacement of recorder WTW-FR117. This replacement was evaluated under EC 6225 and Engineering Standard EN-IC-S-004-R Revision 7 which addressed the differences between the upgraded Yokogawa DX364 digital recorder and the previous Bailey 771 series recorders located in the River Bend Station (RBS) Auxiliary Control Room. The affected configuration management documents are listed in section 2.0 of this engineering change, which includes updates to Asset Suite for the equipment/component database information.

As stated in the evaluation for EC 6225, the power consumption and heat produced will be less for some recorders but higher for others when the individual recorders are replaced. The overall changes to the power consumption and heat loads in the Auxiliary Control Room show a net decrease after all recorders are replaced.

There is no impact to the method of liquid waste processing or system effluent as a result of this change.

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No EC was identified as being completed during this time period that modified any radioactive waste system major component such that the processing method or effluent was changed. Also no changes were identified affecting the method of processing solid, liquid or gaseous waste or the isotopic composition or the quantity of liquid, solid, or gaseous waste as described in the USAR.

In conclusion, no design changes were completed during the specified time period that constituted a major change to either the liquid, solid or gaseous radwaste treatment systems.

2.7 Land Use Census Changes

A Land Use Census was not conducted in 2019. The Land Use Census is performed every two years in accordance with procedure EN-CY-127, as required by the Technical Requirements Manual (TRM) (TR 3.12.2). The results of the Land Use Census are included in the Annual Radiological Environmental Operating Report pursuant to Technical Specification 5.6.2.

2.8 Effluent Monitor Instrument Inoperability**2.8.1 Radioactive Liquid Effluent Monitoring Instrumentation Operability**

The minimum number of channels required to be OPERABLE as described in Table 3.3.11.2-1 of Technical Requirement 3.3.11.2 were, if inoperable at any time in the period January 1, 2019, through December 31, 2019, restored to operable status within the required time.

2.8.2 Radioactive Gaseous Effluent Monitoring Instrumentation Operability

The minimum number of channels required to be OPERABLE as described in Table 3.3.11.3-1 of Technical Requirement 3.3.11.3 were, if inoperable at any time in the period January 1, 2019, through December 31, 2019, restored to operable status within the required time.

Annual Radioactive Effluent Release Report**2.9 Offsite Dose Calculation Manual Changes**

There were no changes to the Offsite Dose Calculation Manual in 2019.

2.10 Radiological Environmental Monitoring Program Changes

There were no changes to the Radiological Environmental Monitoring Program during the reporting period January 1, 2019, through December 31, 2019. Process Control Program (PCP) Changes

There were no changes to the Process Control Program (PCP) in 2019. NON-REMP Groundwater Monitoring Results (NEI 07-07)

Ground water samples were taken in support of the Groundwater Protection Initiative (GPI). These samples are not part of the Radiological Environmental Monitoring Program. The sample results for 2019 are located in Table 17, Table 18, and Table 19.

River Bend Station made no NEI 07-07 voluntary notifications in 2019.

2.11 Outside Tanks

The maximum quantity of radioactive material, excluding tritium and dissolved or entrained noble gases, contained in any unprotected outdoor tank during the period of January 1, 2019, through December 31, 2019 was less than or equal to the 10 curie limit as required by Technical Specification 5.5.8.b.

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3.0 GASEOUS EFFLUENTS

3.1 Gas Effluent and Waste Disposal Report

Table 1, Gaseous Effluents-Summation of All Releases

A.	Fission & Activation Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1.	Total Release	Ci	1.28E+02	6.40E+01	1.83E+01	4.94E+01	2.60E+02
2.	Average release rate for the period	μCi/sec	1.65E+01	8.14E+00	2.30E+00	6.21E+00	8.25E+00
B. Iodine							
1.	Total Iodine – 131	Ci	6.80E-02	1.13E-02	3.65E-02	4.47E-02	1.61E-01
2.	Average release rate for the period	μCi/sec	8.74E-03	1.44E-03	4.60E-03	5.62E-03	5.09E-03
C. Particulates							
1.	Particulates with half-lives > 8 days	Ci	1.11E-03	2.11E-04	2.80E-04	6.29E-04	2.23E-03
2.	Average release rate for the period	μCi/sec	1.43E-04	2.69E-05	3.52E-05	7.91E-05	7.08E-05
D. Tritium							
1.	Total Release	Ci	7.57E+00	5.77E+00	4.42E+00	4.36E+00	2.21E+01
2.	Average release rate for the period	μCi/sec	9.74E-01	7.34E-01	5.56E-01	5.48E-01	7.01E-01
E. Gross Alpha							
1.	Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.	Average release rate for the period	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
F. Carbon-14							
1.	Total Release	Ci	2.71E+00	2.74E+00	2.77E+00	2.77E+00	1.1E+01
2.	Average release rate for the period	μCi/sec	3.49E-01	3.48E-01	3.48E-01	3.48E-01	3.49E-01

% of limit is located in the Radiological Impact to Man Table

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Table 2, Gaseous Effluents – Ground Level Release - Continuous Mode

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Fission Gases						
Xe-131m	Ci	2.14E+00	0.00E+00	0.00E+00	0.00E+00	2.14E+00
Xe-133m	Ci	0.00E+00	3.67E-01	0.00E+00	0.00E+00	3.67E-01
Xe-133	Ci	0.00E+00	1.99E+01	0.00E+00	0.00E+00	1.99E+01
Xe-135m	Ci	1.91E+01	1.25E+00	4.42E+00	4.60E+00	2.94E+01
Xe-135	Ci	1.81E+01	7.160E-01	3.13E+00	2.63E+00	2.45E+01
Total For Period	Ci	3.93E+01	2.22E+01	7.55E+00	7.23E+00	7.63E+01
Iodines						
I-131	Ci	4.97E-04	1.18E-04	7.04E-05	7.97E-05	7.65E-04
I-133	Ci	7.11E-04	3.60E-05	1.15E-04	8.57E-05	9.48E-04
Total for Period	Ci	1.21E-03	1.54E-04	1.85E-04	1.65E-04	1.71E-03
Particulates						
Co-60	Ci	1.64E-06	6.32E-06	4.61E-06	2.69E-06	1.53E-05
Total for Period	Ci	1.64E-06	6.32E-06	4.61E-06	2.69E-06	1.53E-05
Tritium						
H-3	Ci	3.13E+00	4.20E+00	3.18E+00	1.54E+00	1.20E+01

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Table 3, Gaseous Effluents – Mixed Mode Release – Continuous Mode

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Fission Gases						
Kr-85m	Ci	9.24E-01	6.28E-01	5.63E-02	4.41E-01	2.05E+00
Kr-85	Ci	0.00E+00	0.00E+00	0.00E+00	1.49E-02	1.49E-02
Kr-87	Ci	0.00E+00	1.68E+00	0.00E+00	0.00E+00	1.68E+00
Kr-88	Ci	0.00E+00	1.81E+00	0.00E+00	4.90E-02	1.85E+00
Xe-131m	Ci	0.00E+00	0.00E+00	5.12E+00	0.00E+00	5.12E+00
Xe-133	Ci	1.65E+01	1.99E+00	1.33E-01	7.59E+00	2.62E+01
Xe-135m	Ci	2.04E+01	5.97E+00	2.92E+00	1.66E+01	4.59E+01
Xe-135	Ci	4.90E+01	7.78E+00	2.50E+00	1.48E+01	7.41E+01
Xe-137	Ci	0.00E+00	2.37E+00	0.00E+00	0.00E+00	2.37E+00
Xe-138	Ci	2.32E+00	1.96E+01	1.59E-02	2.66E+00	2.45E+01
Total for Period	Ci	8.91E+01	4.18E+01	1.08E+01	4.22E+01	1.84E+02
Iodines						
I-131	Ci	8.78E-03	2.14E-03	3.27E-03	4.16E-03	1.84E-02
I-133	Ci	5.80E-02	9.04E-03	3.31E-02	4.03E-02	1.41E-01
Total for Period	Ci	6.68E-02	1.12E-02	3.64E-02	4.45E-02	1.59E-01
Particulates						
Fe-59	Ci	4.25E-06	0.00E+00	0.00E+00	0.00E+00	4.25E-06
Co-58	Ci	0.00E+00	0.00E+00	0.00E+00	1.26E-05	1.26E-05
Co-60	Ci	0.00E+00	1.05E-05	0.00E+00	5.11E-05	6.16E-05
Ni-63	Ci	1.24E-04	0.00E+00	0.00E+00	0.00E+00	1.24E-04
Zn-65	Ci	0.00E+00	0.00E+00	0.00E+00	6.79E-06	6.79E-06
Sr-89	Ci	5.50E-04	8.63E-05	9.72E-05	2.21E-04	9.54E-04
Sr-90	Ci	1.48E-06	0.00E+00	0.00E+00	0.00E+00	1.48E-06
Nb-95	Ci	0.00E+00	1.39E-06	0.00E+00	1.18E-06	2.57E-06
Ag-110m	Ci	1.40E-05	1.52E-05	6.84E-06	4.96E-06	4.10E-05
Cs-136	Ci	0.00E+00	0.00E+00	0.00E+00	1.08E-05	1.08E-05
Ba-140	Ci	4.13E-04	9.15E-05	1.68E-04	3.12E-04	9.84E-04
Ce-141	Ci	6.18E-06	0.00E+00	2.83E-06	6.36E-06	1.54E-05
Total for Period	Ci	1.11E-03	2.05E-04	2.75E-04	6.26E-04	2.22E-03
Tritium						
H-3	Ci	4.44E+00	1.57E+00	1.24E+00	2.82E+00	1.01E+01

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Table 4, Radioactive Gaseous Waste Sampling and Analysis Program

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) uC/ml
Main Plant Exhaust Duct	M Grab Sample	M	Principle Gamma Emitters	1.00E-04
			H-3	1.00E-06
Fuel Building Ventilation Exhaust Duct	M Grab Sample	M	Principle Gamma Emitters	1.00E-04
			H-3	1.00E-06
Radwaste Building Ventilation Exhaust Duct	M Grab Sample	M	Principle Gamma Emitters	1.00E-04
			H-3	1.00E-06
All Release Types as listed above	Continuous	W Charcoal Sample	I-131	1.00E-12
			I-133	1.00E-10
	Continuous	W Particulate Sample	Principle Gamma Emitters (I-131, Others)	1.00E-11
	Continuous	M Composite Particulate Sample	Gross Alpha	1.00E-11
	Continuous	Q Composite Particulate Sample	Sr-89, Sr-90	1.00E-11
	Continuous	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1.00E-6

W = At least once per 7 days

M = At least once per 31 days

Q = At least once per 92 days

Annual Radioactive Effluent Release Report

4.0 LIQUID EFFLUENTS

4.1 Liquid Effluent and Waste Disposal Report

Table 5, Liquid Effluents-Summation of All Releases

A.	Fission & Activation Products	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1.	Total Release (not including tritium, gases or alpha)	Ci	3.75E-03	6.96E-03	2.52E-03	1.90E-03	1.51E-02
2.	Average diluted concentration during period	μCi/mL	1.73E-06	1.41E-06	4.97E-07	5.78E-07	9.79E-07
B. Tritium							
1.	Total Release	Ci	1.11E+01	1.73E+01	1.57E+01	1.26E+01	5.67E+01
2.	Average diluted concentration during period.	μCi/mL	5.13E-03	3.51E-03	3.09E-03	3.84E-03	3.67E-03
C. Dissolved & Entrained Gases							
1.	Total Release	Ci	1.02E-01	2.28E-02	8.74E-02	5.68E-02	2.69E-01
2.	Average diluted concentration during period	μCi/mL	4.72E-05	4.62E-06	1.73E-05	1.72E-05	1.74E-05
D. Gross Alpha Activity							
1.	Total Release	Ci	0.0E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E.	Volume Of Waste Released (prior to dilution)	Liters	2.17E+06	4.94E+06	5.06E+06	3.29E+06	1.55E+07
F.	Volume Of Dilution Water Used During Period	Liters	1.36E+09	1.13E+09	1.36E+09	1.38E+09	5.23E+09

% of limit is located in the Radiological Impact to Man Table

Annual Radioactive Effluent Release Report

Table 6, Liquid Effluents – Batch Release

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Fission and Activation Products						
Cr-51	Ci	0.00E+00	1.30E-05	7.52E-06	0.00E+00	2.05E-05
Mn-54	Ci	5.57E-05	2.24E-04	8.41E-05	4.47E-05	4.09E-04
Co-58	Ci	2.15E-06	2.12E-05	0.00E+00	3.93E-06	2.73E-05
Co-60	Ci	2.88E-03	6.20E-03	2.09E-03	1.47E-03	1.27E-02
Ni-65	Ci	0.00E+00	5.70E-06	0.00E+00	0.00E+00	5.70E-06
Zn-65	Ci	8.05E-05	9.03E-05	7.11E-06	0.00E+00	1.78E-04
Y-92	Ci	1.37E-05	0.00E+00	0.00E+00	0.00E+00	1.37E-05
Zr-95	Ci	1.88E-06	1.02E-05	0.00E+00	0.00E+00	1.21E-05
Nb-95	Ci	2.54E-06	1.92E-05	2.11E-06	0.00E+00	2.39E-05
Nb-97	Ci	0.00E+00	3.14E-06	0.00E+00	0.00E+00	3.14E-06
Mo-99	Ci	0.00E+00	1.62E-05	0.00E+00	0.00E+00	1.62E-05
Tc-99m	Ci	0.00E+00	0.00E+00	0.00E+00	6.76E-06	6.76E-06
Ru-103	Ci	0.00E+00	2.80E-06	0.00E+00	6.83E-07	3.48E-06
Ru-105	Ci	0.00E+00	4.42E-06	0.00E+00	0.00E+00	4.42E-06
Ag-110m	Ci	0.00E+00	4.20E-06	0.00E+00	0.00E+00	4.20E-06
Rh-105	Ci	0.00E+00	6.79E-06	0.00E+00	0.00E+00	6.79E-06
Sb-124	Ci	0.00E+00	1.76E-05	0.00E+00	0.00E+00	1.76E-05
Sb-125	Ci	0.00E+00	7.73E-06	0.00E+00	0.00E+00	7.73E-06
Sb-126	Ci	0.00E+00	2.08E-06	0.00E+00	1.26E-06	3.34E-06
I-131	Ci	3.66E-05	1.81E-06	4.93E-06	0.00E+00	4.34E-05
I-133	Ci	2.26E-06	1.21E-06	0.00E+00	0.00E+00	3.47E-06
Cs-134	Ci	4.82E-05	7.99E-05	1.37E-05	6.35E-06	1.48E-04
Cs-137	Ci	3.97E-05	5.40E-05	1.12E-05	2.82E-06	1.08E-04
Ba-142	Ci	4.08E-04	0.00E+00	2.07E-04	3.50E-04	9.65E-04
La-140	Ci	1.08E-04	1.55E-05	7.30E-05	1.49E-05	2.11E-04
Ce-141	Ci	1.15E-05	7.12E-05	0.00E+00	0.00E+00	8.28E-05
Ce-144	Ci	5.75E-05	8.82E-05	0.00E+00	0.00E+00	1.46E-04
W-187	Ci	0.00E+00	0.00E+00	5.03E-06	0.00E+00	5.03E-06
Np-239	Ci	0.00E+00	0.00E+00	9.07E-06	0.00E+00	9.07E-06
Total for Period	Ci	3.75E-03	6.96E-03	2.52E-03	1.90E-03	1.51E-02
Tritium						
H-3	Ci	1.11E+01	1.73E+01	1.57E+01	1.26E+01	5.67E+01
Total for Period	Ci	1.11E+01	1.73E+01	1.57E+01	1.26E+01	5.67E+01

Annual Radioactive Effluent Release Report

Table 6, Liquid Effluents – Batch Release

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Dissolved and Entrained Gases						
Kr-88	Ci	1.46E-05	0.00E+00	9.00E-05	5.72E-05	1.62E-04
Xe-131m	Ci	1.01E-03	5.17E-04	0.00E+00	0.00E+00	1.52E-03
Xe-133m	Ci	2.62E-03	2.45E-04	1.13E-03	5.36E-04	4.53E-03
Xe-133	Ci	5.62E-02	1.45E-02	3.73E-02	2.13E-02	1.29E-01
Xe-135	Ci	4.24E-02	7.49E-03	4.90E-02	3.49E-02	1.34E-01
Total for Period	Ci	1.02E-01	2.28E-02	8.74E-02	5.68E-02	2.69E-01

Annual Radioactive Effluent Release Report

Table 7, Supplemental Information for Liquid Effluents – Batch Mode

Report for 2019	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Year
Number of releases		28	66	81	53	228
Total Release Time	minutes	1.09E+04	2.49E+04	2.63E+04	1.72E+04	7.93E+04
Maximum Release Time	minutes	1.42E+03	1.44E+03	7.41E+02	7.03E+02	1.44E+03
Average Release Time	minutes	3.89E+02	3.77E+02	3.25E+02	3.25E+02	3.48E+02
Minimum Release Time	minutes	2.00E+02	1.10E+02	2.61E+02	2.53E+02	1.10E+02

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Average Mississippi River stream flow during periods of release into a flowing stream	ft ³ /sec	1,171,102	1,216,977	716,761	573,554

Annual Radioactive Effluent Release Report

Table 8, Radioactive Liquid Waste Sampling and Analysis Program

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) uC/ml
Batch Waste Release (Liquid Radwaste Recovery Sample Tanks)	P Each Batch	P Each Batch	Principle Gamma Emitters; except Ce-144	5.00E-07 5.00E-06
			I-131	1.00E-06
	P Each Batch / M	M	Dissolved and Entrained Gases (Gamma Emitters)	1.00E-05
	P Each Batch	M Composite	H-3	1.00E-05
			Gross Alpha	1.00E-07
	P Each Batch	Q Composite	Sr-89, Sr-90	5.00E-8
			Fe-55	1.00E-06

P = Prior to each radioactive release

M = At least once per 31 days

Q = At least once per 92 days

Annual Radioactive Effluent Release Report

5.0 SOLID WASTE SUMMARY

5.1 Solid Waste Shipped Offsite for Burial or Disposal (Not Irradiated Fuel)5.1.1 Types of Waste

Table 9, Types of Solid Waste Summary

Types of Waste	Total Quantity (m ³)	Total Activity (Ci)	Est. Total Error (%)
a. Spent resins, filter sludges, evaporator bottoms, etc.	9.11E+01	7.87E+01	25
b. Dry compressible waste, contaminated equip, etc.	1.82E+03	1.04E+01	25
c. Irradiated components, control rods, etc.	0.00E+00	0.00E+00	25
d. Other (Water, EHC, Waste Oil, etc.)	6.51E+01	4.00E-02	25

5.1.2 Estimate of major nuclide composition (by waste type) only >1%^[Note 1] are reported.

Table 10, Major Nuclides

Major Nuclide Composition	Isotope	%	Curies
a. Resins, filters, evaporator bottoms, etc.	C-14	8.69	6.84E+00
	Mn-54	2.19	1.72E+00
	Fe-55	20.24	1.59E+01
	Co-60	46.11	3.63E+01
	Ni-63	2.13	1.67E+00
	Zn-65	3.04	2.39E+00
	Sr-90	1.15	9.07E-01
	Cs-134	6.54	5.15E+00
b. Dry compressible waste, contaminated equip, etc.	Cs-137	7.78	6.12E+00
	Mn-54	1.65	1.72E-01
	Fe-55	42.8	4.47E+00
	Co-60	52.22	5.45E+00
c. Irradiated components, control rods, etc.	Ni-63	1.91	2.00E-01
	N/A	N/A	N/A

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Table 10, Major Nuclides

Major Nuclide Composition	Isotope	%	Curies
d. Other (Water, EHC, Waste Oil, Etc.)	Mn-54	1.88	7.51E-04
	Fe-55	43.22	1.73E-02
	Co-60	51.91	2.05E-02
	Ni-63	1.82	7.27E-04

[Note 1] – “Major” radionuclide is equivalent to a “principle” radionuclide, i.e. greater than 1 percent of total activity.

5.1.3 Solid Waste Disposition

Table 11, Solid Waste Disposition (Specify Site or Unit)

Number of Shipments	Mode of Transportation	Destination
8	Truck	Energy Solutions, LLC (Gallaher) – Oak Ridge, TN
3	Truck	Energy Solutions (Memphis) - Memphis, TN
51	Truck	Energy Solutions (Bear Creek) - Oak Ridge, TN
2	Truck	Energy Solutions (Erwin ResinSolution) - Erwin, TN

Table 12, Irradiated Fuel Shipments Disposition

No Irradiated Fuel Shipments for 2019		
Number of Shipments	Mode of Transportation	Destination
N/A	N/A	N/A

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6.0 RADIOLOGICAL IMPACT TO MAN

6.1 10CFR Part50, Appendix I Evaluation

Table 13, Dose Assessment

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Liquid Effluent Dose Limit, Total Body	1.5 mrem	1.5 mrem	1.5 mrem	1.5 mrem	3 mrem
Total Body Dose	6.02E-05	2.71E-04	5.73E-05	1.89E-05	3.69E-04
% of Limit	4.01E-03	1.81E-02	3.82E-03	1.26E-03	1.23E-02
Liquid Effluent Dose Limit, Any Organ	5 mrem	5 mrem	5 mrem	5 mrem	10 mrem
Maximum Organ Dose	9.45E-05	7.45E-04	2.23E-04	7.79E-05	9.63E-04
% of Limit	1.89E-03	1.49E-02	4.47E-03	1.56E-03	9.63E-03
Gaseous Effluent Dose Limit, Gamma Air	5 mrad	5 mrad	5 mrad	5 mrad	10 mrad
Gamma Air Dose	1.53E-01	4.40E-02	2.95E-02	3.92E-02	2.65E-01
% of Limit	3.05E+00	8.80E-01	5.90E-01	7.80E-01	2.65E+00
Gaseous Effluent Dose Limit, Beta Air	10 mrad	10 mrad	10 mrad	10 mrad	20 mrad
Beta Air Dose	9.87E-02	5.03E-02	1.62E-02	2.06E-02	1.86E-01
% of Limit	9.90E-01	5.00E-01	1.60E-01	2.10E-01	9.30E-01
Gaseous Effluent Organ Dose Limit (Iodine, Tritium, Particulates with > 8 day half-life)	7.5 mrem	7.5 mrem	7.5 mrem	7.5 mrem	15 mrem
Gaseous Effluent Organ Dose (Iodine, Tritium, Particulates with > 8 day half-life)	4.06E-01	1.11e-01	1.58e-01	1.87e-01	8.62e-01
% of Limit	5.41E+00	1.48E+00	2.11E+00	2.49E+00	5.74E+00

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Table 13, Dose Assessment (continued)

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Gaseous Effluent Organ Dose Limit (Carbon-14 – Bounding Calculation)	7.5 mrem	7.5 mrem	7.5 mrem	7.5 mrem	15 mrem
Gaseous Effluent Organ Dose (Carbon-14 – Bounding Calculation)	1.16E+00	1.17E+00	1.18E+00	1.18E+00	4.70E+00
% of Limit	1.55E+01	1.56E+01	1.58E+01	1.58E+01	3.13E+01

6.2 Dose to Members of the Public Inside the Site Boundary

The maximally exposed member of the public was calculated to be member of the West Feliciana Parish Sheriff's Office (WFPSO) that opened a substation in a facility within the site boundary beginning in 2019. The office is estimated to be occupied during normal work hours for 2000 hours per year. It should be noted that the liquid effluent pathway dose was not considered since the individual would not engage in activities that would allow exposure to this pathway.

Location	Annual Critical Organ Dose (mrem)	Annual Total Body Dose (mrem)	Annual Skin Dose (mrem)	Annual Duration Factor
Alligator Bayou	6.18E-05	1.08E-04	1.86E-04	4.57E-03
Deer Hunters	2.72E-03	4.04E-03	6.97E-03	2.92E-02
Onsite RV Park	5.66E-03	8.40E-03	1.45E-02	6.08E-02
WFPSO Building	2.12E-02	3.15E-02	5.45E-02	2.28E-01

Annual Radioactive Effluent Release Report

6.3 40CFR Part 190 Evaluation for an Individual in the Unrestricted Area

An assessment (see Table 14) was made of radiation doses to the likely most-exposed member of the public from River Bend and other nearby uranium fuel cycle sources (none within five miles). The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC, due to releases of radioactivity and to radiation from uranium fuel cycle sources, shall be limited to less than or equal to 25 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

Table 14, EPA 40 CFR PART 190 Evaluation

	Total Body	Thyroid	Any Other Organ
Dose Limit	25 mrem	75 mrem	25 mrem
Dose	9.44E-01	1.74E+00	5.23E+00
% of Limit	3.77E+00	2.32E+00	2.09E+01

Liquid dose, gaseous dose including a bounding calculation of C-14 dose, direct shine, ISFSI and any other nuclear power related facility within 5 miles of the station are considered when calculating dose compliance with 40 CFR 190.

Annual Radioactive Effluent Release Report

7.0 METEOROLOGICAL DATA

Cumulative joint frequency distributions and annual average data for continuous releases are listed below. The meteorological recovery for 2019 was 97.91%.

7.1 Joint Frequency Distributions

All Stability Classes

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	117	66	106	117	99	179	100	0	0	0	784
NNE	108	52	77	141	119	99	22	0	0	0	618
NE	86	55	78	148	146	100	12	0	0	0	625
ENE	97	82	64	107	67	72	6	0	0	0	495
E	73	79	78	74	46	10	0	0	0	0	360
ESE	25	52	93	117	76	37	3	0	0	0	403
SE	25	65	112	260	188	163	34	3	0	0	850
SSE	12	38	71	182	203	343	163	12	0	0	1024
S	9	22	40	111	131	229	78	0	0	0	620
SSW	13	23	26	46	67	85	44	0	0	0	304
SW	14	25	24	35	51	41	8	0	0	0	198
WSW	13	33	27	58	63	51	4	0	0	0	249
W	39	67	26	55	66	100	14	0	0	0	367
WNW	68	97	47	56	76	64	34	0	0	0	442
NW	126	103	44	58	52	101	52	4	0	0	540
NNW	131	57	60	96	72	85	82	0	0	0	583
Total	956	916	973	1661	1522	1759	656	19	0	0	8462

Number of Calms: 115

Number of Invalid Hours: 183

Number of Valid Hours: 8577

Total Hours for the Period: 8760

Annual Radioactive Effluent Release Report

Stability Class A

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	1	0	1	6	16	42	24	0	0	0	90
NNE	0	1	1	4	26	25	10	0	0	0	67
NE	0	0	1	8	29	32	6	0	0	0	76
ENE	0	0	0	7	19	17	1	0	0	0	44
E	0	1	1	12	21	5	0	0	0	0	40
ESE	0	0	1	10	17	15	0	0	0	0	43
SE	0	0	0	5	34	53	4	0	0	0	96
SSE	0	0	1	6	15	51	33	1	0	0	107
S	0	0	0	2	16	73	30	0	0	0	121
SSW	0	0	0	5	18	27	6	0	0	0	56
SW	0	0	0	6	21	17	3	0	0	0	47
WSW	0	0	0	11	34	35	2	0	0	0	82
W	0	0	2	9	36	72	11	0	0	0	130
WNW	0	1	0	6	34	29	12	0	0	0	82
NW	0	0	0	7	20	38	12	0	0	0	77
NNW	1	0	0	9	20	25	30	0	0	0	85
Total	2	3	8	113	376	556	184	1	0	0	1243

Number of Calms: 0

Number of Invalid Hours: 0

Number of Valid Hours: 1243

Total Hours for the Period: 1243

Annual Radioactive Effluent Release Report

Stability Class B

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	1	2	1	9	8	0	0	0	21
NNE	0	0	0	1	5	4	0	0	0	0	10
NE	0	0	0	4	9	7	0	0	0	0	20
ENE	0	0	0	4	3	5	0	0	0	0	12
E	0	0	0	3	0	0	0	0	0	0	3
ESE	0	0	0	6	6	1	0	0	0	0	13
SE	0	0	0	3	9	9	0	0	0	0	21
SSE	0	0	0	7	10	17	18	0	0	0	52
S	0	0	0	1	2	21	11	0	0	0	35
SSW	0	0	0	3	2	7	6	0	0	0	18
SW	0	0	0	1	6	4	0	0	0	0	11
WSW	0	0	0	3	4	1	0	0	0	0	8
W	0	0	1	1	4	10	0	0	0	0	16
WNW	0	0	0	2	7	4	1	0	0	0	14
NW	0	0	1	1	6	4	0	0	0	0	12
NNW	0	0	0	0	4	9	2	0	0	0	15
Total	0	0	3	42	78	112	46	0	0	0	281

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 282

TOTAL HOURS FOR THE PERIOD: 282

Annual Radioactive Effluent Release Report

Stability Class C

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	0	1	8	18	10	0	0	0	37
NNE	0	0	0	5	8	14	2	0	0	0	29
NE	0	0	2	7	14	15	1	0	0	0	39
ENE	0	0	1	11	5	11	1	0	0	0	29
E	0	0	3	7	2	1	0	0	0	0	13
ESE	0	0	2	11	4	1	0	0	0	0	18
SE	1	0	2	11	18	16	4	0	0	0	52
SSE	0	0	2	8	12	44	31	2	0	0	99
S	0	0	0	7	21	40	4	0	0	0	72
SSW	0	0	0	2	7	15	5	0	0	0	29
SW	0	0	0	2	8	4	1	0	0	0	15
WSW	0	0	0	7	7	6	1	0	0	0	21
W	0	0	1	11	16	8	1	0	0	0	37
WNW	0	0	1	7	4	7	5	0	0	0	24
NW	0	0	0	9	7	9	3	0	0	0	28
NNW	0	0	2	6	10	11	6	0	0	0	35
Total	1	0	16	112	151	220	75	2	0	0	577

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 577

TOTAL HOURS FOR THE PERIOD: 577

Annual Radioactive Effluent Release Report

Stability Class D

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	1	1	14	36	43	91	55	0	0	0	241
NNE	0	0	7	46	45	50	10	0	0	0	158
NE	0	4	11	44	43	33	4	0	0	0	139
ENE	0	5	17	34	15	21	2	0	0	0	94
E	1	4	13	25	12	3	0	0	0	0	58
ESE	1	4	22	40	22	10	3	0	0	0	102
SE	0	2	11	56	47	47	20	3	0	0	186
SSE	1	0	5	22	55	144	59	7	0	0	293
S	0	2	1	16	35	75	21	0	0	0	150
SSW	0	0	6	20	29	27	17	0	0	0	99
SW	0	1	5	11	11	12	4	0	0	0	44
WSW	0	1	7	17	16	6	1	0	0	0	48
W	0	3	4	19	7	9	1	0	0	0	43
WNW	1	0	3	13	17	17	15	0	0	0	66
NW	1	1	4	11	9	32	32	4	0	0	94
NNW	1	2	5	14	26	35	39	0	0	0	122
Total	7	30	135	424	432	612	283	14	0	0	1937

NUMBER OF CALMS: 2

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1939

TOTAL HOURS FOR THE PERIOD: 1939

Annual Radioactive Effluent Release Report

Stability Class E

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	5	10	36	46	31	18	3	0	0	0	149
NNE	6	14	24	65	30	6	0	0	0	0	145
NE	4	22	37	63	47	13	1	0	0	0	187
ENE	4	21	26	36	23	18	2	0	0	0	130
E	6	23	40	24	10	1	0	0	0	0	104
ESE	5	19	47	46	26	9	0	0	0	0	152
SE	8	30	63	167	78	38	5	0	0	0	389
SSE	1	15	33	108	99	86	21	2	0	0	365
S	1	4	15	66	54	20	12	0	0	0	172
SSW	3	9	12	12	11	9	10	0	0	0	66
SW	4	13	12	14	5	4	0	0	0	0	52
WSW	1	9	11	18	2	2	0	0	0	0	43
W	5	10	10	12	3	1	1	0	0	0	42
WNW	7	20	18	23	12	5	1	0	0	0	86
NW	3	7	16	25	9	18	5	0	0	0	83
NNW	6	11	19	53	10	4	4	0	0	0	107
Total	69	237	419	778	450	252	65	2	0	0	2272

NUMBER OF CALMS: 3

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2275

TOTAL HOURS FOR THE PERIOD: 2275

Annual Radioactive Effluent Release Report

Stability Class F

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	19	28	35	17	0	1	0	0	0	0	100
NNE	23	20	38	16	5	0	0	0	0	0	102
NE	17	10	20	19	4	0	0	0	0	0	70
ENE	21	22	18	15	2	0	0	0	0	0	78
E	20	27	16	2	1	0	0	0	0	0	66
ESE	12	20	18	4	1	1	0	0	0	0	56
SE	8	25	31	17	2	0	1	0	0	0	84
SSE	6	15	29	30	12	1	1	0	0	0	94
S	5	11	20	17	3	0	0	0	0	0	56
SSW	5	11	8	3	0	0	0	0	0	0	27
SW	3	9	6	0	0	0	0	0	0	0	18
WSW	8	20	7	1	0	0	0	0	0	0	36
W	18	28	3	1	0	0	0	0	0	0	50
WNW	17	38	19	4	2	1	0	0	0	0	81
NW	29	25	19	5	1	0	0	0	0	0	79
NNW	20	15	12	11	2	1	1	0	0	0	62
Total	231	324	299	162	35	5	3	0	0	0	1059

NUMBER OF CALMS: 18

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1077

TOTAL HOURS FOR THE PERIOD: 1077

Annual Radioactive Effluent Release Report

Stability Class G

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	91	27	19	9	0	0	0	0	0	0	146
NNE	79	17	7	4	0	0	0	0	0	0	107
NE	65	19	7	3	0	0	0	0	0	0	94
ENE	72	34	2	0	0	0	0	0	0	0	108
E	46	24	5	1	0	0	0	0	0	0	76
ESE	7	9	3	0	0	0	0	0	0	0	19
SE	8	8	5	1	0	0	0	0	0	0	22
SSE	4	8	1	1	0	0	0	0	0	0	14
S	3	5	4	2	0	0	0	0	0	0	14
SSW	5	3	0	1	0	0	0	0	0	0	9
SW	7	2	1	1	0	0	0	0	0	0	11
WSW	4	3	2	1	0	1	0	0	0	0	11
W	16	26	5	2	0	0	0	0	0	0	49
WNW	43	38	6	1	0	1	0	0	0	0	89
NW	93	70	4	0	0	0	0	0	0	0	167
NNW	103	29	22	3	0	0	0	0	0	0	157
Total	646	322	93	30	0	2	0	0	0	0	1093

NUMBER OF CALMS: 91

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1184

TOTAL HOURS FOR THE PERIOD: 1184

Annual Radioactive Effluent Release Report

All Stability Classes

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	2	5	10	31	39	219	260	32	0	0	598
NNE	3	3	9	36	76	264	246	20	0	0	657
NE	1	4	11	40	72	202	304	19	1	0	654
ENE	1	3	13	48	77	161	213	39	9	0	564
E	1	3	8	52	94	193	93	9	6	0	459
ESE	1	2	7	30	61	314	479	62	11	2	969
SE	3	1	14	32	46	221	308	39	7	0	671
SSE	0	4	4	40	60	209	346	77	12	0	752
S	0	2	2	44	66	265	301	30	0	0	710
SSW	0	2	5	27	63	165	121	40	0	0	423
SW	1	5	6	27	52	113	45	3	0	0	252
WSW	0	4	6	22	88	148	36	3	0	0	307
W	1	2	8	45	88	200	94	20	2	0	460
WNW	0	3	12	20	61	123	84	18	6	0	327
NW	0	2	4	31	49	123	121	35	2	0	367
NNW	0	2	7	20	51	128	145	52	0	0	405
Total	14	47	126	545	1043	3048	3196	498	56	2	8575

NUMBER OF CALMS: 2

NUMBER OF INVALID HOURS: 183

NUMBER OF VALID HOURS: 8577

TOTAL HOURS FOR THE PERIOD: 8760

Annual Radioactive Effluent Release Report

Stability Class A

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	1	1	5	19	46	4	0	0	76
NNE	0	0	1	2	9	28	27	8	0	0	75
NE	0	0	0	2	9	31	26	3	0	0	71
ENE	0	0	0	3	5	15	36	7	0	0	66
E	0	0	1	1	10	28	13	3	0	0	56
ESE	0	0	1	2	5	29	44	8	0	0	89
SE	0	0	0	3	4	26	30	2	1	0	66
SSE	0	0	0	2	1	18	41	18	1	0	81
S	0	0	0	3	11	35	62	4	0	0	115
SSW	0	0	0	2	9	17	20	1	0	0	49
SW	0	1	0	4	9	15	14	0	0	0	43
WSW	0	0	0	1	19	53	15	0	0	0	88
W	0	0	1	6	17	79	48	6	0	0	157
WNW	0	0	0	4	6	30	19	8	0	0	67
NW	0	1	0	5	11	20	30	5	0	0	72
NNW	0	0	0	0	10	19	33	10	0	0	72
Total	0	2	5	41	140	462	504	87	2	0	1243

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1243

TOTAL HOURS FOR THE PERIOD: 1243

Annual Radioactive Effluent Release Report

Stability Class B

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	0	0	0	6	10	2	0	0	18
NNE	0	0	0	2	1	2	6	0	0	0	11
NE	0	0	0	2	2	9	8	1	0	0	22
ENE	0	0	0	0	2	4	7	0	0	0	13
E	0	0	0	1	1	5	2	0	0	0	9
ESE	0	0	0	0	3	7	13	1	0	0	24
SE	0	0	0	2	3	3	7	1	0	0	16
SSE	0	0	0	2	2	6	14	12	0	0	36
S	0	0	0	2	2	7	23	4	0	0	38
SSW	0	0	0	1	3	4	9	5	0	0	22
SW	0	0	0	1	1	5	2	0	0	0	9
WSW	0	0	0	1	2	4	2	0	0	0	9
W	0	0	0	4	1	9	4	0	0	0	18
WNW	0	0	0	0	3	6	2	0	1	0	12
NW	0	0	0	0	0	5	3	0	0	0	8
NNW	0	0	1	0	3	5	6	2	0	0	17
Total	0	0	1	18	29	87	118	28	1	0	282

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 282

TOTAL HOURS FOR THE PERIOD: 282

Annual Radioactive Effluent Release Report

Stability Class C

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	0	4	2	11	16	1	0	0	34
NNE	0	0	0	1	2	9	16	1	0	0	29
NE	0	0	1	1	9	14	16	3	0	0	44
ENE	0	0	0	3	5	5	18	4	1	0	36
E	0	1	0	3	3	9	2	0	0	0	18
ESE	0	0	1	3	5	19	17	4	0	0	49
SE	0	0	1	1	4	15	18	8	0	0	47
SSE	0	0	0	1	4	18	34	12	2	0	71
S	0	0	0	1	5	25	34	0	0	0	65
SSW	0	0	0	0	3	9	13	4	0	0	29
SW	0	0	0	0	3	6	3	1	0	0	13
WSW	0	0	0	1	8	12	1	0	0	0	22
W	0	0	0	6	7	21	8	3	1	0	46
WNW	0	1	0	1	8	6	6	1	0	0	23
NW	0	0	0	2	6	5	8	0	0	0	21
NNW	0	0	1	3	5	6	12	3	0	0	30
Total	0	2	4	31	79	190	222	45	4	0	577

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 577

TOTAL HOURS FOR THE PERIOD: 577

Annual Radioactive Effluent Release Report

Stability Class D

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	1	2	4	10	63	97	23	0	0	200
NNE	0	0	1	10	26	67	95	10	0	0	209
NE	0	1	2	11	16	41	55	8	1	0	135
ENE	0	0	4	10	18	29	36	10	3	0	110
E	0	1	0	8	6	33	29	2	5	0	84
ESE	0	1	0	5	4	54	72	18	10	2	166
SE	0	0	3	8	9	42	67	20	3	0	152
SSE	0	0	1	6	9	33	127	19	6	0	201
S	0	0	0	4	11	44	87	16	0	0	162
SSW	0	1	0	5	9	35	41	18	0	0	109
SW	0	0	1	6	4	16	14	2	0	0	43
WSW	0	2	0	8	9	10	12	2	0	0	43
W	0	0	2	6	15	15	17	9	1	0	65
WNW	0	0	2	5	6	14	19	6	5	0	57
NW	0	0	1	2	4	17	39	27	2	0	92
NNW	0	1	0	2	6	21	47	33	0	0	110
Total	0	8	19	100	162	534	854	223	36	2	1938

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1939

TOTAL HOURS FOR THE PERIOD: 1939

Annual Radioactive Effluent Release Report

Stability Class E

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	1	1	5	11	9	54	51	2	0	0	134
NNE	2	0	1	12	14	80	63	1	0	0	173
NE	1	2	4	12	16	59	66	3	0	0	163
ENE	0	3	5	11	22	38	72	13	5	0	169
E	0	1	5	18	40	65	29	3	0	0	161
ESE	0	0	2	12	20	110	217	29	1	0	391
SE	1	0	3	7	8	75	115	7	2	0	218
SSE	0	1	0	9	15	57	111	16	3	0	212
S	0	0	1	12	14	84	85	6	0	0	202
SSW	0	1	0	6	8	33	31	12	0	0	91
SW	0	0	2	2	8	29	11	0	0	0	52
WSW	0	0	3	6	11	16	4	1	0	0	41
W	0	0	2	10	19	20	6	2	0	0	59
WNW	0	1	5	2	11	13	21	3	0	0	56
NW	0	1	2	8	7	29	26	3	0	0	76
NNW	0	1	2	5	9	32	23	4	0	0	76
Total	5	12	42	143	231	794	931	105	11	0	2274

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2275

TOTAL HOURS FOR THE PERIOD: 2275

Annual Radioactive Effluent Release Report

Stability Class F

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	2	1	5	3	27	20	0	0	0	58
NNE	0	1	4	5	13	43	31	0	0	0	97
NE	0	0	2	2	10	21	68	1	0	0	104
ENE	0	0	1	13	15	31	24	5	0	0	89
E	0	0	1	15	18	21	10	1	1	0	67
ESE	0	0	1	2	11	58	86	2	0	0	160
SE	1	0	3	7	7	28	47	1	1	0	95
SSE	0	2	2	11	11	27	8	0	0	0	61
S	0	1	0	11	9	29	9	0	0	0	59
SSW	0	0	0	9	10	27	5	0	0	0	51
SW	1	1	0	5	16	16	0	0	0	0	39
WSW	0	1	2	1	12	17	0	0	0	0	33
W	1	1	2	2	10	25	5	0	0	0	46
WNW	0	0	2	1	10	15	9	0	0	0	37
NW	0	0	1	6	6	13	7	0	0	0	33
NNW	0	0	1	5	7	25	10	0	0	0	48
Total	3	9	23	100	168	423	339	10	2	0	1077

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1077

TOTAL HOURS FOR THE PERIOD: 1077

Annual Radioactive Effluent Release Report

Stability Class G

Period of Record: 01/01/2019 - 12/31/2019

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	1	1	1	6	10	39	20	0	0	0	78
NNE	1	2	2	4	11	35	8	0	0	0	63
NE	0	1	2	10	10	27	65	0	0	0	115
ENE	1	0	3	8	10	39	20	0	0	0	81
E	1	0	1	6	16	32	8	0	0	0	64
ESE	1	1	2	6	13	37	30	0	0	0	90
SE	1	1	4	4	11	32	24	0	0	0	77
SSE	0	1	1	9	18	50	11	0	0	0	90
S	0	1	1	11	14	41	1	0	0	0	69
SSW	0	0	5	4	21	40	2	0	0	0	72
SW	0	3	3	9	11	26	1	0	0	0	53
WSW	0	1	1	4	27	36	2	0	0	0	71
W	0	1	1	11	19	31	6	0	0	0	69
WNW	0	1	3	7	17	39	8	0	0	0	75
NW	0	0	0	8	15	34	8	0	0	0	65
NNW	0	0	2	5	11	20	14	0	0	0	52
Total	6	14	32	112	234	558	228	0	0	0	1184

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1184

TOTAL HOURS FOR THE PERIOD: 1184

Annual Radioactive Effluent Release Report

7.2 Stability Class

Table 15, Classification of Atmospheric Stability

Stability Condition	Pasquill Categories	Hours (Percentage)
Extremely Unstable	A	14
Moderately Stable	B	3
Slightly Unstable	C	7
Neutral	D	23
Slightly Stable	E	27
Moderately Stable	F	13
Extremely Stable	G	14

Table 16, Atmospheric Dispersion and Deposition Rates for the Maximum Individual Dose Calculations

Analysis	Location (meters)	Ground Level Releases	Mixed Mode Releases
Gamma air dose (3) and Beta Air Dose	994 m WNW (Containment)	CHI/Q - 421.0	CHI/Q - 33.1
Maximum Receptor (4)	994 m WNW	CHI/Q - 421.0	CHI/Q - 33.1
Resident		D/Q - 50.3	D/Q - 18.0
Garden			
Meat animal			
Immersion			
Milk animal (5)	7,000 m WNW	CHI/Q - 3.58 D/Q - 0.38	CHI/Q - .870 D/Q - .223
Other on-site Receptors	115 m ENE	CHI/Q - 5977.0 D/Q - 529.7	CHI/Q - 407.5 D/Q - 46.9
	275 m N	CHI/Q - 1644.0 D/Q - 345.6	CHI/Q - 169.1 D/Q - 68.4
	2500 SW	CHI/Q - 34.45 D/Q - 3.35	CHI/Q - 4.65 D/Q - 1.40

Notes:(1) All CHI/Q = 10^{-7} sec/m³(2) All D/Q = 10^{-9} m⁻²

(3) Maximum offsite location (property boundary) with highest CHI/Q (unoccupied).

(4) Maximum hypothetical occupied offsite location with highest CHI/Q and D/Q.

(5) No milk animal within 5 miles radius, hypothetical location in worst sector.

(6) Other onsite receptors

(7) Revisions to X/Q and D/Q can be performed using NUREG/CR-2919, XOQDOQ, Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations

Annual Radioactive Effluent Release Report

Attachment 1

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-100	2/19/2019	pCi/L	< 4.0E+00	< 5.7E+00	< 1.0E+01	< 6.0E+00	< 9.6E+00	< 7.2E+00	< 1.2E+01	< 1.4E+01	< 7.8E+00	< 5.9E+00	< 4.1E+01	< 1.2E+01
MW-124	2/19/2019	pCi/L	< 3.5E+00	< 3.9E+00	< 9.0E+00	< 4.4E+00	< 8.3E+00	< 5.2E+00	< 8.0E+00	< 1.3E+01	< 4.8E+00	< 4.5E+00	< 3.0E+01	< 1.0E+01
MW-125	2/19/2019	pCi/L	< 4.9E+00	< 5.0E+00	< 9.3E+00	< 5.1E+00	< 8.9E+00	< 5.4E+00	< 8.3E+00	< 1.4E+01	< 5.6E+00	< 5.7E+00	< 3.3E+01	< 9.3E+00
MW-142	2/19/2019	pCi/L	< 2.8E+00	< 3.0E+00	< 6.6E+00	< 3.2E+00	< 5.7E+00	< 3.2E+00	< 5.2E+00	< 1.1E+01	< 3.1E+00	< 3.0E+00	< 2.1E+01	< 5.7E+00
MW-144	2/19/2019	pCi/L	< 3.5E+00	< 4.7E+00	< 1.2E+01	< 5.7E+00	< 8.7E+00	< 4.8E+00	< 7.8E+00	< 1.5E+01	< 5.1E+00	< 5.1E+00	< 3.2E+01	< 1.4E+01
MW-146	2/19/2019	pCi/L	< 4.3E+00	< 5.6E+00	< 1.0E+01	< 4.3E+00	< 9.0E+00	< 5.3E+00	< 9.2E+00	< 1.5E+01	< 5.2E+00	< 5.0E+00	< 3.5E+01	< 1.2E+01
MW-147	2/19/2019	pCi/L	< 4.6E+00	< 6.2E+00	< 1.2E+01	< 6.0E+00	< 9.1E+00	< 6.4E+00	< 9.1E+00	< 1.5E+01	< 5.0E+00	< 5.4E+00	< 2.9E+01	< 9.6E+00
MW-148	2/19/2019	pCi/L	< 5.1E+00	< 4.7E+00	< 1.1E+01	< 4.5E+00	< 1.0E+01	< 5.0E+00	< 8.1E+00	< 1.3E+01	< 5.3E+00	< 4.9E+00	< 3.3E+01	< 1.0E+01
MW-148	2/19/2019	pCi/L	< 5.0E+00	< 5.5E+00	< 1.3E+01	< 6.1E+00	< 1.0E+01	< 5.4E+00	< 9.8E+00	< 1.4E+01	< 7.4E+00	< 5.2E+00	< 4.0E+01	< 1.1E+01
MW-155	2/19/2019	pCi/L	< 3.1E+00	< 3.3E+00	< 6.5E+00	< 2.8E+00	< 6.5E+00	< 3.5E+00	< 5.7E+00	< 1.1E+01	< 3.2E+00	< 3.1E+00	< 2.3E+01	< 6.4E+00
MW-156	2/19/2019	pCi/L	< 3.6E+00	< 4.0E+00	< 1.2E+01	< 4.3E+00	< 8.3E+00	< 5.1E+00	< 9.5E+00	< 1.5E+01	< 4.2E+00	< 4.6E+00	< 3.4E+01	< 1.2E+01
MW-157	2/19/2019	pCi/L	< 4.8E+00	< 4.0E+00	< 9.2E+00	< 4.8E+00	< 8.5E+00	< 4.7E+00	< 8.7E+00	< 1.5E+01	< 5.2E+00	< 4.2E+00	< 2.8E+01	< 8.8E+00
MW-158	2/19/2019	pCi/L	< 5.6E+00	< 4.1E+00	< 1.3E+01	< 5.7E+00	< 8.9E+00	< 3.9E+00	< 9.4E+00	< 1.3E+01	< 5.6E+00	< 5.1E+00	< 3.2E+01	< 1.1E+01
MW-159	2/19/2019	pCi/L	< 5.2E+00	< 4.9E+00	< 8.5E+00	< 5.3E+00	< 9.0E+00	< 5.4E+00	< 9.0E+00	< 1.5E+01	< 5.3E+00	< 3.6E+00	< 3.5E+01	< 1.1E+01
MW-159	2/19/2019	pCi/L	< 5.9E+00	< 7.4E+00	< 1.1E+01	< 6.6E+00	< 1.1E+01	< 6.4E+00	< 1.2E+01	< 1.3E+01	< 5.5E+00	< 6.3E+00	< 4.7E+01	< 1.4E+01
MW-162	2/19/2019	pCi/L	< 2.8E+00	< 3.0E+00	< 7.1E+00	< 2.6E+00	< 5.9E+00	< 2.9E+00	< 5.1E+00	< 8.7E+00	< 3.0E+00	< 2.9E+00	< 1.9E+01	< 6.8E+00
MW-188	2/19/2019	pCi/L	< 2.3E+00	< 2.7E+00	< 5.7E+00	< 2.8E+00	< 4.9E+00	< 2.5E+00	< 4.5E+00	< 8.9E+00	< 2.6E+00	< 2.7E+00	< 1.8E+01	< 5.6E+00

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-205	2/19/2019	pCi/L	< 3.0E+00	< 3.3E+00	< 6.6E+00	< 3.0E+00	< 6.5E+00	< 2.5E+00	< 5.8E+00	< 9.8E+00	< 3.2E+00	< 2.8E+00	< 1.9E+01	< 7.9E+00
MW-207	2/19/2019	pCi/L	< 2.6E+00	< 2.7E+00	< 6.1E+00	< 2.9E+00	< 5.6E+00	< 2.8E+00	< 5.2E+00	< 7.3E+00	< 2.8E+00	< 2.8E+00	< 1.8E+01	< 6.0E+00
MW-211	2/19/2019	pCi/L	< 5.1E+00	< 4.0E+00	< 1.1E+01	< 5.8E+00	< 1.0E+01	< 4.8E+00	< 8.8E+00	< 9.5E+00	< 5.8E+00	< 4.3E+00	< 2.4E+01	< 9.6E+00
MW-211	2/19/2019	pCi/L	< 5.3E+00	< 4.6E+00	< 1.3E+01	< 5.6E+00	< 1.0E+01	< 5.8E+00	< 9.6E+00	< 1.2E+01	< 4.8E+00	< 5.6E+00	< 3.1E+01	< 1.1E+01
MW-213	2/19/2019	pCi/L	< 2.1E+00	< 2.1E+00	< 5.8E+00	< 2.6E+00	< 4.5E+00	< 2.5E+00	< 4.4E+00	< 8.5E+00	< 2.6E+00	< 2.4E+00	< 1.6E+01	< 5.1E+00
MW-213	2/19/2019	pCi/L	< 4.6E+00	< 6.1E+00	< 1.1E+01	< 4.9E+00	< 8.5E+00	< 5.7E+00	< 8.7E+00	< 1.1E+01	< 6.0E+00	< 5.1E+00	< 2.8E+01	< 1.0E+01
MW-215	2/19/2019	pCi/L	< 6.2E+00	< 5.6E+00	< 1.1E+01	< 6.9E+00	< 1.3E+01	< 5.5E+00	< 1.1E+01	< 1.2E+01	< 6.8E+00	< 5.5E+00	< 2.4E+01	< 1.2E+01
MW-217	2/19/2019	pCi/L	< 6.5E+00	< 6.2E+00	< 1.3E+01	< 7.5E+00	< 1.4E+01	< 7.9E+00	< 1.3E+01	< 1.4E+01	< 7.1E+00	< 6.9E+00	< 4.0E+01	< 1.2E+01
MW-227	2/19/2019	pCi/L	< 2.8E+00	< 2.5E+00	< 6.6E+00	< 3.3E+00	< 6.0E+00	< 3.1E+00	< 5.0E+00	< 8.2E+00	< 3.0E+00	< 2.8E+00	< 2.1E+01	< 6.2E+00
MW-229	2/19/2019	pCi/L	< 2.8E+00	< 3.1E+00	< 7.2E+00	< 3.0E+00	< 5.5E+00	< 3.0E+00	< 5.3E+00	< 9.6E+00	< 3.2E+00	< 3.0E+00	< 2.1E+01	< 6.4E+00
MW-110	2/20/2019	pCi/L	< 4.9E+00	< 5.6E+00	< 1.2E+01	< 5.2E+00	< 1.2E+01	< 6.3E+00	< 1.1E+01	< 1.5E+01	< 6.2E+00	< 5.3E+00	< 3.2E+01	< 1.1E+01
MW-112	2/20/2019	pCi/L	< 5.5E+00	< 5.4E+00	< 1.6E+01	< 7.2E+00	< 9.0E+00	< 5.5E+00	< 1.1E+01	< 1.4E+01	< 7.1E+00	< 6.9E+00	< 4.2E+01	< 1.1E+01
MW-114	2/20/2019	pCi/L	< 4.7E+00	< 5.0E+00	< 9.0E+00	< 5.8E+00	< 8.8E+00	< 4.3E+00	< 9.4E+00	< 1.3E+01	< 5.3E+00	< 4.6E+00	< 2.4E+01	< 9.1E+00
MW-116	2/20/2019	pCi/L	< 4.9E+00	< 5.5E+00	< 1.2E+01	< 6.1E+00	< 9.9E+00	< 5.1E+00	< 9.4E+00	< 1.4E+01	< 3.0E+00	< 4.8E+00	< 3.9E+01	< 1.3E+01
MW-118	2/20/2019	pCi/L	< 4.3E+00	< 4.4E+00	< 1.0E+01	< 4.8E+00	< 7.8E+00	< 5.0E+00	< 7.4E+00	< 1.4E+01	< 4.6E+00	< 3.7E+00	< 2.9E+01	< 1.1E+01
MW-137	2/20/2019	pCi/L	< 4.0E+00	< 4.7E+00	< 1.0E+01	< 4.5E+00	< 9.8E+00	< 4.5E+00	< 6.7E+00	< 1.4E+01	< 4.6E+00	< 4.8E+00	< 3.1E+01	< 9.2E+00
MW-139	2/20/2019	pCi/L	< 3.2E+00	< 4.0E+00	< 9.2E+00	< 4.6E+00	< 7.8E+00	< 4.3E+00	< 7.5E+00	< 1.3E+01	< 4.4E+00	< 5.1E+00	< 2.7E+01	< 1.1E+01

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-141	2/20/2019	pCi/L	< 4.8E+00	< 4.7E+00	< 1.0E+01	< 4.3E+00	< 8.1E+00	< 5.3E+00	< 9.1E+00	< 1.4E+01	< 4.3E+00	< 4.9E+00	< 3.1E+01	< 9.6E+00
MW-151	2/20/2019	pCi/L	< 5.1E+00	< 4.6E+00	< 1.3E+01	< 4.8E+00	< 9.7E+00	< 4.1E+00	< 8.7E+00	< 1.4E+01	< 4.4E+00	< 4.4E+00	< 3.0E+01	< 9.5E+00
MW-153	2/20/2019	pCi/L	< 4.5E+00	< 5.0E+00	< 1.0E+01	< 6.2E+00	< 1.3E+01	< 4.9E+00	< 8.3E+00	< 1.5E+01	< 4.8E+00	< 4.7E+00	< 3.1E+01	< 7.4E+00
MW-161	2/20/2019	pCi/L	< 4.6E+00	< 5.5E+00	< 1.1E+01	< 4.1E+00	< 9.7E+00	< 4.9E+00	< 8.9E+00	< 1.4E+01	< 4.5E+00	< 4.3E+00	< 2.9E+01	< 1.1E+01
MW-164	2/20/2019	pCi/L	< 4.2E+00	< 4.2E+00	< 9.3E+00	< 5.0E+00	< 7.1E+00	< 4.4E+00	< 8.0E+00	< 1.4E+01	< 4.8E+00	< 4.5E+00	< 3.0E+01	< 1.1E+01
MW-165	2/20/2019	pCi/L	< 5.6E+00	< 6.0E+00	< 1.3E+01	< 6.2E+00	< 1.3E+01	< 5.8E+00	< 1.1E+01	< 1.3E+01	< 7.3E+00	< 5.2E+00	< 2.9E+01	< 1.2E+01
MW-165	2/20/2019	pCi/L	< 4.2E+00	< 4.9E+00	< 1.1E+01	< 6.0E+00	< 1.1E+01	< 4.3E+00	< 7.4E+00	< 8.6E+00	< 5.5E+00	< 5.6E+00	< 2.7E+01	< 9.5E+00
MW-170	2/20/2019	pCi/L	< 4.4E+00	< 6.2E+00	< 1.2E+01	< 4.9E+00	< 1.0E+01	< 5.3E+00	< 9.7E+00	< 1.2E+01	< 5.0E+00	< 4.9E+00	< 2.5E+01	< 7.2E+00
MW-178	2/20/2019	pCi/L	< 4.3E+00	< 4.8E+00	< 1.0E+01	< 4.4E+00	< 1.0E+01	< 5.1E+00	< 9.9E+00	< 1.4E+01	< 5.0E+00	< 5.1E+00	< 3.0E+01	< 9.8E+00
MW-179	2/20/2019	pCi/L	< 4.4E+00	< 4.1E+00	< 1.2E+01	< 5.5E+00	< 1.1E+01	< 5.7E+00	< 8.5E+00	< 1.4E+01	< 5.1E+00	< 4.8E+00	< 2.8E+01	< 1.0E+01
MW-182	2/20/2019	pCi/L	< 5.7E+00	< 7.7E+00	< 1.6E+01	< 7.5E+00	< 1.3E+01	< 8.2E+00	< 1.5E+01	< 1.5E+01	< 6.0E+00	< 7.1E+00	< 3.8E+01	< 9.9E+00
MW-186	2/20/2019	pCi/L	< 2.3E+00	< 2.7E+00	< 6.0E+00	< 2.7E+00	< 5.4E+00	< 2.9E+00	< 4.4E+00	< 1.0E+01	< 2.6E+00	< 2.6E+00	< 2.0E+01	< 6.4E+00
MW-187	2/20/2019	pCi/L	< 2.7E+00	< 3.0E+00	< 6.3E+00	< 2.7E+00	< 5.8E+00	< 3.2E+00	< 5.5E+00	< 1.1E+01	< 2.9E+00	< 3.0E+00	< 2.3E+01	< 6.3E+00
MW-201	2/20/2019	pCi/L	< 4.1E+00	< 3.8E+00	< 9.3E+00	< 3.8E+00	< 8.8E+00	< 4.8E+00	< 7.1E+00	< 1.3E+01	< 4.4E+00	< 4.1E+00	< 2.8E+01	< 8.0E+00
MW-203	2/20/2019	pCi/L	< 3.9E+00	< 4.2E+00	< 8.0E+00	< 4.0E+00	< 7.3E+00	< 4.6E+00	< 6.8E+00	< 1.5E+01	< 4.9E+00	< 4.3E+00	< 2.8E+01	< 9.1E+00
MW-209	2/20/2019	pCi/L	< 6.0E+00	< 5.1E+00	< 1.2E+01	< 6.5E+00	< 9.8E+00	< 5.5E+00	< 8.3E+00	< 1.0E+01	< 6.4E+00	< 5.7E+00	< 2.8E+01	< 7.5E+00
MW-219	2/20/2019	pCi/L	< 6.1E+00	< 5.2E+00	< 1.3E+01	< 5.4E+00	< 1.3E+01	< 6.2E+00	< 1.0E+01	< 1.3E+01	< 5.9E+00	< 5.7E+00	< 2.9E+01	< 7.3E+00

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-221	2/20/2019	pCi/L	< 3.9E+00	< 3.7E+00	< 8.4E+00	< 3.5E+00	< 8.5E+00	< 4.5E+00	< 6.8E+00	< 1.4E+01	< 4.3E+00	< 3.9E+00	< 2.8E+01	< 1.1E+01
MW-223	2/20/2019	pCi/L	< 3.3E+00	< 3.8E+00	< 8.0E+00	< 3.6E+00	< 7.7E+00	< 4.5E+00	< 6.3E+00	< 1.2E+01	< 3.9E+00	< 3.3E+00	< 2.6E+01	< 7.5E+00
MW-225	2/20/2019	pCi/L	< 3.5E+00	< 4.1E+00	< 7.7E+00	< 3.4E+00	< 9.1E+00	< 4.2E+00	< 7.4E+00	< 8.6E+00	< 4.1E+00	< 4.2E+00	< 2.1E+01	< 6.1E+00
MW-231	2/20/2019	pCi/L	< 5.6E+00	< 7.2E+00	< 1.5E+01	< 7.9E+00	< 1.1E+01	< 6.1E+00	< 1.3E+01	< 1.0E+01	< 6.9E+00	< 5.8E+00	< 2.9E+01	< 1.4E+01
MW-233	2/20/2019	pCi/L	< 5.3E+00	< 5.7E+00	< 1.1E+01	< 6.9E+00	< 1.3E+01	< 4.9E+00	< 9.3E+00	< 9.6E+00	< 5.9E+00	< 4.9E+00	< 2.5E+01	< 1.1E+01
MW-235	2/20/2019	pCi/L	< 5.1E+00	< 4.9E+00	< 1.2E+01	< 5.2E+00	< 9.3E+00	< 6.1E+00	< 9.7E+00	< 1.2E+01	< 6.5E+00	< 5.2E+00	< 2.7E+01	< 6.5E+00
PZ-01	2/20/2019	pCi/L	< 4.8E+00	< 5.5E+00	< 1.1E+01	< 5.0E+00	< 1.0E+01	< 5.6E+00	< 8.0E+00	< 1.4E+01	< 5.7E+00	< 5.5E+00	< 4.0E+01	< 1.2E+01
SW-101	2/21/2019	pCi/L	< 4.0E+00	< 4.5E+00	< 1.0E+01	< 3.5E+00	< 7.6E+00	< 4.5E+00	< 6.9E+00	< 1.4E+01	< 4.8E+00	< 4.8E+00	< 3.1E+01	< 1.1E+01
SW-102	2/21/2019	pCi/L	< 3.7E+00	< 4.5E+00	< 1.0E+01	< 4.5E+00	< 7.7E+00	< 4.7E+00	< 9.3E+00	< 1.4E+01	< 4.0E+00	< 4.1E+00	< 3.3E+01	< 1.1E+01
SW-103	2/21/2019	pCi/L	< 3.1E+00	< 3.4E+00	< 7.3E+00	< 3.0E+00	< 6.5E+00	< 3.6E+00	< 6.3E+00	< 1.3E+01	< 3.5E+00	< 3.3E+00	< 2.5E+01	< 7.6E+00
SW-104	2/21/2019	pCi/L	< 4.6E+00	< 5.1E+00	< 1.1E+01	< 5.5E+00	< 8.3E+00	< 5.2E+00	< 9.6E+00	< 1.5E+01	< 5.4E+00	< 5.3E+00	< 2.8E+01	< 1.5E+01
MW-158	4/17/2019	pCi/L	< 3.6E+00	< 4.2E+00	< 8.8E+00	< 3.8E+00	< 8.8E+00	< 5.2E+00	< 7.7E+00	< 1.3E+01	< 4.1E+00	< 4.2E+00	< 2.8E+01	< 1.2E+01
MW-124	5/14/2019	pCi/L	< 2.9E+00	< 3.3E+00	< 6.3E+00	< 3.6E+00	< 6.5E+00	< 3.5E+00	< 5.9E+00	< 7.2E+00	< 3.5E+00	< 3.3E+00	< 1.9E+01	< 5.5E+00
MW-124	5/14/2019	pCi/L	< 4.5E+00	< 4.6E+00	< 9.7E+00	< 4.4E+00	< 9.7E+00	< 5.2E+00	< 8.4E+00	< 1.5E+01	< 5.3E+00	< 4.7E+00	< 3.0E+01	< 1.0E+01
MW-125	5/14/2019	pCi/L	< 4.1E+00	< 5.1E+00	< 1.2E+01	< 5.3E+00	< 8.5E+00	< 5.7E+00	< 8.9E+00	< 1.4E+01	< 6.3E+00	< 4.4E+00	< 3.4E+01	< 1.1E+01
MW-142	5/14/2019	pCi/L	< 2.7E+00	< 3.1E+00	< 6.8E+00	< 2.3E+00	< 5.3E+00	< 3.0E+00	< 5.1E+00	< 1.0E+01	< 3.1E+00	< 2.9E+00	< 2.0E+01	< 8.0E+00
MW-144	5/14/2019	pCi/L	< 3.2E+00	< 3.2E+00	< 6.4E+00	< 3.1E+00	< 6.4E+00	< 3.5E+00	< 5.9E+00	< 8.2E+00	< 3.5E+00	< 3.1E+00	< 1.9E+01	< 7.0E+00

Annual Radioactive Effluent Release Report

Attachment 1

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-146	5/14/2019	pCi/L	< 3.4E+00	< 3.6E+00	< 7.9E+00	< 3.9E+00	< 7.1E+00	< 3.9E+00	< 6.5E+00	< 9.0E+00	< 4.2E+00	< 3.8E+00	< 2.1E+01	< 8.0E+00
MW-147	5/14/2019	pCi/L	< 3.2E+00	< 3.0E+00	< 9.1E+00	< 3.8E+00	< 6.6E+00	< 3.6E+00	< 6.9E+00	< 8.5E+00	< 3.6E+00	< 3.6E+00	< 2.0E+01	< 7.2E+00
MW-148	5/14/2019	pCi/L	< 3.3E+00	< 3.5E+00	< 7.4E+00	< 4.4E+00	< 5.1E+00	< 3.8E+00	< 5.4E+00	< 7.6E+00	< 3.4E+00	< 3.6E+00	< 1.9E+01	< 6.5E+00
MW-156	5/14/2019	pCi/L	< 3.9E+00	< 3.8E+00	< 9.3E+00	< 4.2E+00	< 8.3E+00	< 4.7E+00	< 8.2E+00	< 1.4E+01	< 4.9E+00	< 4.5E+00	< 3.1E+01	< 8.3E+00
MW-157	5/14/2019	pCi/L	< 3.5E+00	< 3.6E+00	< 7.1E+00	< 3.2E+00	< 6.5E+00	< 3.5E+00	< 5.8E+00	< 7.7E+00	< 3.8E+00	< 3.0E+00	< 1.9E+01	< 6.5E+00
MW-157	5/14/2019	pCi/L	< 3.0E+00	< 3.6E+00	< 7.1E+00	< 3.9E+00	< 6.7E+00	< 3.8E+00	< 6.3E+00	< 8.0E+00	< 3.7E+00	< 3.5E+00	< 2.1E+01	< 7.9E+00
MW-158	5/14/2019	pCi/L	< 3.8E+00	< 4.4E+00	< 9.3E+00	< 3.9E+00	< 7.3E+00	< 4.4E+00	< 7.6E+00	< 1.4E+01	< 4.0E+00	< 3.5E+00	< 2.6E+01	< 7.2E+00
MW-159	5/14/2019	pCi/L	< 4.1E+00	< 4.1E+00	< 9.1E+00	< 4.0E+00	< 8.6E+00	< 3.9E+00	< 6.1E+00	< 1.0E+01	< 4.5E+00	< 3.7E+00	< 2.3E+01	< 7.6E+00
MW-162	5/14/2019	pCi/L	< 3.6E+00	< 4.0E+00	< 8.1E+00	< 4.2E+00	< 8.8E+00	< 4.3E+00	< 7.7E+00	< 1.4E+01	< 3.7E+00	< 4.1E+00	< 2.8E+01	< 9.3E+00
MW-100	5/15/2019	pCi/L	< 4.4E+00	< 4.7E+00	< 1.1E+01	< 4.3E+00	< 9.1E+00	< 4.2E+00	< 7.1E+00	< 1.3E+01	< 6.2E+00	< 4.0E+00	< 2.7E+01	< 1.2E+01
MW-110	5/15/2019	pCi/L	< 3.7E+00	< 4.2E+00	< 8.8E+00	< 3.9E+00	< 8.4E+00	< 4.1E+00	< 8.2E+00	< 1.1E+01	< 4.1E+00	< 4.0E+00	< 2.9E+01	< 8.2E+00
MW-112	5/15/2019	pCi/L	< 5.2E+00	< 5.1E+00	< 1.3E+01	< 4.9E+00	< 1.1E+01	< 6.0E+00	< 1.1E+01	< 1.3E+01	< 6.0E+00	< 3.8E+00	< 3.5E+01	< 1.3E+01
MW-114	5/15/2019	pCi/L	< 3.7E+00	< 4.2E+00	< 8.6E+00	< 4.6E+00	< 6.9E+00	< 4.3E+00	< 8.3E+00	< 1.2E+01	< 4.3E+00	< 3.3E+00	< 2.8E+01	< 1.1E+01
MW-116	5/15/2019	pCi/L	< 4.9E+00	< 5.0E+00	< 1.1E+01	< 5.2E+00	< 8.3E+00	< 5.3E+00	< 8.7E+00	< 1.4E+01	< 5.2E+00	< 4.4E+00	< 3.3E+01	< 1.3E+01
MW-118	5/15/2019	pCi/L	< 3.5E+00	< 4.2E+00	< 8.6E+00	< 4.3E+00	< 9.8E+00	< 4.1E+00	< 6.3E+00	< 1.2E+01	< 4.6E+00	< 4.1E+00	< 2.5E+01	< 9.8E+00
MW-131	5/15/2019	pCi/L	< 4.1E+00	< 4.5E+00	< 1.0E+01	< 3.7E+00	< 7.5E+00	< 4.0E+00	< 7.8E+00	< 1.2E+01	< 4.4E+00	< 4.4E+00	< 2.9E+01	< 8.8E+00
MW-132	5/15/2019	pCi/L	< 3.9E+00	< 3.8E+00	< 8.4E+00	< 3.7E+00	< 8.2E+00	< 3.7E+00	< 7.3E+00	< 1.3E+01	< 4.5E+00	< 4.0E+00	< 2.7E+01	< 8.1E+00

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-137	5/15/2019	pCi/L	< 4.1E+00	< 5.4E+00	< 9.8E+00	< 4.8E+00	< 8.6E+00	< 5.5E+00	< 1.0E+01	< 1.4E+01	< 5.4E+00	< 5.4E+00	< 3.3E+01	< 1.2E+01
MW-139	5/15/2019	pCi/L	< 4.0E+00	< 5.2E+00	< 8.6E+00	< 4.2E+00	< 8.6E+00	< 4.9E+00	< 9.7E+00	< 1.2E+01	< 4.2E+00	< 3.9E+00	< 2.9E+01	< 1.0E+01
MW-141	5/15/2019	pCi/L	< 6.1E+00	< 5.8E+00	< 1.0E+01	< 5.1E+00	< 1.0E+01	< 4.9E+00	< 8.0E+00	< 1.4E+01	< 6.4E+00	< 4.5E+00	< 3.5E+01	< 1.1E+01
MW-151	5/15/2019	pCi/L	< 2.2E+00	< 2.3E+00	< 5.2E+00	< 2.3E+00	< 4.2E+00	< 2.4E+00	< 4.5E+00	< 1.3E+01	< 2.3E+00	< 2.2E+00	< 2.1E+01	< 6.1E+00
MW-153	5/15/2019	pCi/L	< 4.6E+00	< 6.2E+00	< 1.0E+01	< 5.7E+00	< 1.0E+01	< 5.8E+00	< 1.0E+01	< 1.5E+01	< 5.5E+00	< 5.0E+00	< 3.6E+01	< 1.0E+01
MW-155	5/15/2019	pCi/L	< 4.3E+00	< 5.1E+00	< 1.1E+01	< 5.1E+00	< 8.5E+00	< 4.7E+00	< 8.5E+00	< 1.5E+01	< 4.4E+00	< 4.3E+00	< 2.8E+01	< 1.0E+01
MW-161	5/15/2019	pCi/L	< 4.8E+00	< 5.8E+00	< 1.3E+01	< 5.8E+00	< 1.1E+01	< 4.5E+00	< 9.4E+00	< 1.5E+01	< 5.3E+00	< 4.9E+00	< 3.5E+01	< 9.9E+00
MW-161	5/15/2019	pCi/L	< 4.0E+00	< 4.8E+00	< 1.1E+01	< 6.6E+00	< 7.6E+00	< 5.1E+00	< 8.8E+00	< 1.4E+01	< 5.0E+00	< 4.3E+00	< 3.0E+01	< 7.4E+00
MW-164	5/15/2019	pCi/L	< 1.7E+00	< 1.8E+00	< 4.2E+00	< 1.8E+00	< 3.3E+00	< 2.0E+00	< 3.5E+00	< 9.5E+00	< 1.8E+00	< 1.7E+00	< 1.7E+01	< 5.2E+00
MW-165	5/15/2019	pCi/L	< 1.6E+00	< 1.8E+00	< 3.9E+00	< 1.7E+00	< 3.3E+00	< 2.0E+00	< 3.3E+00	< 9.8E+00	< 1.8E+00	< 1.6E+00	< 1.7E+01	< 5.1E+00
MW-167	5/15/2019	pCi/L	< 3.2E+00	< 3.9E+00	< 8.5E+00	< 3.4E+00	< 6.2E+00	< 3.8E+00	< 6.0E+00	< 1.3E+01	< 4.0E+00	< 3.5E+00	< 2.4E+01	< 7.9E+00
MW-172	5/15/2019	pCi/L	< 1.4E+00	< 1.5E+00	< 3.6E+00	< 1.5E+00	< 3.0E+00	< 1.8E+00	< 2.8E+00	< 8.8E+00	< 1.6E+00	< 1.6E+00	< 1.5E+01	< 5.0E+00
MW-174	5/15/2019	pCi/L	< 1.8E+00	< 2.0E+00	< 4.2E+00	< 1.8E+00	< 3.7E+00	< 1.9E+00	< 3.7E+00	< 1.1E+01	< 2.0E+00	< 1.8E+00	< 1.9E+01	< 6.3E+00
MW-178	5/15/2019	pCi/L	< 3.7E+00	< 3.7E+00	< 7.4E+00	< 4.2E+00	< 7.2E+00	< 4.0E+00	< 7.6E+00	< 1.1E+01	< 4.1E+00	< 3.5E+00	< 2.4E+01	< 8.1E+00
MW-179	5/15/2019	pCi/L	< 5.6E+00	< 4.9E+00	< 1.1E+01	< 5.7E+00	< 1.1E+01	< 5.3E+00	< 8.3E+00	< 1.3E+01	< 5.0E+00	< 5.0E+00	< 3.1E+01	< 1.1E+01
MW-185	5/15/2019	pCi/L	< 4.3E+00	< 4.0E+00	< 9.9E+00	< 4.0E+00	< 7.9E+00	< 4.8E+00	< 7.6E+00	< 1.5E+01	< 4.4E+00	< 5.2E+00	< 3.2E+01	< 8.4E+00
MW-185	5/15/2019	pCi/L	< 4.2E+00	< 4.4E+00	< 1.1E+01	< 4.6E+00	< 9.2E+00	< 4.4E+00	< 7.2E+00	< 1.5E+01	< 4.5E+00	< 4.7E+00	< 3.3E+01	< 9.4E+00

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-186	5/15/2019	pCi/L	< 1.6E+00	< 1.9E+00	< 4.3E+00	< 1.9E+00	< 3.6E+00	< 1.9E+00	< 3.4E+00	< 1.1E+01	< 1.9E+00	< 1.7E+00	< 1.8E+01	< 6.4E+00
MW-187	5/15/2019	pCi/L	< 1.5E+00	< 1.8E+00	< 4.3E+00	< 1.7E+00	< 3.1E+00	< 2.0E+00	< 3.5E+00	< 1.2E+01	< 1.8E+00	< 1.8E+00	< 1.9E+01	< 6.4E+00
MW-201	5/15/2019	pCi/L	< 1.7E+00	< 1.8E+00	< 4.4E+00	< 1.7E+00	< 3.8E+00	< 2.0E+00	< 3.4E+00	< 1.1E+01	< 1.9E+00	< 1.8E+00	< 1.8E+01	< 6.5E+00
MW-203	5/15/2019	pCi/L	< 2.0E+00	< 2.2E+00	< 4.9E+00	< 2.3E+00	< 4.0E+00	< 2.3E+00	< 4.1E+00	< 1.3E+01	< 2.2E+00	< 2.0E+00	< 2.2E+01	< 6.4E+00
MW-211	5/15/2019	pCi/L	< 4.6E+00	< 4.6E+00	< 9.3E+00	< 4.4E+00	< 9.0E+00	< 5.0E+00	< 6.9E+00	< 1.4E+01	< 4.5E+00	< 4.4E+00	< 2.8E+01	< 1.1E+01
MW-213	5/15/2019	pCi/L	< 4.4E+00	< 5.0E+00	< 9.6E+00	< 4.0E+00	< 9.6E+00	< 5.7E+00	< 8.6E+00	< 1.3E+01	< 4.6E+00	< 5.0E+00	< 2.7E+01	< 1.0E+01
PZ-01	5/15/2019	pCi/L	< 3.9E+00	< 5.0E+00	< 9.7E+00	< 5.1E+00	< 7.4E+00	< 4.8E+00	< 7.7E+00	< 1.2E+01	< 4.2E+00	< 4.1E+00	< 2.8E+01	< 1.1E+01
PZ-03	5/15/2019	pCi/L	< 3.8E+00	< 4.5E+00	< 8.8E+00	< 4.3E+00	< 8.0E+00	< 4.6E+00	< 6.6E+00	< 1.5E+01	< 4.7E+00	< 4.1E+00	< 3.2E+01	< 1.1E+01
MW-106	5/16/2019	pCi/L	< 4.1E+00	< 4.0E+00	< 9.0E+00	< 3.8E+00	< 8.6E+00	< 4.5E+00	< 7.1E+00	< 1.2E+01	< 3.8E+00	< 3.4E+00	< 2.7E+01	< 9.6E+00
MW-120	5/16/2019	pCi/L	< 4.2E+00	< 5.0E+00	< 1.2E+01	< 4.4E+00	< 9.0E+00	< 5.1E+00	< 7.4E+00	< 1.3E+01	< 5.2E+00	< 4.3E+00	< 3.3E+01	< 9.9E+00
MW-122	5/16/2019	pCi/L	< 2.0E+00	< 2.3E+00	< 5.4E+00	< 2.4E+00	< 4.2E+00	< 2.4E+00	< 4.3E+00	< 1.3E+01	< 2.2E+00	< 2.2E+00	< 2.3E+01	< 6.9E+00
MW-126	5/16/2019	pCi/L	< 1.5E+00	< 1.7E+00	< 3.8E+00	< 1.5E+00	< 3.1E+00	< 1.8E+00	< 3.0E+00	< 9.7E+00	< 1.6E+00	< 1.5E+00	< 1.6E+01	< 5.1E+00
MW-126	5/16/2019	pCi/L	< 1.6E+00	< 1.7E+00	< 4.0E+00	< 1.6E+00	< 3.2E+00	< 1.8E+00	< 3.1E+00	< 1.1E+01	< 1.6E+00	< 1.6E+00	< 1.7E+01	< 6.1E+00
MW-128	5/16/2019	pCi/L	< 1.5E+00	< 1.7E+00	< 3.9E+00	< 1.5E+00	< 3.0E+00	< 1.7E+00	< 3.0E+00	< 1.1E+01	< 1.6E+00	< 1.5E+00	< 1.7E+01	< 6.2E+00
MW-130	5/16/2019	pCi/L	< 1.4E+00	< 1.5E+00	< 3.5E+00	< 1.3E+00	< 3.0E+00	< 1.5E+00	< 2.7E+00	< 8.7E+00	< 1.5E+00	< 1.4E+00	< 1.5E+01	< 4.7E+00
MW-134	5/16/2019	pCi/L	< 4.5E+00	< 4.4E+00	< 1.1E+01	< 4.0E+00	< 9.6E+00	< 4.8E+00	< 9.1E+00	< 1.3E+01	< 4.9E+00	< 4.6E+00	< 2.8E+01	< 8.2E+00
MW-169	5/16/2019	pCi/L	< 3.5E+00	< 3.8E+00	< 8.7E+00	< 4.5E+00	< 9.4E+00	< 5.2E+00	< 6.5E+00	< 1.4E+01	< 4.0E+00	< 4.7E+00	< 2.7E+01	< 1.1E+01

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-170	5/16/2019	pCi/L	< 4.0E+00	< 4.4E+00	< 7.7E+00	< 4.2E+00	< 9.9E+00	< 5.4E+00	< 8.1E+00	< 1.5E+01	< 5.5E+00	< 4.6E+00	< 2.9E+01	< 1.0E+01
MW-180	5/16/2019	pCi/L	< 3.8E+00	< 3.9E+00	< 9.3E+00	< 4.8E+00	< 8.3E+00	< 4.3E+00	< 7.0E+00	< 1.3E+01	< 4.2E+00	< 4.0E+00	< 2.8E+01	< 7.9E+00
MW-182	5/16/2019	pCi/L	< 4.8E+00	< 4.5E+00	< 1.2E+01	< 4.9E+00	< 1.0E+01	< 4.8E+00	< 8.7E+00	< 1.4E+01	< 5.1E+00	< 4.7E+00	< 2.9E+01	< 1.1E+01
MW-188	5/16/2019	pCi/L	< 1.6E+00	< 1.9E+00	< 4.5E+00	< 1.7E+00	< 3.5E+00	< 2.0E+00	< 3.3E+00	< 1.0E+01	< 1.9E+00	< 1.7E+00	< 1.8E+01	< 5.4E+00
MW-205	5/16/2019	pCi/L	< 1.9E+00	< 2.1E+00	< 5.1E+00	< 1.9E+00	< 3.8E+00	< 2.2E+00	< 3.8E+00	< 1.2E+01	< 2.0E+00	< 1.8E+00	< 1.9E+01	< 6.9E+00
MW-207	5/16/2019	pCi/L	< 4.9E+00	< 4.4E+00	< 8.6E+00	< 4.2E+00	< 9.4E+00	< 5.0E+00	< 8.8E+00	< 1.2E+01	< 5.9E+00	< 4.9E+00	< 3.1E+01	< 1.2E+01
MW-209	5/16/2019	pCi/L	< 4.5E+00	< 4.0E+00	< 1.0E+01	< 4.3E+00	< 8.5E+00	< 4.2E+00	< 8.1E+00	< 1.3E+01	< 4.4E+00	< 4.2E+00	< 3.0E+01	< 1.2E+01
MW-209	5/16/2019	pCi/L	< 4.1E+00	< 4.9E+00	< 8.6E+00	< 4.4E+00	< 8.3E+00	< 4.8E+00	< 7.6E+00	< 1.4E+01	< 4.7E+00	< 4.2E+00	< 2.8E+01	< 1.0E+01
MW-215	5/16/2019	pCi/L	< 4.4E+00	< 5.5E+00	< 9.9E+00	< 4.7E+00	< 1.0E+01	< 5.5E+00	< 7.4E+00	< 1.5E+01	< 4.3E+00	< 4.1E+00	< 3.0E+01	< 1.3E+01
MW-217	5/16/2019	pCi/L	< 5.0E+00	< 5.4E+00	< 1.3E+01	< 5.5E+00	< 5.0E+00	< 5.4E+00	< 9.4E+00	< 1.5E+01	< 5.4E+00	< 4.4E+00	< 3.3E+01	< 1.1E+01
MW-219	5/16/2019	pCi/L	< 3.4E+00	< 4.3E+00	< 7.2E+00	< 4.4E+00	< 7.5E+00	< 4.3E+00	< 7.4E+00	< 1.2E+01	< 4.5E+00	< 3.8E+00	< 2.5E+01	< 8.4E+00
MW-221	5/16/2019	pCi/L	< 1.6E+00	< 1.9E+00	< 4.1E+00	< 1.6E+00	< 3.4E+00	< 2.0E+00	< 3.3E+00	< 1.1E+01	< 1.6E+00	< 1.7E+00	< 1.8E+01	< 6.1E+00
MW-223	5/16/2019	pCi/L	< 1.6E+00	< 2.0E+00	< 4.7E+00	< 1.9E+00	< 3.3E+00	< 2.0E+00	< 3.6E+00	< 1.1E+01	< 2.0E+00	< 1.7E+00	< 1.8E+01	< 6.3E+00
MW-225	5/16/2019	pCi/L	< 4.4E+00	< 4.9E+00	< 1.2E+01	< 5.0E+00	< 9.6E+00	< 4.0E+00	< 1.0E+01	< 1.4E+01	< 5.2E+00	< 5.2E+00	< 3.5E+01	< 9.4E+00
MW-227	5/16/2019	pCi/L	< 1.8E+00	< 2.0E+00	< 4.5E+00	< 1.9E+00	< 3.8E+00	< 2.3E+00	< 3.6E+00	< 1.4E+01	< 2.0E+00	< 1.8E+00	< 2.0E+01	< 6.3E+00
MW-229	5/16/2019	pCi/L	< 4.3E+00	< 3.9E+00	< 9.2E+00	< 4.0E+00	< 8.7E+00	< 4.2E+00	< 6.3E+00	< 1.1E+01	< 4.4E+00	< 4.4E+00	< 2.7E+01	< 9.2E+00
MW-231	5/16/2019	pCi/L	< 5.2E+00	< 4.8E+00	< 1.3E+01	< 6.0E+00	< 1.1E+01	< 5.4E+00	< 1.0E+01	< 1.3E+01	< 5.1E+00	< 4.3E+00	< 2.9E+01	< 1.1E+01

Annual Radioactive Effluent Release Report

Attachment 1

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-231	5/16/2019	pCi/L	< 5.0E+00	< 4.4E+00	< 1.2E+01	< 7.0E+00	< 9.8E+00	< 5.5E+00	< 8.4E+00	< 1.5E+01	< 4.6E+00	< 4.8E+00	< 3.1E+01	< 1.1E+01
MW-233	5/16/2019	pCi/L	< 1.7E+00	< 1.9E+00	< 4.4E+00	< 1.6E+00	< 3.4E+00	< 1.9E+00	< 3.4E+00	< 1.1E+01	< 1.8E+00	< 1.7E+00	< 1.8E+01	< 6.5E+00
MW-235	5/16/2019	pCi/L	< 1.6E+00	< 1.8E+00	< 4.4E+00	< 2.0E+00	< 3.5E+00	< 2.0E+00	< 3.1E+00	< 1.1E+01	< 1.7E+00	< 1.7E+00	< 1.7E+01	< 6.0E+00
SW-101	5/16/2019	pCi/L	< 1.5E+00	< 1.8E+00	< 4.3E+00	< 1.6E+00	< 3.2E+00	< 1.8E+00	< 3.0E+00	< 1.0E+01	< 1.6E+00	< 1.5E+00	< 1.6E+01	< 5.6E+00
SW-102	5/16/2019	pCi/L	< 4.2E+00	< 4.3E+00	< 8.7E+00	< 5.5E+00	< 9.4E+00	< 4.6E+00	< 8.6E+00	< 1.3E+01	< 5.1E+00	< 4.3E+00	< 3.0E+01	< 9.3E+00
SW-103	5/16/2019	pCi/L	< 3.8E+00	< 4.7E+00	< 1.0E+01	< 4.9E+00	< 1.1E+01	< 4.4E+00	< 7.8E+00	< 1.3E+01	< 5.4E+00	< 4.4E+00	< 2.7E+01	< 1.0E+01
SW-104	5/16/2019	pCi/L	< 3.9E+00	< 3.9E+00	< 7.8E+00	< 5.1E+00	< 8.1E+00	< 4.7E+00	< 8.2E+00	< 1.3E+01	< 4.6E+00	< 4.0E+00	< 2.9E+01	< 9.1E+00
MW-100	8/13/2019	pCi/L	< 2.3E+00	< 2.5E+00	< 6.0E+00	< 2.6E+00	< 4.6E+00	< 2.6E+00	< 4.5E+00	< 8.2E+00	< 2.5E+00	< 2.6E+00	< 1.8E+01	< 6.0E+00
MW-124	8/13/2019	pCi/L	< 2.7E+00	< 2.8E+00	< 6.4E+00	< 3.5E+00	< 6.0E+00	< 3.2E+00	< 5.3E+00	< 7.6E+00	< 2.9E+00	< 2.8E+00	< 2.0E+01	< 7.4E+00
MW-125	8/13/2019	pCi/L	< 5.1E+00	< 5.5E+00	< 9.5E+00	< 5.1E+00	< 9.9E+00	< 6.1E+00	< 9.7E+00	< 1.4E+01	< 5.0E+00	< 5.2E+00	< 3.0E+01	< 1.0E+01
MW-142	8/13/2019	pCi/L	< 3.0E+00	< 3.6E+00	< 9.4E+00	< 3.4E+00	< 6.5E+00	< 3.9E+00	< 6.6E+00	< 1.4E+01	< 3.9E+00	< 3.0E+00	< 3.4E+01	< 9.1E+00
MW-144	8/13/2019	pCi/L	< 3.3E+00	< 3.4E+00	< 7.3E+00	< 3.7E+00	< 5.6E+00	< 3.5E+00	< 6.0E+00	< 9.3E+00	< 3.4E+00	< 3.4E+00	< 2.1E+01	< 7.2E+00
MW-146	8/13/2019	pCi/L	< 5.2E+00	< 5.4E+00	< 1.1E+01	< 5.3E+00	< 1.1E+01	< 6.2E+00	< 1.1E+01	< 1.4E+01	< 5.2E+00	< 5.1E+00	< 4.2E+01	< 1.1E+01
MW-147	8/13/2019	pCi/L	< 4.0E+00	< 4.4E+00	< 1.0E+01	< 3.8E+00	< 8.9E+00	< 5.3E+00	< 8.1E+00	< 1.3E+01	< 4.7E+00	< 3.7E+00	< 2.9E+01	< 1.2E+01
MW-148	8/13/2019	pCi/L	< 3.7E+00	< 3.5E+00	< 9.1E+00	< 3.2E+00	< 6.0E+00	< 4.5E+00	< 6.6E+00	< 1.4E+01	< 4.0E+00	< 3.7E+00	< 3.0E+01	< 1.1E+01
MW-155	8/13/2019	pCi/L	< 3.0E+00	< 3.4E+00	< 6.2E+00	< 3.1E+00	< 7.0E+00	< 3.2E+00	< 5.5E+00	< 9.1E+00	< 3.3E+00	< 3.2E+00	< 2.0E+01	< 5.7E+00
MW-156	8/13/2019	pCi/L	< 2.6E+00	< 3.2E+00	< 7.3E+00	< 3.0E+00	< 6.1E+00	< 3.1E+00	< 5.1E+00	< 8.1E+00	< 3.1E+00	< 3.1E+00	< 2.0E+01	< 6.9E+00

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-156	8/13/2019	pCi/L	< 3.0E+00	< 3.0E+00	< 6.1E+00	< 3.1E+00	< 6.1E+00	< 2.9E+00	< 4.9E+00	< 7.9E+00	< 2.8E+00	< 3.0E+00	< 1.8E+01	< 5.4E+00
MW-157	8/13/2019	pCi/L	< 3.0E+00	< 3.3E+00	< 7.0E+00	< 3.3E+00	< 6.8E+00	< 3.3E+00	< 5.9E+00	< 8.4E+00	< 3.5E+00	< 3.1E+00	< 2.0E+01	< 6.7E+00
MW-157	8/13/2019	pCi/L	< 3.0E+00	< 3.3E+00	< 6.9E+00	< 3.3E+00	< 6.9E+00	< 3.6E+00	< 5.9E+00	< 8.9E+00	< 3.3E+00	< 3.1E+00	< 2.1E+01	< 6.6E+00
MW-158	8/13/2019	pCi/L	< 3.7E+00	< 4.2E+00	< 8.5E+00	< 3.7E+00	< 7.5E+00	< 4.4E+00	< 8.6E+00	< 1.4E+01	< 4.1E+00	< 4.4E+00	< 2.9E+01	< 9.5E+00
MW-159	8/13/2019	pCi/L	< 2.8E+00	< 2.9E+00	< 6.9E+00	< 3.3E+00	< 4.9E+00	< 2.8E+00	< 5.0E+00	< 6.7E+00	< 3.3E+00	< 2.7E+00	< 1.7E+01	< 5.4E+00
MW-162	8/13/2019	pCi/L	< 2.5E+00	< 3.4E+00	< 6.8E+00	< 3.3E+00	< 5.6E+00	< 3.5E+00	< 5.6E+00	< 1.2E+01	< 3.2E+00	< 2.3E+00	< 2.3E+01	< 8.3E+00
MW-205	8/13/2019	pCi/L	< 3.3E+00	< 3.7E+00	< 6.2E+00	< 3.2E+00	< 6.1E+00	< 3.4E+00	< 4.9E+00	< 1.4E+01	< 3.2E+00	< 3.3E+00	< 2.6E+01	< 8.4E+00
MW-207	8/13/2019	pCi/L	< 2.9E+00	< 2.8E+00	< 5.8E+00	< 2.7E+00	< 5.2E+00	< 2.9E+00	< 5.2E+00	< 8.3E+00	< 3.1E+00	< 2.8E+00	< 1.8E+01	< 6.2E+00
MW-211	8/13/2019	pCi/L	< 4.1E+00	< 3.9E+00	< 1.1E+01	< 4.5E+00	< 6.4E+00	< 4.5E+00	< 8.4E+00	< 1.3E+01	< 4.9E+00	< 4.2E+00	< 3.3E+01	< 1.0E+01
MW-213	8/13/2019	pCi/L	< 3.9E+00	< 4.1E+00	< 9.7E+00	< 3.9E+00	< 8.0E+00	< 4.8E+00	< 9.0E+00	< 1.4E+01	< 4.4E+00	< 4.4E+00	< 2.7E+01	< 9.1E+00
MW-215	8/13/2019	pCi/L	< 2.7E+00	< 2.8E+00	< 6.6E+00	< 2.8E+00	< 6.2E+00	< 3.2E+00	< 5.6E+00	< 8.6E+00	< 3.1E+00	< 2.8E+00	< 2.0E+01	< 7.0E+00
MW-217	8/13/2019	pCi/L	< 4.2E+00	< 5.6E+00	< 9.5E+00	< 4.4E+00	< 7.8E+00	< 5.3E+00	< 8.7E+00	< 1.4E+01	< 4.7E+00	< 4.5E+00	< 3.4E+01	< 1.1E+01
MW-227	8/13/2019	pCi/L	< 3.3E+00	< 3.9E+00	< 9.6E+00	< 4.5E+00	< 7.3E+00	< 3.9E+00	< 6.9E+00	< 1.3E+01	< 3.9E+00	< 3.4E+00	< 3.5E+01	< 1.3E+01
MW-229	8/13/2019	pCi/L	< 2.8E+00	< 3.5E+00	< 7.2E+00	< 3.2E+00	< 6.1E+00	< 3.8E+00	< 7.5E+00	< 1.3E+01	< 3.3E+00	< 2.6E+00	< 2.4E+01	< 9.0E+00
MW-110	8/14/2019	pCi/L	< 4.3E+00	< 5.4E+00	< 1.1E+01	< 5.4E+00	< 9.8E+00	< 6.1E+00	< 8.4E+00	< 1.4E+01	< 5.7E+00	< 5.3E+00	< 3.2E+01	< 1.1E+01
MW-112	8/14/2019	pCi/L	< 4.7E+00	< 5.2E+00	< 1.0E+01	< 4.8E+00	< 1.2E+01	< 5.5E+00	< 9.3E+00	< 1.4E+01	< 6.1E+00	< 4.9E+00	< 3.6E+01	< 1.0E+01
MW-114	8/14/2019	pCi/L	< 4.6E+00	< 4.3E+00	< 9.6E+00	< 4.7E+00	< 8.9E+00	< 4.8E+00	< 8.6E+00	< 1.2E+01	< 5.1E+00	< 4.8E+00	< 2.7E+01	< 1.0E+01

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-116	8/14/2019	pCi/L	< 5.0E+00	< 5.0E+00	< 1.1E+01	< 5.3E+00	< 1.0E+01	< 5.8E+00	< 9.9E+00	< 1.5E+01	< 5.8E+00	< 5.6E+00	< 3.6E+01	< 1.1E+01
MW-118	8/14/2019	pCi/L	< 5.0E+00	< 5.1E+00	< 1.3E+01	< 6.4E+00	< 1.0E+01	< 4.8E+00	< 9.7E+00	< 1.3E+01	< 5.7E+00	< 5.5E+00	< 3.4E+01	< 1.1E+01
MW-137	8/14/2019	pCi/L	< 2.9E+00	< 3.0E+00	< 7.4E+00	< 2.6E+00	< 6.3E+00	< 3.3E+00	< 5.6E+00	< 8.1E+00	< 2.7E+00	< 3.2E+00	< 1.9E+01	< 5.5E+00
MW-139	8/14/2019	pCi/L	< 4.9E+00	< 5.0E+00	< 1.0E+01	< 4.3E+00	< 1.0E+01	< 4.4E+00	< 8.4E+00	< 1.2E+01	< 5.4E+00	< 4.8E+00	< 3.0E+01	< 1.0E+01
MW-141	8/14/2019	pCi/L	< 3.9E+00	< 5.2E+00	< 1.1E+01	< 4.5E+00	< 8.7E+00	< 5.0E+00	< 8.6E+00	< 1.3E+01	< 4.2E+00	< 4.1E+00	< 2.5E+01	< 1.0E+01
MW-151	8/14/2019	pCi/L	< 4.3E+00	< 4.5E+00	< 1.1E+01	< 5.1E+00	< 9.2E+00	< 4.9E+00	< 8.6E+00	< 1.4E+01	< 5.0E+00	< 4.1E+00	< 3.0E+01	< 8.7E+00
MW-153	8/14/2019	pCi/L	< 3.2E+00	< 3.3E+00	< 7.5E+00	< 2.5E+00	< 6.6E+00	< 3.3E+00	< 5.7E+00	< 8.3E+00	< 3.4E+00	< 3.1E+00	< 2.1E+01	< 7.0E+00
MW-161	8/14/2019	pCi/L	< 4.7E+00	< 5.7E+00	< 1.3E+01	< 5.2E+00	< 1.1E+01	< 5.8E+00	< 1.0E+01	< 1.5E+01	< 6.0E+00	< 5.5E+00	< 3.6E+01	< 1.2E+01
MW-164	8/14/2019	pCi/L	< 5.3E+00	< 5.2E+00	< 1.2E+01	< 4.6E+00	< 1.1E+01	< 5.5E+00	< 8.2E+00	< 1.3E+01	< 4.6E+00	< 4.9E+00	< 3.2E+01	< 1.1E+01
MW-165	8/14/2019	pCi/L	< 1.9E+00	< 2.2E+00	< 4.7E+00	< 2.3E+00	< 4.8E+00	< 2.2E+00	< 4.2E+00	< 7.6E+00	< 2.0E+00	< 2.3E+00	< 1.5E+01	< 5.2E+00
MW-165	8/14/2019	pCi/L	< 4.9E+00	< 4.8E+00	< 9.8E+00	< 4.7E+00	< 9.4E+00	< 5.6E+00	< 8.2E+00	< 1.4E+01	< 4.6E+00	< 4.7E+00	< 3.3E+01	< 9.8E+00
MW-170	8/14/2019	pCi/L	< 4.4E+00	< 4.4E+00	< 1.1E+01	< 3.7E+00	< 8.9E+00	< 4.1E+00	< 6.8E+00	< 1.3E+01	< 5.0E+00	< 3.3E+00	< 3.0E+01	< 1.4E+01
MW-178	8/14/2019	pCi/L	< 3.8E+00	< 3.7E+00	< 9.6E+00	< 3.3E+00	< 8.6E+00	< 4.6E+00	< 7.9E+00	< 1.1E+01	< 3.6E+00	< 4.1E+00	< 2.7E+01	< 8.4E+00
MW-179	8/14/2019	pCi/L	< 4.3E+00	< 4.1E+00	< 8.0E+00	< 3.5E+00	< 8.4E+00	< 3.7E+00	< 7.0E+00	< 9.3E+00	< 4.0E+00	< 4.0E+00	< 2.2E+01	< 6.4E+00
MW-182	8/14/2019	pCi/L	< 4.7E+00	< 5.5E+00	< 1.2E+01	< 3.8E+00	< 8.8E+00	< 5.8E+00	< 9.4E+00	< 1.4E+01	< 4.4E+00	< 4.5E+00	< 3.3E+01	< 9.3E+00
MW-186	8/14/2019	pCi/L	< 3.5E+00	< 3.5E+00	< 8.8E+00	< 3.2E+00	< 8.3E+00	< 3.9E+00	< 6.4E+00	< 1.3E+01	< 3.8E+00	< 3.8E+00	< 2.7E+01	< 1.1E+01
MW-187	8/14/2019	pCi/L	< 2.4E+00	< 3.7E+00	< 8.4E+00	< 4.3E+00	< 7.9E+00	< 4.0E+00	< 6.0E+00	< 1.1E+01	< 4.2E+00	< 3.0E+00	< 2.0E+01	< 9.5E+00

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-188	8/14/2019	pCi/L	< 4.1E+00	< 4.2E+00	< 8.2E+00	< 4.9E+00	< 6.6E+00	< 4.2E+00	< 7.5E+00	< 1.3E+01	< 4.0E+00	< 3.8E+00	< 3.1E+01	< 9.7E+00
MW-201	8/14/2019	pCi/L	< 1.9E+00	< 2.3E+00	< 4.8E+00	< 2.0E+00	< 4.1E+00	< 2.4E+00	< 4.0E+00	< 1.1E+01	< 2.3E+00	< 2.0E+00	< 1.9E+01	< 6.8E+00
MW-203	8/14/2019	pCi/L	< 1.8E+00	< 2.2E+00	< 4.4E+00	< 2.0E+00	< 3.9E+00	< 1.9E+00	< 3.4E+00	< 9.9E+00	< 2.0E+00	< 1.8E+00	< 1.9E+01	< 5.5E+00
MW-209	8/14/2019	pCi/L	< 3.6E+00	< 3.5E+00	< 9.1E+00	< 3.8E+00	< 8.4E+00	< 4.3E+00	< 6.5E+00	< 1.4E+01	< 4.3E+00	< 3.7E+00	< 2.8E+01	< 7.3E+00
MW-219	8/14/2019	pCi/L	< 3.4E+00	< 4.6E+00	< 7.4E+00	< 4.2E+00	< 8.4E+00	< 3.7E+00	< 6.9E+00	< 1.4E+01	< 3.9E+00	< 3.5E+00	< 2.8E+01	< 1.1E+01
MW-221	8/14/2019	pCi/L	< 4.0E+00	< 4.0E+00	< 7.8E+00	< 4.4E+00	< 6.0E+00	< 4.2E+00	< 8.2E+00	< 1.4E+01	< 4.1E+00	< 4.1E+00	< 2.9E+01	< 9.1E+00
MW-221	8/14/2019	pCi/L	< 3.8E+00	< 4.4E+00	< 7.7E+00	< 3.7E+00	< 6.9E+00	< 3.8E+00	< 6.5E+00	< 1.4E+01	< 4.2E+00	< 3.5E+00	< 2.8E+01	< 1.0E+01
MW-223	8/14/2019	pCi/L	< 3.7E+00	< 3.9E+00	< 1.0E+01	< 4.2E+00	< 8.9E+00	< 5.0E+00	< 7.1E+00	< 1.4E+01	< 4.0E+00	< 4.1E+00	< 3.0E+01	< 9.0E+00
MW-223	8/14/2019	pCi/L	< 3.1E+00	< 3.5E+00	< 7.7E+00	< 4.6E+00	< 7.1E+00	< 4.4E+00	< 7.1E+00	< 1.4E+01	< 3.6E+00	< 3.6E+00	< 2.6E+01	< 9.5E+00
MW-225	8/14/2019	pCi/L	< 3.0E+00	< 3.9E+00	< 9.0E+00	< 4.4E+00	< 7.5E+00	< 3.6E+00	< 7.3E+00	< 1.4E+01	< 4.2E+00	< 4.0E+00	< 3.0E+01	< 1.0E+01
MW-231	8/14/2019	pCi/L	< 4.3E+00	< 4.4E+00	< 9.3E+00	< 4.1E+00	< 8.5E+00	< 5.3E+00	< 8.1E+00	< 1.4E+01	< 4.6E+00	< 4.2E+00	< 3.1E+01	< 1.1E+01
MW-233	8/14/2019	pCi/L	< 3.8E+00	< 3.9E+00	< 9.2E+00	< 4.7E+00	< 7.7E+00	< 5.0E+00	< 7.2E+00	< 1.4E+01	< 3.4E+00	< 3.9E+00	< 3.0E+01	< 7.3E+00
MW-235	8/14/2019	pCi/L	< 2.6E+00	< 2.6E+00	< 6.1E+00	< 2.7E+00	< 4.9E+00	< 2.7E+00	< 4.8E+00	< 8.2E+00	< 2.8E+00	< 2.7E+00	< 1.8E+01	< 6.1E+00
PZ-01	8/14/2019	pCi/L	< 5.3E+00	< 6.1E+00	< 1.0E+01	< 5.6E+00	< 9.4E+00	< 4.9E+00	< 7.5E+00	< 1.4E+01	< 4.7E+00	< 5.0E+00	< 3.2E+01	< 1.0E+01
SW-101	8/15/2019	pCi/L	< 4.0E+00	< 4.6E+00	< 9.9E+00	< 5.1E+00	< 9.3E+00	< 5.1E+00	< 8.3E+00	< 1.4E+01	< 4.5E+00	< 4.7E+00	< 3.2E+01	< 8.3E+00
SW-103	8/15/2019	pCi/L	< 3.9E+00	< 4.1E+00	< 8.2E+00	< 5.1E+00	< 8.4E+00	< 4.2E+00	< 8.5E+00	< 1.4E+01	< 4.4E+00	< 4.2E+00	< 3.3E+01	< 8.7E+00
SW-104	8/15/2019	pCi/L	< 4.1E+00	< 3.6E+00	< 8.2E+00	< 4.1E+00	< 7.5E+00	< 4.5E+00	< 6.1E+00	< 1.2E+01	< 4.7E+00	< 4.3E+00	< 2.3E+01	< 5.4E+00

Annual Radioactive Effluent Release Report

Attachment 1

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-111	11/5/2019	pCi/L	< 8.0E+00	< 7.8E+00	< 1.8E+01	< 4.5E+00	< 1.7E+01	< 9.6E+00	< 1.4E+01	< 6.8E+01	< 5.2E+00	< 7.4E+00	< 9.3E+01	< 2.2E+01
MW-112	11/5/2019	pCi/L	< 6.0E+00	< 8.0E+00	< 1.3E+01	< 8.3E+00	< 1.3E+01	< 8.2E+00	< 1.2E+01	< 8.2E+01	< 7.2E+00	< 6.9E+00	< 1.0E+02	< 4.3E+01
MW-116	11/5/2019	pCi/L	< 3.6E+00	< 8.8E+00	< 2.3E+01	< 6.6E+00	< 1.5E+01	< 9.6E+00	< 1.4E+01	< 8.4E+01	< 8.3E+00	< 7.1E+00	< 1.1E+02	< 3.4E+01
MW-118	11/5/2019	pCi/L	< 8.5E+00	< 1.0E+01	< 2.2E+01	< 4.8E+00	< 1.2E+01	< 9.6E+00	< 1.3E+01	< 8.9E+01	< 7.6E+00	< 8.1E+00	< 1.2E+02	< 3.6E+01
MW-124	11/5/2019	pCi/L	< 5.1E+00	< 7.8E+00	< 1.7E+01	< 5.9E+00	< 1.1E+01	< 9.4E+00	< 1.5E+01	< 8.0E+01	< 6.7E+00	< 6.0E+00	< 9.9E+01	< 3.4E+01
MW-125	11/5/2019	pCi/L	< 6.7E+00	< 1.0E+01	< 1.6E+01	< 1.1E+01	< 2.1E+01	< 1.0E+01	< 1.7E+01	< 9.5E+01	< 9.2E+00	< 8.5E+00	< 1.3E+02	< 3.9E+01
MW-125	11/5/2019	pCi/L	< 6.8E+00	< 9.6E+00	< 2.0E+01	< 7.0E+00	< 1.4E+01	< 1.0E+01	< 1.8E+01	< 8.7E+01	< 8.9E+00	< 7.6E+00	< 1.2E+02	< 4.1E+01
MW-137	11/5/2019	pCi/L	< 6.6E+00	< 8.4E+00	< 2.0E+01	< 7.1E+00	< 1.2E+01	< 9.6E+00	< 1.5E+01	< 7.4E+01	< 6.2E+00	< 5.5E+00	< 8.5E+01	< 3.9E+01
MW-137	11/5/2019	pCi/L	< 4.9E+00	< 8.5E+00	< 1.7E+01	< 5.8E+00	< 2.1E+01	< 1.1E+01	< 1.9E+01	< 9.2E+01	< 6.7E+00	< 7.9E+00	< 1.2E+02	< 3.0E+01
MW-139	11/5/2019	pCi/L	< 6.3E+00	< 7.3E+00	< 1.7E+01	< 6.1E+00	< 1.2E+01	< 8.9E+00	< 1.5E+01	< 8.6E+01	< 7.7E+00	< 7.4E+00	< 1.1E+02	< 3.2E+01
MW-141	11/5/2019	pCi/L	< 8.2E+00	< 9.9E+00	< 2.1E+01	< 8.3E+00	< 9.8E+00	< 8.0E+00	< 1.3E+01	< 7.4E+01	< 7.5E+00	< 4.9E+00	< 1.2E+02	< 3.2E+01
MW-142	11/5/2019	pCi/L	< 6.9E+00	< 8.1E+00	< 2.0E+01	< 6.0E+00	< 1.5E+01	< 9.4E+00	< 1.8E+01	< 8.8E+01	< 8.7E+00	< 6.6E+00	< 1.1E+02	< 3.7E+01
MW-144	11/5/2019	pCi/L	< 5.5E+00	< 9.8E+00	< 1.6E+01	< 8.0E+00	< 1.7E+01	< 8.9E+00	< 1.4E+01	< 8.4E+01	< 7.8E+00	< 6.8E+00	< 1.1E+02	< 3.1E+01
MW-146	11/5/2019	pCi/L	< 5.8E+00	< 5.6E+00	< 2.4E+01	< 7.0E+00	< 1.9E+01	< 7.9E+00	< 1.5E+01	< 8.9E+01	< 6.0E+00	< 6.4E+00	< 1.0E+02	< 4.7E+01
MW-147	11/5/2019	pCi/L	< 7.2E+00	< 9.6E+00	< 2.4E+01	< 5.4E+00	< 1.5E+01	< 8.9E+00	< 1.7E+01	< 9.7E+01	< 7.6E+00	< 7.8E+00	< 1.3E+02	< 4.5E+01
MW-148	11/5/2019	pCi/L	< 7.0E+00	< 1.1E+01	< 2.5E+01	< 7.9E+00	< 1.7E+01	< 9.8E+00	< 2.1E+01	< 9.3E+01	< 8.0E+00	< 9.1E+00	< 1.2E+02	< 5.0E+01
MW-153	11/5/2019	pCi/L	< 5.9E+00	< 7.3E+00	< 1.9E+01	< 6.8E+00	< 1.5E+01	< 8.5E+00	< 1.3E+01	< 9.6E+01	< 7.5E+00	< 6.6E+00	< 9.9E+01	< 4.1E+01

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-155	11/5/2019	pCi/L	< 8.1E+00	< 9.6E+00	< 2.5E+01	< 8.7E+00	< 1.5E+01	< 1.1E+01	< 1.8E+01	< 1.1E+02	< 8.5E+00	< 8.4E+00	< 1.2E+02	< 5.4E+01
MW-158	11/5/2019	pCi/L	< 5.4E+00	< 1.0E+01	< 2.0E+01	< 5.8E+00	< 9.6E+00	< 1.2E+01	< 1.6E+01	< 9.4E+01	< 7.5E+00	< 7.5E+00	< 1.1E+02	< 4.4E+01
MW-159	11/5/2019	pCi/L	< 8.1E+00	< 9.9E+00	< 2.2E+01	< 8.5E+00	< 1.8E+01	< 9.6E+00	< 1.8E+01	< 8.5E+01	< 8.3E+00	< 8.4E+00	< 1.2E+02	< 4.2E+01
MW-162	11/5/2019	pCi/L	< 7.2E+00	< 7.4E+00	< 2.4E+01	< 7.5E+00	< 1.8E+01	< 7.7E+00	< 1.5E+01	< 6.4E+01	< 8.3E+00	< 5.9E+00	< 8.7E+01	< 3.2E+01
MW-172	11/5/2019	pCi/L	< 7.2E+00	< 8.3E+00	< 1.8E+01	< 4.1E+00	< 1.6E+01	< 9.6E+00	< 1.2E+01	< 8.4E+01	< 5.7E+00	< 8.1E+00	< 9.9E+01	< 3.8E+01
MW-174	11/5/2019	pCi/L	< 5.3E+00	< 1.1E+01	< 1.7E+01	< 6.9E+00	< 1.5E+01	< 8.3E+00	< 1.6E+01	< 6.7E+01	< 8.0E+00	< 8.2E+00	< 1.0E+02	< 5.2E+01
MW-188	11/5/2019	pCi/L	< 6.3E+00	< 8.3E+00	< 1.6E+01	< 8.2E+00	< 1.7E+01	< 8.0E+00	< 1.5E+01	< 7.4E+01	< 8.9E+00	< 7.4E+00	< 1.0E+02	< 5.1E+01
MW-227	11/5/2019	pCi/L	< 7.5E+00	< 7.0E+00	< 1.9E+01	< 5.6E+00	< 1.6E+01	< 8.0E+00	< 1.2E+01	< 7.3E+01	< 7.1E+00	< 7.1E+00	< 9.5E+01	< 4.0E+01
MW-04	11/6/2019	pCi/L	< 6.0E+00	< 6.0E+00	< 1.4E+01	< 8.0E+00	< 1.4E+01	< 8.6E+00	< 1.2E+01	< 6.1E+01	< 4.5E+00	< 7.1E+00	< 8.5E+01	< 3.2E+01
MW-100	11/6/2019	pCi/L	< 6.4E+00	< 4.2E+00	< 2.0E+01	< 8.2E+00	< 1.2E+01	< 8.7E+00	< 1.5E+01	< 5.1E+01	< 7.7E+00	< 7.8E+00	< 9.7E+01	< 2.9E+01
MW-103	11/6/2019	pCi/L	< 7.4E+00	< 7.0E+00	< 2.5E+01	< 9.8E+00	< 1.3E+01	< 6.4E+00	< 1.6E+01	< 5.7E+01	< 6.8E+00	< 5.7E+00	< 9.9E+01	< 3.6E+01
MW-104	11/6/2019	pCi/L	< 6.1E+00	< 6.8E+00	< 1.7E+01	< 5.9E+00	< 8.3E+00	< 6.5E+00	< 1.1E+01	< 5.4E+01	< 6.4E+00	< 5.4E+00	< 7.0E+01	< 2.5E+01
MW-104	11/6/2019	pCi/L	< 7.2E+00	< 1.2E+01	< 2.3E+01	< 7.7E+00	< 2.3E+01	< 9.1E+00	< 1.7E+01	< 7.1E+01	< 7.9E+00	< 7.0E+00	< 1.1E+02	< 3.1E+01
MW-106	11/6/2019	pCi/L	< 4.6E+00	< 8.3E+00	< 1.3E+01	< 6.4E+00	< 1.4E+01	< 9.0E+00	< 1.4E+01	< 6.3E+01	< 6.5E+00	< 5.5E+00	< 9.9E+01	< 3.3E+01
MW-110	11/6/2019	pCi/L	< 6.3E+00	< 6.9E+00	< 1.8E+01	< 6.0E+00	< 1.2E+01	< 7.3E+00	< 1.2E+01	< 7.0E+01	< 7.0E+00	< 6.0E+00	< 8.7E+01	< 3.3E+01
MW-114	11/6/2019	pCi/L	< 7.9E+00	< 8.0E+00	< 1.8E+01	< 6.4E+00	< 1.7E+01	< 7.5E+00	< 1.5E+01	< 8.3E+01	< 7.9E+00	< 6.3E+00	< 1.0E+02	< 2.8E+01
MW-126	11/6/2019	pCi/L	< 8.1E+00	< 8.3E+00	< 2.8E+01	< 7.9E+00	< 1.8E+01	< 8.6E+00	< 1.6E+01	< 7.4E+01	< 7.6E+00	< 7.7E+00	< 9.9E+01	< 4.0E+01

Annual Radioactive Effluent Release Report

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-126	11/6/2019	pCi/L	< 6.8E+00	< 6.7E+00	< 1.9E+01	< 7.3E+00	< 1.4E+01	< 8.6E+00	< 1.4E+01	< 6.3E+01	< 7.4E+00	< 6.3E+00	< 1.1E+02	< 3.7E+01
MW-128	11/6/2019	pCi/L	< 7.6E+00	< 9.0E+00	< 2.1E+01	< 9.2E+00	< 1.3E+01	< 1.0E+01	< 1.3E+01	< 6.5E+01	< 9.3E+00	< 7.5E+00	< 7.8E+01	< 3.6E+01
MW-130	11/6/2019	pCi/L	< 6.6E+00	< 7.7E+00	< 2.0E+01	< 6.8E+00	< 1.9E+01	< 9.2E+00	< 1.3E+01	< 6.7E+01	< 5.8E+00	< 7.3E+00	< 1.1E+02	< 3.5E+01
MW-14	11/6/2019	pCi/L	< 8.3E+00	< 9.5E+00	< 2.2E+01	< 7.2E+00	< 1.6E+01	< 8.8E+00	< 2.0E+01	< 6.8E+01	< 9.8E+00	< 7.5E+00	< 1.1E+02	< 3.5E+01
MW-151	11/6/2019	pCi/L	< 3.6E+00	< 9.2E+00	< 2.4E+01	< 5.1E+00	< 1.1E+01	< 9.5E+00	< 1.4E+01	< 7.2E+01	< 8.3E+00	< 7.4E+00	< 1.1E+02	< 4.1E+01
MW-156	11/6/2019	pCi/L	< 7.7E+00	< 8.2E+00	< 2.2E+01	< 8.3E+00	< 1.5E+01	< 1.1E+01	< 1.6E+01	< 9.3E+01	< 7.7E+00	< 5.4E+00	< 1.0E+02	< 4.5E+01
MW-157	11/6/2019	pCi/L	< 5.2E+00	< 6.1E+00	< 1.7E+01	< 5.5E+00	< 1.1E+01	< 6.5E+00	< 1.2E+01	< 6.3E+01	< 5.6E+00	< 4.4E+00	< 8.1E+01	< 3.6E+01
MW-161	11/6/2019	pCi/L	< 7.1E+00	< 7.2E+00	< 1.7E+01	< 7.0E+00	< 1.7E+01	< 8.2E+00	< 1.2E+01	< 6.8E+01	< 8.3E+00	< 7.3E+00	< 9.0E+01	< 3.4E+01
MW-164	11/6/2019	pCi/L	< 8.4E+00	< 7.6E+00	< 2.6E+01	< 6.8E+00	< 1.5E+01	< 7.5E+00	< 1.4E+01	< 7.8E+01	< 9.6E+00	< 5.9E+00	< 1.0E+02	< 2.7E+01
MW-165	11/6/2019	pCi/L	< 6.2E+00	< 8.0E+00	< 1.9E+01	< 6.2E+00	< 1.7E+01	< 8.0E+00	< 1.6E+01	< 6.8E+01	< 7.9E+00	< 7.6E+00	< 1.0E+02	< 3.3E+01
MW-178	11/6/2019	pCi/L	< 5.8E+00	< 6.8E+00	< 1.7E+01	< 6.9E+00	< 1.2E+01	< 8.5E+00	< 1.3E+01	< 7.4E+01	< 8.7E+00	< 6.0E+00	< 9.6E+01	< 3.4E+01
MW-179	11/6/2019	pCi/L	< 8.0E+00	< 9.9E+00	< 2.2E+01	< 7.4E+00	< 1.6E+01	< 1.1E+01	< 1.7E+01	< 8.1E+01	< 9.9E+00	< 8.3E+00	< 1.1E+02	< 4.7E+01
MW-18	11/6/2019	pCi/L	< 8.8E+00	< 9.5E+00	< 2.3E+01	< 1.1E+01	< 1.8E+01	< 8.3E+00	< 1.6E+01	< 7.2E+01	< 5.6E+00	< 6.2E+00	< 7.3E+01	< 2.7E+01
MW-185	11/6/2019	pCi/L	< 6.9E+00	< 1.0E+01	< 2.3E+01	< 8.2E+00	< 1.5E+01	< 7.5E+00	< 1.2E+01	< 8.6E+01	< 9.4E+00	< 7.4E+00	< 1.1E+02	< 4.4E+01
MW-186	11/6/2019	pCi/L	< 6.1E+00	< 8.0E+00	< 1.8E+01	< 8.5E+00	< 1.8E+01	< 9.5E+00	< 1.4E+01	< 7.7E+01	< 9.7E+00	< 7.3E+00	< 1.0E+02	< 2.3E+01
MW-187	11/6/2019	pCi/L	< 9.0E+00	< 1.1E+01	< 1.8E+01	< 8.2E+00	< 2.0E+01	< 1.3E+01	< 1.8E+01	< 9.1E+01	< 8.3E+00	< 8.6E+00	< 1.2E+02	< 3.3E+01
MW-201	11/6/2019	pCi/L	< 5.7E+00	< 9.5E+00	< 1.6E+01	< 9.8E+00	< 1.9E+01	< 7.1E+00	< 1.5E+01	< 5.9E+01	< 7.7E+00	< 6.8E+00	< 9.2E+01	< 4.0E+01

Annual Radioactive Effluent Release Report

Attachment 1

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-203	11/6/2019	pCi/L	< 5.0E+00	< 8.3E+00	< 2.1E+01	< 8.2E+00	< 8.7E+00	< 9.8E+00	< 1.3E+01	< 5.2E+01	< 6.8E+00	< 6.5E+00	< 8.1E+01	< 2.7E+01
MW-205	11/6/2019	pCi/L	< 6.8E+00	< 6.1E+00	< 2.3E+01	< 5.6E+00	< 1.5E+01	< 1.1E+01	< 1.2E+01	< 6.5E+01	< 6.9E+00	< 4.6E+00	< 1.0E+02	< 3.4E+01
MW-205	11/6/2019	pCi/L	< 5.5E+00	< 5.4E+00	< 1.8E+01	< 5.9E+00	< 9.8E+00	< 6.5E+00	< 1.2E+01	< 5.8E+01	< 7.0E+00	< 4.5E+00	< 9.1E+01	< 2.3E+01
MW-209	11/6/2019	pCi/L	< 6.9E+00	< 4.7E+00	< 2.1E+01	< 7.8E+00	< 1.6E+01	< 7.6E+00	< 1.5E+01	< 6.5E+01	< 4.2E+00	< 6.2E+00	< 8.2E+01	< 2.7E+01
MW-209	11/6/2019	pCi/L	< 9.1E+00	< 1.0E+01	< 2.5E+01	< 7.1E+00	< 1.7E+01	< 9.2E+00	< 1.9E+01	< 7.0E+01	< 6.9E+00	< 9.8E+00	< 1.4E+02	< 2.5E+01
MW-8	11/6/2019	pCi/L	< 8.6E+00	< 9.1E+00	< 1.9E+01	< 8.7E+00	< 1.6E+01	< 1.2E+01	< 1.5E+01	< 7.2E+01	< 8.5E+00	< 7.7E+00	< 1.0E+02	< 2.8E+01
PZ-01	11/6/2019	pCi/L	< 7.7E+00	< 9.6E+00	< 1.7E+01	< 9.8E+00	< 1.6E+01	< 1.2E+01	< 1.7E+01	< 8.1E+01	< 7.7E+00	< 8.0E+00	< 1.1E+02	< 3.6E+01
PZ-03	11/6/2019	pCi/L	< 6.6E+00	< 6.8E+00	< 1.9E+01	< 9.4E+00	< 1.4E+01	< 7.4E+00	< 1.4E+01	< 6.4E+01	< 6.7E+00	< 6.6E+00	< 1.0E+02	< 2.6E+01
T-14	11/6/2019	pCi/L	< 6.4E+00	< 5.8E+00	< 2.4E+01	< 6.9E+00	< 1.8E+01	< 8.6E+00	< 2.0E+01	< 7.4E+01	< 7.2E+00	< 7.9E+00	< 8.3E+01	< 5.1E+01
MW-05	11/7/2019	pCi/L	< 8.2E+00	< 9.6E+00	< 2.3E+01	< 6.8E+00	< 1.6E+01	< 9.2E+00	< 2.0E+01	< 6.6E+01	< 8.1E+00	< 8.0E+00	< 1.2E+02	< 3.5E+01
MW-107	11/7/2019	pCi/L	< 7.6E+00	< 7.9E+00	< 2.0E+01	< 4.2E+00	< 1.3E+01	< 7.8E+00	< 1.2E+01	< 6.2E+01	< 6.2E+00	< 4.9E+00	< 7.2E+01	< 1.5E+01
MW-108	11/7/2019	pCi/L	< 4.9E+00	< 6.4E+00	< 1.6E+01	< 5.5E+00	< 1.5E+01	< 9.8E+00	< 1.7E+01	< 5.9E+01	< 6.6E+00	< 7.0E+00	< 8.4E+01	< 3.7E+01
MW-120	11/7/2019	pCi/L	< 7.1E+00	< 8.7E+00	< 1.8E+01	< 9.5E+00	< 1.8E+01	< 9.9E+00	< 1.2E+01	< 7.7E+01	< 4.2E+00	< 6.8E+00	< 7.9E+01	< 3.0E+01
MW-127	11/7/2019	pCi/L	< 6.8E+00	< 9.9E+00	< 2.0E+01	< 7.5E+00	< 4.7E+00	< 9.8E+00	< 1.5E+01	< 7.5E+01	< 7.2E+00	< 8.7E+00	< 1.3E+02	< 4.4E+01
MW-131	11/7/2019	pCi/L	< 6.6E+00	< 9.0E+00	< 2.0E+01	< 7.8E+00	< 1.1E+01	< 9.0E+00	< 1.7E+01	< 6.6E+01	< 6.9E+00	< 5.1E+00	< 8.5E+01	< 3.4E+01
MW-132	11/7/2019	pCi/L	< 6.5E+00	< 6.8E+00	< 2.1E+01	< 8.6E+00	< 1.9E+01	< 8.0E+00	< 1.7E+01	< 6.5E+01	< 5.1E+00	< 7.5E+00	< 1.0E+02	< 3.1E+01
MW-134	11/7/2019	pCi/L	< 6.4E+00	< 8.0E+00	< 1.5E+01	< 6.2E+00	< 1.1E+01	< 8.6E+00	< 1.3E+01	< 5.4E+01	< 7.5E+00	< 6.5E+00	< 7.6E+01	< 3.7E+01

Annual Radioactive Effluent Release Report

Attachment 1

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Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-167	11/7/2019	pCi/L	< 6.0E+00	< 9.2E+00	< 1.7E+01	< 7.3E+00	< 9.6E+00	< 7.3E+00	< 1.5E+01	< 6.7E+01	< 7.0E+00	< 8.5E+00	< 1.2E+02	< 4.3E+01
MW-169	11/7/2019	pCi/L	< 8.2E+00	< 1.1E+01	< 2.0E+01	< 6.9E+00	< 1.6E+01	< 9.7E+00	< 1.4E+01	< 7.5E+01	< 7.2E+00	< 8.0E+00	< 1.0E+02	< 3.7E+01
MW-170	11/7/2019	pCi/L	< 7.9E+00	< 9.6E+00	< 2.8E+01	< 7.8E+00	< 1.5E+01	< 1.0E+01	< 1.5E+01	< 6.2E+01	< 8.8E+00	< 7.2E+00	< 1.1E+02	< 4.0E+01
MW-180	11/7/2019	pCi/L	< 7.9E+00	< 9.4E+00	< 2.3E+01	< 9.1E+00	< 1.4E+01	< 9.8E+00	< 1.2E+01	< 7.0E+01	< 8.8E+00	< 6.1E+00	< 9.0E+01	< 3.7E+01
MW-182	11/7/2019	pCi/L	< 7.5E+00	< 8.6E+00	< 2.0E+01	< 6.2E+00	< 1.3E+01	< 8.7E+00	< 1.4E+01	< 6.9E+01	< 6.9E+00	< 6.4E+00	< 1.0E+02	< 3.4E+01
MW-207	11/7/2019	pCi/L	< 8.7E+00	< 8.5E+00	< 2.1E+01	< 9.5E+00	< 1.7E+01	< 8.0E+00	< 1.8E+01	< 7.6E+01	< 8.4E+00	< 7.7E+00	< 9.3E+01	< 5.2E+01
MW-211	11/7/2019	pCi/L	< 6.9E+00	< 6.7E+00	< 1.7E+01	< 7.2E+00	< 1.3E+01	< 7.9E+00	< 1.5E+01	< 5.7E+01	< 6.6E+00	< 6.6E+00	< 8.0E+01	< 3.0E+01
MW-213	11/7/2019	pCi/L	< 7.1E+00	< 7.5E+00	< 1.9E+01	< 7.1E+00	< 1.6E+01	< 9.8E+00	< 1.6E+01	< 6.6E+01	< 7.6E+00	< 8.0E+00	< 9.9E+01	< 1.9E+01
MW-215	11/7/2019	pCi/L	< 8.8E+00	< 9.1E+00	< 1.9E+01	< 6.5E+00	< 1.6E+01	< 9.9E+00	< 1.6E+01	< 8.1E+01	< 9.1E+00	< 7.4E+00	< 1.2E+02	< 3.6E+01
MW-217	11/7/2019	pCi/L	< 8.9E+00	< 9.0E+00	< 1.5E+01	< 7.1E+00	< 1.8E+01	< 1.0E+01	< 1.8E+01	< 6.9E+01	< 8.0E+00	< 8.0E+00	< 1.0E+02	< 3.1E+01
MW-219	11/7/2019	pCi/L	< 5.8E+00	< 6.6E+00	< 1.7E+01	< 5.9E+00	< 1.0E+01	< 6.9E+00	< 1.2E+01	< 4.8E+01	< 6.3E+00	< 5.8E+00	< 7.6E+01	< 2.6E+01
MW-221	11/7/2019	pCi/L	< 7.5E+00	< 9.4E+00	< 2.4E+01	< 8.0E+00	< 1.2E+01	< 7.8E+00	< 1.3E+01	< 5.9E+01	< 6.2E+00	< 8.0E+00	< 8.6E+01	< 3.2E+01
MW-223	11/7/2019	pCi/L	< 6.6E+00	< 7.2E+00	< 1.8E+01	< 6.9E+00	< 1.6E+01	< 8.8E+00	< 1.3E+01	< 6.3E+01	< 6.1E+00	< 6.1E+00	< 8.5E+01	< 3.3E+01
MW-225	11/7/2019	pCi/L	< 5.2E+00	< 9.0E+00	< 2.2E+01	< 8.1E+00	< 1.2E+01	< 1.2E+01	< 1.8E+01	< 6.0E+01	< 7.9E+00	< 6.4E+00	< 1.3E+02	< 3.4E+01
MW-229	11/7/2019	pCi/L	< 6.7E+00	< 8.4E+00	< 1.9E+01	< 7.3E+00	< 1.6E+01	< 9.7E+00	< 1.4E+01	< 7.5E+01	< 5.7E+00	< 6.5E+00	< 8.8E+01	< 3.8E+01
MW-229	11/7/2019	pCi/L	< 6.5E+00	< 6.1E+00	< 1.4E+01	< 6.4E+00	< 1.4E+01	< 6.4E+00	< 9.8E+00	< 4.7E+01	< 4.1E+00	< 5.7E+00	< 7.4E+01	< 2.3E+01
MW-231	11/7/2019	pCi/L	< 5.6E+00	< 8.6E+00	< 1.9E+01	< 7.8E+00	< 1.5E+01	< 6.5E+00	< 1.5E+01	< 5.9E+01	< 7.1E+00	< 7.4E+00	< 7.6E+01	< 3.6E+01

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Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-233	11/7/2019	pCi/L	< 7.3E+00	< 9.1E+00	< 2.0E+01	< 9.6E+00	< 1.9E+01	< 1.3E+01	< 2.1E+01	< 8.1E+01	< 8.8E+00	< 9.2E+00	< 1.2E+02	< 3.5E+01
MW-235	11/7/2019	pCi/L	< 4.0E+00	< 6.0E+00	< 1.3E+01	< 5.2E+00	< 1.2E+01	< 5.0E+00	< 1.1E+01	< 4.6E+01	< 6.2E+00	< 5.8E+00	< 7.8E+01	< 2.9E+01
SW-103	11/7/2019	pCi/L	< 7.8E+00	< 5.6E+00	< 1.8E+01	< 6.6E+00	< 1.4E+01	< 8.9E+00	< 1.5E+01	< 6.1E+01	< 6.2E+00	< 8.0E+00	< 1.1E+02	< 2.9E+01
SW-104	11/7/2019	pCi/L	< 7.0E+00	< 7.3E+00	< 1.8E+01	< 7.0E+00	< 1.2E+01	< 9.0E+00	< 1.3E+01	< 4.8E+01	< 6.7E+00	< 5.9E+00	< 8.3E+01	< 2.8E+01

Table 18, Hard to Detect Nuclides

Station ID	Sample Date	Units	FE-55	NI-63	SR-89	SR-90	CM-242	CM-243/244	PU-238
MW-158	02/19/2019 1102	pCi/L	< 2.5E+01	< 1.9E+01	< 1.1E+01	< 8.9E-01	< 1.3E-02	< 6.1E-02	< 2.3E-02

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-100	2/19/2019	pCi/L	< 4.7E+02		MW-205	2/19/2019	pCi/L	< 4.8E+02
MW-124	2/19/2019	pCi/L	4.60E+04		MW-207	2/19/2019	pCi/L	< 4.8E+02
MW-125	2/19/2019	pCi/L	5.70E+05		MW-211	2/19/2019	pCi/L	6.40E+02
MW-142	2/19/2019	pCi/L	< 5.0E+02		MW-211	2/19/2019	pCi/L	< 4.6E+02
MW-144	2/19/2019	pCi/L	< 4.7E+02		MW-213	2/19/2019	pCi/L	< 4.8E+02
MW-146	2/19/2019	pCi/L	1.60E+05		MW-213	2/19/2019	pCi/L	< 4.7E+02
MW-147	2/19/2019	pCi/L	6.80E+04		MW-215	2/19/2019	pCi/L	< 5.2E+02
MW-148	2/19/2019	pCi/L	< 4.8E+02		MW-217	2/19/2019	pCi/L	< 4.7E+02
MW-148	2/19/2019	pCi/L	< 4.7E+02		MW-227	2/19/2019	pCi/L	< 4.8E+02
MW-155	2/19/2019	pCi/L	1.10E+05		MW-229	2/19/2019	pCi/L	< 4.7E+02
MW-156	2/19/2019	pCi/L	4.20E+03		MW-110	2/20/2019	pCi/L	2.90E+04
MW-157	2/19/2019	pCi/L	2.00E+05		MW-112	2/20/2019	pCi/L	5.70E+03
MW-158	2/19/2019	pCi/L	6.00E+05		MW-114	2/20/2019	pCi/L	2.00E+03
MW-159	2/19/2019	pCi/L	6.60E+03		MW-116	2/20/2019	pCi/L	6.00E+03
MW-159	2/19/2019	pCi/L	7.80E+03		MW-118	2/20/2019	pCi/L	3.60E+03
MW-162	2/19/2019	pCi/L	< 4.7E+02		MW-137	2/20/2019	pCi/L	1.20E+04
MW-188	2/19/2019	pCi/L	< 4.7E+02		MW-139	2/20/2019	pCi/L	6.80E+02

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-141	2/20/2019	pCi/L	3.40E+03		MW-221	2/20/2019	pCi/L	< 5.1E+02
MW-151	2/20/2019	pCi/L	< 4.7E+02		MW-223	2/20/2019	pCi/L	< 4.8E+02
MW-153	2/20/2019	pCi/L	1.30E+03		MW-225	2/20/2019	pCi/L	< 4.7E+02
MW-161	2/20/2019	pCi/L	1.30E+03		MW-231	2/20/2019	pCi/L	< 4.7E+02
MW-164	2/20/2019	pCi/L	< 4.7E+02		MW-233	2/20/2019	pCi/L	< 4.7E+02
MW-165	2/20/2019	pCi/L	< 4.7E+02		MW-235	2/20/2019	pCi/L	< 4.7E+02
MW-165	2/20/2019	pCi/L	< 4.6E+02		PZ-01	2/20/2019	pCi/L	7.40E+04
MW-170	2/20/2019	pCi/L	< 4.7E+02		SW-101	2/21/2019	pCi/L	< 4.6E+02
MW-178	2/20/2019	pCi/L	4.90E+03		SW-102	2/21/2019	pCi/L	< 4.7E+02
MW-179	2/20/2019	pCi/L	2.60E+05		SW-103	2/21/2019	pCi/L	< 4.6E+02
MW-182	2/20/2019	pCi/L	< 4.8E+02		SW-104	2/21/2019	pCi/L	< 4.7E+02
MW-186	2/20/2019	pCi/L	< 4.7E+02		MW-158	4/17/2019	pCi/L	6.30E+05
MW-187	2/20/2019	pCi/L	< 4.8E+02		MW-124	5/14/2019	pCi/L	3.90E+04
MW-201	2/20/2019	pCi/L	< 4.6E+02		MW-124	5/14/2019	pCi/L	5.10E+04
MW-203	2/20/2019	pCi/L	< 4.8E+02		MW-125	5/14/2019	pCi/L	4.50E+05
MW-209	2/20/2019	pCi/L	< 4.7E+02		MW-142	5/14/2019	pCi/L	< 5.3E+02
MW-219	2/20/2019	pCi/L	< 4.7E+02		MW-144	5/14/2019	pCi/L	< 5.3E+02

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-146	5/14/2019	pCi/L	9.30E+04		MW-137	5/15/2019	pCi/L	1.20E+04
MW-147	5/14/2019	pCi/L	7.60E+04		MW-139	5/15/2019	pCi/L	6.30E+02
MW-148	5/14/2019	pCi/L	< 5.2E+02		MW-141	5/15/2019	pCi/L	2.50E+03
MW-156	5/14/2019	pCi/L	6.30E+03		MW-151	5/15/2019	pCi/L	< 5.2E+02
MW-157	5/14/2019	pCi/L	2.10E+05		MW-153	5/15/2019	pCi/L	9.80E+02
MW-157	5/14/2019	pCi/L	2.10E+05		MW-155	5/15/2019	pCi/L	1.50E+05
MW-158	5/14/2019	pCi/L	4.90E+05		MW-161	5/15/2019	pCi/L	7.40E+02
MW-159	5/14/2019	pCi/L	1.50E+04		MW-161	5/15/2019	pCi/L	< 5.1E+02
MW-162	5/14/2019	pCi/L	< 6.4E+02		MW-164	5/15/2019	pCi/L	< 5.7E+02
MW-100	5/15/2019	pCi/L	< 6.3E+02		MW-165	5/15/2019	pCi/L	< 5.5E+02
MW-110	5/15/2019	pCi/L	1.90E+04		MW-167	5/15/2019	pCi/L	< 6.2E+02
MW-112	5/15/2019	pCi/L	3.80E+03		MW-172	5/15/2019	pCi/L	< 5.7E+02
MW-114	5/15/2019	pCi/L	1.50E+03		MW-174	5/15/2019	pCi/L	< 5.6E+02
MW-116	5/15/2019	pCi/L	2.30E+03		MW-178	5/15/2019	pCi/L	4.40E+03
MW-118	5/15/2019	pCi/L	3.70E+03		MW-179	5/15/2019	pCi/L	2.30E+05
MW-131	5/15/2019	pCi/L	< 6.1E+02		MW-185	5/15/2019	pCi/L	< 6.3E+02
MW-132	5/15/2019	pCi/L	< 6.2E+02		MW-185	5/15/2019	pCi/L	< 6.2E+02

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-186	5/15/2019	pCi/L	< 5.7E+02		MW-170	5/16/2019	pCi/L	< 6.3E+02
MW-187	5/15/2019	pCi/L	< 5.7E+02		MW-180	5/16/2019	pCi/L	< 6.2E+02
MW-201	5/15/2019	pCi/L	< 5.6E+02		MW-182	5/16/2019	pCi/L	< 6.2E+02
MW-203	5/15/2019	pCi/L	< 5.7E+02		MW-188	5/16/2019	pCi/L	< 5.7E+02
MW-211	5/15/2019	pCi/L	< 5.3E+02		MW-205	5/16/2019	pCi/L	< 5.6E+02
MW-213	5/15/2019	pCi/L	< 6.3E+02		MW-207	5/16/2019	pCi/L	< 6.3E+02
PZ-01	5/15/2019	pCi/L	6.30E+04		MW-209	5/16/2019	pCi/L	< 6.3E+02
PZ-03	5/15/2019	pCi/L	< 6.3E+02		MW-209	5/16/2019	pCi/L	< 6.2E+02
MW-106	5/16/2019	pCi/L	< 6.2E+02		MW-215	5/16/2019	pCi/L	< 6.2E+02
MW-120	5/16/2019	pCi/L	< 6.2E+02		MW-217	5/16/2019	pCi/L	< 6.1E+02
MW-122	5/16/2019	pCi/L	< 5.8E+02		MW-219	5/16/2019	pCi/L	< 6.2E+02
MW-126	5/16/2019	pCi/L	< 5.6E+02		MW-221	5/16/2019	pCi/L	< 5.8E+02
MW-126	5/16/2019	pCi/L	< 5.8E+02		MW-223	5/16/2019	pCi/L	< 5.7E+02
MW-128	5/16/2019	pCi/L	< 5.7E+02		MW-225	5/16/2019	pCi/L	< 6.2E+02
MW-130	5/16/2019	pCi/L	< 5.7E+02		MW-227	5/16/2019	pCi/L	< 5.7E+02
MW-134	5/16/2019	pCi/L	< 6.2E+02		MW-229	5/16/2019	pCi/L	< 6.2E+02
MW-169	5/16/2019	pCi/L	< 6.2E+02		MW-231	5/16/2019	pCi/L	< 6.3E+02

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-231	5/16/2019	pCi/L	< 6.3E+02		MW-156	8/13/2019	pCi/L	3.70E+03
MW-233	5/16/2019	pCi/L	< 5.7E+02		MW-157	8/13/2019	pCi/L	1.90E+05
MW-235	5/16/2019	pCi/L	< 5.8E+02		MW-157	8/13/2019	pCi/L	2.10E+05
SW-101	5/16/2019	pCi/L	< 5.8E+02		MW-158	8/13/2019	pCi/L	4.70E+05
SW-102	5/16/2019	pCi/L	< 6.2E+02		MW-159	8/13/2019	pCi/L	2.10E+04
SW-103	5/16/2019	pCi/L	< 6.2E+02		MW-162	8/13/2019	pCi/L	< 6.0E+02
SW-104	5/16/2019	pCi/L	< 6.2E+02		MW-205	8/13/2019	pCi/L	< 6.4E+02
MW-100	8/13/2019	pCi/L	< 5.4E+02		MW-207	8/13/2019	pCi/L	< 5.5E+02
MW-124	8/13/2019	pCi/L	1.00E+05		MW-211	8/13/2019	pCi/L	< 5.4E+02
MW-125	8/13/2019	pCi/L	6.30E+05		MW-213	8/13/2019	pCi/L	< 5.4E+02
MW-142	8/13/2019	pCi/L	< 6.1E+02		MW-215	8/13/2019	pCi/L	< 5.4E+02
MW-144	8/13/2019	pCi/L	6.30E+02		MW-217	8/13/2019	pCi/L	< 5.5E+02
MW-146	8/13/2019	pCi/L	3.10E+04		MW-227	8/13/2019	pCi/L	< 6.4E+02
MW-147	8/13/2019	pCi/L	4.70E+03		MW-229	8/13/2019	pCi/L	< 6.0E+02
MW-148	8/13/2019	pCi/L	4.50E+03		MW-110	8/14/2019	pCi/L	1.50E+04
MW-155	8/13/2019	pCi/L	1.60E+05		MW-112	8/14/2019	pCi/L	3.40E+03
MW-156	8/13/2019	pCi/L	3.80E+03		MW-114	8/14/2019	pCi/L	1.20E+03

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-116	8/14/2019	pCi/L	1.10E+03		MW-188	8/14/2019	pCi/L	< 6.6E+02
MW-118	8/14/2019	pCi/L	4.20E+03		MW-201	8/14/2019	pCi/L	< 5.9E+02
MW-137	8/14/2019	pCi/L	1.00E+04		MW-203	8/14/2019	pCi/L	< 6.0E+02
MW-139	8/14/2019	pCi/L	< 5.7E+02		MW-209	8/14/2019	pCi/L	< 6.2E+02
MW-141	8/14/2019	pCi/L	3.20E+03		MW-219	8/14/2019	pCi/L	< 6.1E+02
MW-151	8/14/2019	pCi/L	< 5.3E+02		MW-221	8/14/2019	pCi/L	< 6.0E+02
MW-153	8/14/2019	pCi/L	1.20E+03		MW-221	8/14/2019	pCi/L	< 6.0E+02
MW-161	8/14/2019	pCi/L	1.50E+03		MW-223	8/14/2019	pCi/L	< 6.6E+02
MW-164	8/14/2019	pCi/L	< 5.3E+02		MW-223	8/14/2019	pCi/L	< 6.5E+02
MW-165	8/14/2019	pCi/L	< 5.5E+02		MW-225	8/14/2019	pCi/L	< 6.1E+02
MW-165	8/14/2019	pCi/L	< 5.3E+02		MW-231	8/14/2019	pCi/L	< 5.9E+02
MW-170	8/14/2019	pCi/L	< 6.0E+02		MW-233	8/14/2019	pCi/L	< 6.2E+02
MW-178	8/14/2019	pCi/L	2.80E+03		MW-235	8/14/2019	pCi/L	< 5.4E+02
MW-179	8/14/2019	pCi/L	2.00E+05		PZ-01	8/14/2019	pCi/L	4.20E+04
MW-182	8/14/2019	pCi/L	< 5.4E+02		SW-101	8/15/2019	pCi/L	< 6.1E+02
MW-186	8/14/2019	pCi/L	< 6.6E+02		SW-103	8/15/2019	pCi/L	< 6.5E+02
MW-187	8/14/2019	pCi/L	< 6.7E+02		SW-104	8/15/2019	pCi/L	< 6.5E+02

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-111	11/5/2019	pCi/L	< 5.9E+02		MW-155	11/5/2019	pCi/L	1.60E+05
MW-112	11/5/2019	pCi/L	3.70E+03		MW-158	11/5/2019	pCi/L	4.30E+05
MW-116	11/5/2019	pCi/L	3.40E+03		MW-159	11/5/2019	pCi/L	2.30E+04
MW-118	11/5/2019	pCi/L	6.00E+03		MW-162	11/5/2019	pCi/L	< 5.9E+02
MW-124	11/5/2019	pCi/L	1.70E+05		MW-172	11/5/2019	pCi/L	< 5.8E+02
MW-125	11/5/2019	pCi/L	6.10E+05		MW-174	11/5/2019	pCi/L	< 5.9E+02
MW-125	11/5/2019	pCi/L	6.00E+05		MW-188	11/5/2019	pCi/L	< 5.9E+02
MW-137	11/5/2019	pCi/L	2.80E+04		MW-227	11/5/2019	pCi/L	< 5.8E+02
MW-137	11/5/2019	pCi/L	2.50E+04		MW-04	11/6/2019	pCi/L	< 6.0E+02
MW-139	11/5/2019	pCi/L	6.10E+02		MW-100	11/6/2019	pCi/L	< 5.8E+02
MW-141	11/5/2019	pCi/L	3.10E+03		MW-103	11/6/2019	pCi/L	< 5.8E+02
MW-142	11/5/2019	pCi/L	< 5.9E+02		MW-104	11/6/2019	pCi/L	< 5.7E+02
MW-144	11/5/2019	pCi/L	6.40E+02		MW-104	11/6/2019	pCi/L	< 5.8E+02
MW-146	11/5/2019	pCi/L	1.60E+05		MW-106	11/6/2019	pCi/L	< 5.4E+02
MW-147	11/5/2019	pCi/L	6.90E+04		MW-110	11/6/2019	pCi/L	2.20E+04
MW-148	11/5/2019	pCi/L	< 5.0E+02		MW-114	11/6/2019	pCi/L	2.00E+03
MW-153	11/5/2019	pCi/L	1.20E+03		MW-126	11/6/2019	pCi/L	1.00E+03

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Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-126	11/6/2019	pCi/L	1.30E+03		MW-203	11/6/2019	pCi/L	< 5.8E+02
MW-128	11/6/2019	pCi/L	< 5.8E+02		MW-205	11/6/2019	pCi/L	< 5.3E+02
MW-130	11/6/2019	pCi/L	< 5.3E+02		MW-205	11/6/2019	pCi/L	< 5.9E+02
MW-14	11/6/2019	pCi/L	< 5.8E+02		MW-209	11/6/2019	pCi/L	8.60E+02
MW-151	11/6/2019	pCi/L	< 5.4E+02		MW-209	11/6/2019	pCi/L	< 5.9E+02
MW-156	11/6/2019	pCi/L	2.90E+03		MW-8	11/6/2019	pCi/L	< 5.8E+02
MW-157	11/6/2019	pCi/L	2.20E+05		PZ-01	11/6/2019	pCi/L	4.30E+04
MW-161	11/6/2019	pCi/L	3.00E+03		PZ-03	11/6/2019	pCi/L	< 5.4E+02
MW-164	11/6/2019	pCi/L	< 5.8E+02		T-14	11/6/2019	pCi/L	< 5.9E+02
MW-165	11/6/2019	pCi/L	< 5.8E+02		MW-05	11/7/2019	pCi/L	< 5.9E+02
MW-178	11/6/2019	pCi/L	2.70E+03		MW-107	11/7/2019	pCi/L	< 5.8E+02
MW-179	11/6/2019	pCi/L	1.60E+05		MW-108	11/7/2019	pCi/L	< 5.8E+02
MW-18	11/6/2019	pCi/L	< 5.8E+02		MW-120	11/7/2019	pCi/L	< 5.8E+02
MW-185	11/6/2019	pCi/L	< 5.4E+02		MW-127	11/7/2019	pCi/L	< 5.4E+02
MW-186	11/6/2019	pCi/L	< 5.5E+02		MW-131	11/7/2019	pCi/L	< 5.5E+02
MW-187	11/6/2019	pCi/L	< 5.3E+02		MW-132	11/7/2019	pCi/L	< 5.3E+02
MW-201	11/6/2019	pCi/L	< 5.8E+02		MW-134	11/7/2019	pCi/L	< 5.8E+02

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Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-167	11/7/2019	pCi/L	< 5.4E+02		MW-221	11/7/2019	pCi/L	7.00E+02
MW-169	11/7/2019	pCi/L	< 5.4E+02		MW-223	11/7/2019	pCi/L	< 5.8E+02
MW-170	11/7/2019	pCi/L	< 5.8E+02		MW-225	11/7/2019	pCi/L	< 5.8E+02
MW-180	11/7/2019	pCi/L	< 5.8E+02		MW-229	11/7/2019	pCi/L	< 5.8E+02
MW-182	11/7/2019	pCi/L	< 5.4E+02		MW-229	11/7/2019	pCi/L	< 5.8E+02
MW-207	11/7/2019	pCi/L	< 5.8E+02		MW-231	11/7/2019	pCi/L	< 5.8E+02
MW-211	11/7/2019	pCi/L	< 5.4E+02		MW-233	11/7/2019	pCi/L	< 5.7E+02
MW-213	11/7/2019	pCi/L	< 5.4E+02		MW-235	11/7/2019	pCi/L	< 5.8E+02
MW-215	11/7/2019	pCi/L	< 5.8E+02		SW-102	11/7/2019	pCi/L	< 5.5E+02
MW-217	11/7/2019	pCi/L	< 5.8E+02		SW-103	11/7/2019	pCi/L	< 5.4E+02
MW-219	11/7/2019	pCi/L	< 5.9E+02		SW-104	11/7/2019	pCi/L	< 5.8E+02