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RBG-48220

April 25, 2023

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

Subject: 2022 Annual Radioactive Effluent Release Report
River Bend Station – Unit 1
Renewed Operating 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, 2022, through December 31, 2022. 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 Randy Crawford, at (225) 381-4177.

Sincerely,

A handwritten signature in black ink, appearing to read 'Randy Crawford', written over a horizontal line.

Randy Crawford

RTC/twf

Enclosure: 2022 Annual Radioactive Effluent Release Report

cc: NRC Senior Resident Inspector – River Bend Station, Unit 1

Enclosure
2022 Annual Radioactive Effluent Release Report



Plant: River Bend Nuclear Station	Page 1 of 70
	YEAR: 2022
Document Number: RBG-48220	
Annual Radioactive Effluent Release Report	


Review and Approval:
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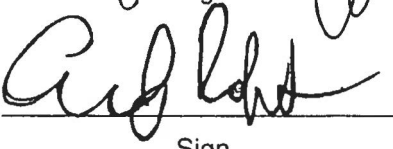
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Annual Radioactive Effluent Release Report**1.0 INTRODUCTION**

This is the Annual Radioactive Effluent Release Report for the period of January 1, 2022, through December 31, 2022. 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, Strontium-90, and Gross alpha are quantitatively analyzed by counting by gas flow proportional counting.

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 2022.

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 (uCi/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, Strontium-90, and Gross alpha analysis are performed using a gas flow proportional counter. Iron-55 is counted with a liquid scintillation counter after digestion of the iron. The activity of each nuclide released to the environment is determined from the nuclide specific concentration and total tank volume released.
- 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.

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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, 2022, through December 31, 2022 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, 2022, through December 31, 2022.

2.5 Abnormal Releases

There were no abnormal releases in 2022.

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 2022 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).

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

The Land Use Census for 2022 was conducted as required by the Technical Requirements Manual (TRM) (TR 3.12.2). The results of the Land Use Census will be included in the Annual Radiological Environmental Operating Report pursuant to Technical Specification 5.6.2.

A garden census is not conducted pursuant to the note in the TRM 3.12.2 that allows the sampling of broadleaf vegetation in the highest calculated average ground-level D/Q sector near site boundary in lieu of the garden census.

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The milk animal census identified no milk animals within 8 km (5 miles) of River Bend site. This information was verified by the County Agents from West Feliciana, East Feliciana, and Pointe Coupee parishes.

No locations were identified this period that would yield a calculated dose or dose commitment greater than those currently calculated in Requirement TSR 3.11.2.3.1.

The County Agents confirmed that there was no commercial harvesting of crawfish within the five-mile radius downstream of RBS. RBS conservatively uses the invertebrate pathway although not required by NUREG-0133 liquid dose factor methodology for fresh water nuclear power plants.

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, 2020, through December 31, 2020, 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, 2022, through December 31, 2022, restored to operable status within the required time.

2.9 Offsite Dose Calculation Manual Changes

There were no changes to the Offsite Dose Calculation Manual in 2022.

2.10 Radiological Environmental Monitoring Program Changes

There were no changes to the Radiological Environmental Monitoring Program during the reporting period January 1, 2022, through December 31, 2022. Process Control Program (PCP) Changes

2.11 Process Control Program (PCP) Changes

There were no changes to the Process Control Program (PCP) in 2022. NON-REMP Groundwater Monitoring Results (NEI 07-07)

2.12 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 2022 are located in Table 17, Table 18, and Table 19.

River Bend Station made no NEI 07-07 voluntary notifications in 2022.

Annual Radioactive Effluent Release Report**2.13 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, 2022, through December 31, 2022 was less than or equal to the 10 curie limit as required by Technical Specification 5.5.8.b.

2.14 Errata/Corrections to Previous ARERRs

There were no Errata issued or corrections to previous ARERRs for the 2022 reporting period.

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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	9.14E+00	9.32E+00	3.17E+01	3.28E+01	8.30E+01
2.	Average release rate for the period	μCi/sec	1.18E+00	1.19E+00	3.99E+00	4.13E+00	2.63E+00
B. Iodine							
1.	Total Iodine-131	Ci	2.54E-03	2.09E-03	2.25E-03	2.47E-03	9.35E-03
2.	Average release rate for the period	μCi/sec	3.27E-04	2.65E-04	2.84E-04	3.11E-04	2.97E-04
C. Particulates							
1.	Particulates with half-lives > 8 days	Ci	8.57E-05	2.02E-04	6.62E-05	1.71E-04	5.25E-04
2.	Average release rate for the period	μCi/sec	1.10E-05	2.57E-05	8.33E-06	2.15E-05	1.66E-05
D. Tritium							
1.	Total Release	Ci	1.84E+00	2.12E+00	2.49E+00	2.70E+00	9.14E+00
2.	Average release rate for the period	μCi/sec	2.37E-01	2.69E-01	3.13E-01	3.39E-01	2.90E-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-133	Ci	6.81E-01	4.52E-02	0.00E+00	0.00E+00	7.26E-01
Xe-135m	Ci	1.94E+00	1.93E+00	2.50E+00	1.43E+00	7.80E+00
Xe-135	Ci	2.03E+00	1.16E+00	1.43E+00	2.43E+00	7.05E+00
Total For Period	Ci	4.65E+00	3.14E+00	3.93E+00	3.86E+00	1.56E+01
Iodines						
I-131	Ci	6.10E-05	8.23E-05	5.87E-05	2.12E-05	2.23E-04
I-133	Ci	6.44E-05	6.71E-05	1.69E-05	4.21E-06	1.53E-04
Total For Period	Ci	1.25E-04	1.49E-04	7.56E-05	2.54E-05	3.76E-04
Particulates						
Co-60	Ci	0.00E+00	2.41E-06	0.00E+00	0.00E+00	2.41E-06
Total For Period	Ci	0.00E+00	2.41E-06	0.00E+00	0.00E+00	2.41E-06
Tritium						
H-3	Ci	1.75E-01	9.97E-02	7.99E-01	3.92E-01	1.47E+00
Total For Period	Ci	1.75E-01	9.97E-02	7.99E-01	3.92E-01	1.47E+00

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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	1.15E+00	1.64E+00	1.11E+00	6.60E-01	4.56E+00
Kr-88	Ci	1.94E-01	7.67E-01	0.00E+00	0.00E+00	9.60E-01
Xe-133	Ci	3.00E-02	3.81E-02	5.41E-02	2.85E-02	1.51E-01
Xe-135	Ci	3.11E+00	3.74E+00	2.66E+01	2.83E+01	6.18E+01
Total For Period	Ci	4.49E+00	6.19E+00	2.78E+01	2.90E+01	6.75E+01
Iodines						
I-131	Ci	2.48E-03	2.00E-03	2.20E-03	2.45E-03	9.13E-03
I-133	Ci	2.39E-02	2.03E-02	2.02E-02	2.48E-02	8.92E-02
Total For Period	Ci	2.64E-02	2.23E-02	2.24E-02	2.73E-02	9.83E-02
Particulates						
Sr-89	Ci	6.96E-05	4.13E-05	5.02E-05	1.19E-04	2.80E-04
Ba-140	Ci	1.62E-05	4.95E-06	1.61E-05	5.20E-05	8.92E-05
La-140	Ci	0.00E+00	1.53E-04	0.00E+00	0.00E+00	1.53E-04
Total For Period	Ci	8.57E-05	1.99E-04	6.62E-05	1.71E-04	5.22E-04
Tritium						
H-3	Ci	1.67E+00	2.02E+00	1.69E+00	2.31E+00	7.68E+00
Total For Period	Ci	1.67E+00	2.02E+00	1.69E+00	2.31E+00	7.68E+00

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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

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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	2.48E-04	1.25E-03	1.56E-03	2.05E-03	5.10E-03
2.	Average diluted concentration during period	μCi/mL	1.68E-10	8.18E-10	1.10E-09	1.44E-09	8.73E-10
B. Tritium							
1.	Total Release	Ci	2.78E+00	8.32E+00	8.83E+00	5.54E+00	2.55E+01
2.	Average diluted concentration during period.	μCi/mL	1.88E-06	5.47E-06	6.26E-06	3.88E-06	4.36E-06
C. Dissolved & Entrained Gases							
1.	Total Release	Ci	1.23E-02	2.50E-02	2.26E-02	1.05E-02	7.03E-02
2.	Average diluted concentration during period	μCi/mL	8.30E-09	1.64E-08	1.60E-08	7.35E-09	1.20E-08
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	1.24E+06	3.39E+06	4.37E+06	2.55E+06	1.15E+07
F. Volume Of Dilution Water Used During Period							
		Liters	1.48E+09	1.52E+09	1.41E+09	1.43E+09	5.84E+09

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

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Table 6, Liquid Effluents – Batch Release

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Fission and Activation Products						
Na-24	Ci	1.20E-05	0.00E+00	0.00E+00	0.00E+00	1.20E-05
Cr-51	Ci	0.00E+00	0.00E+00	0.00E+00	4.35E-06	4.35E-06
Mn-54	Ci	1.71E-06	4.25E-06	3.06E-06	4.65E-06	1.37E-05
Fe-59	Ci	0.00E+00	0.00E+00	1.72E-06	0.00E+00	1.72E-06
Co-58	Ci	0.00E+00	0.00E+00	0.00E+00	1.31E-06	1.31E-06
Co-60	Ci	2.20E-04	1.24E-03	1.54E-03	1.96E-03	4.96E-03
Zn-65	Ci	0.00E+00	2.42E-06	4.28E-06	0.00E+00	6.70E-06
Zr-95	Ci	0.00E+00	0.00E+00	5.87E-07	0.00E+00	5.87E-07
Nb-97	Ci	0.00E+00	0.00E+00	0.00E+00	1.87E-06	1.87E-06
Mo-99	Ci	1.14E-05	0.00E+00	0.00E+00	0.00E+00	1.14E-05
Tc-99m	Ci	1.56E-06	0.00E+00	0.00E+00	0.00E+00	1.56E-06
Ag-110m	Ci	0.00E+00	0.00E+00	0.00E+00	4.11E-06	4.11E-06
Rh-105	Ci	0.00E+00	0.00E+00	0.00E+00	2.29E-06	2.29E-06
Sb-124	Ci	0.00E+00	4.06E-07	0.00E+00	0.00E+00	4.06E-07
Sb-125	Ci	0.00E+00	0.00E+00	0.00E+00	5.24E-06	5.24E-06
Sb-127	Ci	0.00E+00	0.00E+00	0.00E+00	1.10E-06	1.10E-06
I-131	Ci	1.05E-06	6.25E-07	1.34E-06	8.45E-06	1.15E-05
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	4.60E-06	4.60E-06
Cs-134	Ci	4.90E-07	0.00E+00	0.00E+00	0.00E+00	4.90E-07
Cs-137	Ci	0.00E+00	1.20E-06	0.00E+00	0.00E+00	1.20E-06
Ba-140	Ci	0.00E+00	0.00E+00	0.00E+00	1.31E-06	1.31E-06
La-140	Ci	0.00E+00	0.00E+00	1.62E-06	3.49E-05	3.65E-05
Ce-141	Ci	0.00E+00	0.00E+00	0.00E+00	8.05E-06	8.05E-06
Np-238	Ci	0.00E+00	0.00E+00	0.00E+00	4.05E-06	4.05E-06
Total For Period	Ci	2.48E-04	1.25E-03	1.56E-03	2.05E-03	5.10E-03

Annual Radioactive Effluent Release Report

Table 6, Liquid Effluents – Batch Release

Tritium						
H-3	Ci	2.78E+00	8.32E+00	8.83E+00	5.54E+00	2.55E+01
Total For Period	Ci	2.78E+00	8.32E+00	8.83E+00	5.54E+00	2.55E+01

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Dissolved and Entrained Gases						
Kr-85	Ci	0.00E+00	2.03E-04	7.48E-05	0.00E+00	2.78E-04
Kr-88	Ci	6.06E-06	4.01E-05	0.00E+00	0.00E+00	4.62E-05
Xe-133m	Ci	1.28E-04	3.60E-04	2.25E-04	2.03E-04	9.16E-04
Xe-133	Ci	3.89E-03	1.02E-02	8.99E-03	6.34E-03	2.94E-02
Xe-135	Ci	8.25E-03	1.42E-02	1.33E-02	3.95E-03	3.97E-02
Total For Period	Ci	1.23E-02	2.50E-02	2.26E-02	1.05E-02	7.03E-02

Annual Radioactive Effluent Release Report

Table 7, Supplemental Information for Liquid Effluents – Batch Mode

Report for 2022	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Year
Number of releases		24	56	73	37	190
Total Release Time	minutes	7.03E+03	1.73E+04	2.26E+04	1.26E+04	5.95E+04
Maximum Release Time	minutes	4.07E+02	8.90E+02	1.15E+03	1.92E+03	1.92E+03
Average Release Time	minutes	2.93E+02	3.08E+02	3.10E+02	3.41E+02	3.13E+02
Minimum Release Time	minutes	6.00E+01	1.76E+02	2.14E+02	2.35E+02	6.00E+01

	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	660,036	748,131	273,534	205,146

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.	7.74E+01	9.61E+01	25
b. Dry compressible waste, contaminated equip, etc.	3.79E+02	1.44E-01	25
c. Irradiated components, control rods, etc.	5.78E-02	4.73E+00	25
d. Other (Water, EHC, Waste Oil, etc.)	2.08E+01	1.43E-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.	Mn-54	1.64%	1.58E+00
	Fe-55	42.96%	4.13E+01
	Co-60	41.18%	3.96E+01
	Zn-65	1.88%	1.81E+00
	Sr-90	1.14%	1.10E+00
	Ag-110m	1.26%	1.21E+00
	Sb-125	1.92%	1.84E+00
	Cs-134	3.16%	3.04E+00
	Cs-137	2.65%	2.55E+00

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Table 10, Major Nuclides

Major Nuclide Composition	Isotope	%	Curies
b. Dry compressible waste, contaminated equip, etc.	Mn-54	1.47%	2.11E-03
	Fe-55	40.66%	5.85E-02
	Co-60	49.70%	7.15E-02
	Ni-63	1.61%	2.31E-03
	Zn-65	1.51%	2.17E-03
	Sr-90	1.25%	1.80E-03
	Ce-141	1.62%	2.33E-03
c. Irradiated components, control rods, etc.	Fe-55	9.08%	4.30E-01
	Co-60	56.09%	2.65E+00
	Ni-63	33.99%	1.61E+00
d. Other (Water, EHC, Waste Oil, Etc.)	Mn-54	1.46%	2.08E-04
	Fe-55	40.51%	5.79E-03
	Co-60	49.52%	7.08E-03
	Ni-63	1.60%	2.29E-04
	Zn-65	1.50%	2.15E-04
	Sr-90	1.25%	1.78E-04
	Ce-141	1.66%	2.37E-04

Determined by Measurement & Correlation.

Packaged in Strong, Tight Liners.

No Solidification Agent or Absorbent Used.

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

Annual Radioactive Effluent Release Report5.1.3 Solid Waste Disposition**Table 11, Solid Waste Disposition (Specify Site or Unit)**

Number of Shipments	Mode of Transportation	Destination
26	Truck	Energy Solutions (Bear Creek) - Oak Ridge, TN

Table 12, Irradiated Fuel Shipments Disposition

No Irradiated Fuel Shipments for 2022

Number of Shipments	Mode of Transportation	Destination
N/A	N/A	N/A

Annual Radioactive Effluent Release Report

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	8.30E-07	6.31E-06	9.12E-06	4.27E-06	1.82E-05
% of Limit	5.53E-05	4.21E-04	6.08E-04	2.84E-04	6.06E-04
Liquid Effluent Dose Limit, Any Organ	5 mrem	5 mrem	5 mrem	5 mrem	10 mrem
Maximum Organ Dose	2.40E-06	2.42E-05	3.90E-05	2.79E-05	8.39E-05
% of Limit	4.79E-05	4.85E-04	7.80E-04	5.58E-04	8.39E-04
Gaseous Effluent Dose Limit, Gamma Air	5 mrad	5 mrad	5 mrad	5 mrad	10 mrad
Gamma Air Dose	1.53E-02	1.39E-02	2.04E-02	1.84E-02	6.80E-02
% of Limit	3.06E-01	2.77E-01	4.07E-01	3.69E-01	6.80E-01
Gaseous Effluent Dose Limit, Beta Air	10 mrad	10 mrad	10 mrad	10 mrad	20 mrad
Beta Air Dose	1.06E-02	7.33E-03	1.43E-02	1.68E-02	4.91E-02
% of Limit	1.06E-01	7.33E-02	1.43E-01	1.68E-01	2.45E-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)	1.08E-01	9.22E-02	9.88E-02	1.05E-01	4.04E-01
% of Limit	1.45E+00	1.23E+00	1.32E+00	1.40E+00	2.70E+00

Annual Radioactive Effluent Release Report

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)	1.17E+00	1.17E+00	1.18E+00	1.18E+00	4.70E+00
% of Limit	1.56E+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	3.01E-05	1.75E-06	1.26E-07	4.57E-03
Deer Hunters	1.15E-03	1.13E-04	1.08E-05	2.92E-02
Onsite RV Park	2.68E-03	2.64E-04	2.52E-05	6.82E-02
WFPSO Building	8.99E-03	8.83E-04	8.43E-05	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 (Excluding C-14)	7.51E-02	4.68E-01	7.65E-02
% of Limit	3.00E-01	6.24E-01	3.06E-01
Dose (Including C-14)	1.01E+00	1.41E+00	4.77E+00
% of Limit	4.06E+00	1.88E+00	1.91E+01

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 2022 was 95%.

7.1 Joint Frequency Distributions

All Stability Classes

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	77	62	126	142	107	143	58	1	0	0	0	0	716
NNE	66	55	67	152	89	78	23	2	0	0	0	0	532
NE	51	41	65	111	90	62	6	0	0	0	0	0	426
ENE	45	61	51	86	53	55	5	0	0	0	0	0	356
E	48	95	63	96	46	52	4	0	0	0	0	0	404
ESE	29	97	102	97	53	24	35	0	0	0	0	0	437
SE	39	81	137	211	127	140	41	2	0	0	0	0	778
SSE	26	51	62	154	126	168	137	2	0	0	0	0	726
S	26	53	77	120	129	155	94	2	0	0	0	0	656
SSW	30	45	47	85	76	124	16	0	0	0	0	0	423
SW	42	51	45	97	57	65	2	0	0	0	0	0	359
WSW	40	71	32	51	84	47	3	0	0	0	0	0	328
W	56	108	52	57	89	60	3	0	0	0	0	0	425
WNW	52	95	58	76	79	82	9	0	0	0	0	0	451
NW	76	85	71	88	99	125	34	1	0	0	0	0	579
NNW	94	76	110	109	63	145	122	5	0	0	0	0	724
TOTAL	797	1127	1165	1732	1367	1525	592	15	0	0	0	0	8320

Number of Calms: 6

Number of Invalid Hours: 434

Number of Valid Hours: 8326

Total Hours for the Period: 8760

Annual Radioactive Effluent Release Report

Stability Class A

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	0	0	3	25	59	21	0	0	0	0	0	108
NNE	0	0	1	16	28	38	5	0	0	0	0	0	88
NE	0	0	1	5	35	22	1	0	0	0	0	0	64
ENE	0	0	1	13	32	36	2	0	0	0	0	0	84
E	0	0	0	17	19	22	4	0	0	0	0	0	62
ESE	0	1	2	16	16	7	15	0	0	0	0	0	57
SE	1	0	0	6	22	29	13	0	0	0	0	0	71
SSE	1	1	0	3	18	36	35	1	0	0	0	0	95
S	0	0	1	9	27	39	20	2	0	0	0	0	98
SSW	0	0	0	5	12	50	12	0	0	0	0	0	79
SW	0	0	0	7	20	38	1	0	0	0	0	0	66
WSW	0	0	0	9	55	34	1	0	0	0	0	0	99
W	0	0	0	6	63	51	3	0	0	0	0	0	123
WNW	0	0	0	7	30	44	3	0	0	0	0	0	84
NW	0	0	0	4	20	39	8	0	0	0	0	0	71
NNW	0	0	0	5	14	39	18	0	0	0	0	0	76
TOTAL	2	2	6	131	436	583	162	3	0	0	0	0	1325

Number of Calms: 0

Number of Invalid Hours: 0

Number of Valid Hours: 1325

Total Hours for the Period: 1325

Annual Radioactive Effluent Release Report

Stability Class B

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	0	0	5	13	13	6	0	0	0	0	0	37
NNE	0	0	0	8	7	5	1	0	0	0	0	0	21
NE	0	0	1	8	5	15	1	0	0	0	0	0	30
ENE	0	0	0	4	6	10	1	0	0	0	0	0	21
E	0	0	1	8	6	8	0	0	0	0	0	0	23
ESE	0	0	0	7	1	6	3	0	0	0	0	0	17
SE	0	0	0	13	13	12	3	0	0	0	0	0	41
SSE	1	0	1	1	13	31	20	0	0	0	0	0	67
S	0	0	2	5	16	17	10	0	0	0	0	0	50
SSW	0	0	0	2	19	15	2	0	0	0	0	0	38
SW	0	0	1	11	13	3	0	0	0	0	0	0	28
WSW	0	0	0	9	14	5	0	0	0	0	0	0	28
W	0	0	0	10	14	3	0	0	0	0	0	0	27
WNW	0	0	1	9	10	2	0	0	0	0	0	0	22
NW	0	0	0	7	5	11	3	0	0	0	0	0	26
NNW	0	0	0	5	10	12	9	0	0	0	0	0	36
TOTAL	1	0	7	112	165	168	59	0	0	0	0	0	512

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 512

TOTAL HOURS FOR THE PERIOD: 512

Annual Radioactive Effluent Release Report

Stability Class C

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	0	0	9	7	16	5	0	0	0	0	0	37
NNE	0	0	2	8	5	4	1	0	0	0	0	0	20
NE	0	0	2	6	7	5	1	0	0	0	0	0	21
ENE	0	0	1	8	3	2	1	0	0	0	0	0	15
E	0	0	1	5	8	3	0	0	0	0	0	0	17
ESE	0	0	1	6	2	1	3	0	0	0	0	0	13
SE	0	0	1	10	6	7	4	0	0	0	0	0	28
SSE	0	0	0	12	7	12	21	0	0	0	0	0	52
S	0	0	1	4	6	18	10	0	0	0	0	0	39
SSW	0	0	0	4	12	14	1	0	0	0	0	0	31
SW	0	0	0	12	6	7	0	0	0	0	0	0	25
WSW	0	0	1	5	4	2	1	0	0	0	0	0	13
W	0	0	6	9	5	1	0	0	0	0	0	0	21
WNW	0	0	1	5	1	2	0	0	0	0	0	0	9
NW	0	0	0	7	8	8	1	0	0	0	0	0	24
NNW	0	0	0	4	4	6	11	0	0	0	0	0	25
TOTAL	0	0	17	114	91	108	60	0	0	0	0	0	390

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 390

TOTAL HOURS FOR THE PERIOD: 390

Annual Radioactive Effluent Release Report

Stability Class D

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	1	13	47	33	45	26	1	0	0	0	0	166
NNE	0	2	9	39	28	25	14	2	0	0	0	0	119
NE	2	3	12	32	21	18	3	0	0	0	0	0	91
ENE	1	2	15	31	9	5	1	0	0	0	0	0	64
E	0	7	14	31	12	18	0	0	0	0	0	0	82
ESE	0	10	22	28	20	7	14	0	0	0	0	0	101
SE	0	5	25	67	46	72	21	2	0	0	0	0	238
SSE	1	4	10	39	54	76	59	1	0	0	0	0	244
S	1	3	10	35	43	73	52	0	0	0	0	0	217
SSW	0	2	8	40	24	42	1	0	0	0	0	0	117
SW	1	3	14	32	9	13	0	0	0	0	0	0	72
WSW	0	1	8	11	6	3	1	0	0	0	0	0	30
W	0	4	10	17	4	4	0	0	0	0	0	0	39
WNW	0	4	12	19	17	20	6	0	0	0	0	0	78
NW	0	3	6	23	29	52	21	1	0	0	0	0	135
NNW	0	0	10	27	25	77	84	5	0	0	0	0	228
TOTAL	6	54	198	518	380	550	303	12	0	0	0	0	2021

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2022

TOTAL HOURS FOR THE PERIOD: 2022

Annual Radioactive Effluent Release Report

Stability Class E

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	6	20	49	50	28	10	0	0	0	0	0	0	163
NNE	7	21	25	67	20	5	2	0	0	0	0	0	147
NE	13	15	23	44	14	1	0	0	0	0	0	0	110
ENE	14	21	24	24	3	2	0	0	0	0	0	0	88
E	7	40	38	32	1	1	0	0	0	0	0	0	119
ESE	7	38	56	35	13	3	0	0	0	0	0	0	152
SE	10	40	85	102	37	20	0	0	0	0	0	0	294
SSE	4	19	38	87	32	12	2	0	0	0	0	0	194
S	2	20	43	59	36	8	2	0	0	0	0	0	170
SSW	2	18	27	32	9	2	0	0	0	0	0	0	90
SW	5	17	16	32	9	4	1	0	0	0	0	0	84
WSW	4	20	8	14	5	2	0	0	0	0	0	0	53
W	10	26	15	11	3	1	0	0	0	0	0	0	66
WNW	6	16	25	29	21	14	0	0	0	0	0	0	111
NW	8	15	36	35	35	15	1	0	0	0	0	0	145
NNW	5	17	37	38	10	11	0	0	0	0	0	0	118
TOTAL	110	363	545	691	276	111	8	0	0	0	0	0	2104

NUMBER OF CALMS: 2

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2106

TOTAL HOURS FOR THE PERIOD: 2106

Annual Radioactive Effluent Release Report

Stability Class F

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	16	13	37	18	1	0	0	0	0	0	0	0	85
NNE	20	13	25	14	1	1	0	0	0	0	0	0	74
NE	10	12	22	14	8	1	0	0	0	0	0	0	67
ENE	14	13	8	6	0	0	0	0	0	0	0	0	41
E	17	14	5	3	0	0	0	0	0	0	0	0	39
ESE	12	23	15	4	1	0	0	0	0	0	0	0	55
SE	16	25	20	13	3	0	0	0	0	0	0	0	77
SSE	5	17	12	10	2	1	0	0	0	0	0	0	47
S	6	14	15	7	1	0	0	0	0	0	0	0	43
SSW	3	10	11	2	0	1	0	0	0	0	0	0	27
SW	6	18	10	3	0	0	0	0	0	0	0	0	37
WSW	7	19	6	2	0	1	0	0	0	0	0	0	35
W	18	31	12	3	0	0	0	0	0	0	0	0	64
WNW	20	24	13	6	0	0	0	0	0	0	0	0	63
NW	21	19	18	11	2	0	0	0	0	0	0	0	71
NNW	24	21	27	18	0	0	0	0	0	0	0	0	90
TOTAL	215	286	256	134	19	5	0	0	0	0	0	0	915

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 916

TOTAL HOURS FOR THE PERIOD: 916

Annual Radioactive Effluent Release Report

Stability Class G

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 30 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	55	28	27	10	0	0	0	0	0	0	0	0	120
NNE	39	19	5	0	0	0	0	0	0	0	0	0	63
NE	26	11	4	2	0	0	0	0	0	0	0	0	43
ENE	16	25	2	0	0	0	0	0	0	0	0	0	43
E	24	34	4	0	0	0	0	0	0	0	0	0	62
ESE	10	25	6	1	0	0	0	0	0	0	0	0	42
SE	12	11	6	0	0	0	0	0	0	0	0	0	29
SSE	14	10	1	2	0	0	0	0	0	0	0	0	27
S	17	16	5	1	0	0	0	0	0	0	0	0	39
SSW	25	15	1	0	0	0	0	0	0	0	0	0	41
SW	30	13	4	0	0	0	0	0	0	0	0	0	47
WSW	29	31	9	1	0	0	0	0	0	0	0	0	70
W	28	47	9	1	0	0	0	0	0	0	0	0	85
WNW	26	51	6	1	0	0	0	0	0	0	0	0	84
NW	47	48	11	1	0	0	0	0	0	0	0	0	107
NNW	65	38	36	12	0	0	0	0	0	0	0	0	151
TOTAL	463	422	136	32	0	0	0	0	0	0	0	0	1053

NUMBER OF CALMS: 2

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1055

TOTAL HOURS FOR THE PERIOD: 1055

Annual Radioactive Effluent Release Report

All Stability Classes

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	1	3	7	29	53	198	232	46	1	0	0	0	570
NNE	0	4	8	41	80	287	232	24	3	0	0	0	679
NE	0	2	10	44	79	213	160	12	0	0	0	0	520
ENE	0	2	13	44	88	230	196	19	0	0	0	0	592
E	0	3	12	43	89	163	74	25	0	0	0	0	409
ESE	0	4	4	44	80	248	307	58	10	0	0	0	755
SE	2	1	9	25	63	216	239	39	7	0	0	0	601
SSE	0	1	1	33	63	212	224	65	7	0	0	0	606
S	0	1	4	31	63	241	295	38	3	0	0	0	676
SSW	3	4	6	37	75	244	209	5	0	0	0	0	583
SW	1	0	5	25	53	135	80	3	0	0	0	0	302
WSW	1	2	7	44	55	151	55	5	0	0	0	0	320
W	0	2	11	51	89	209	57	12	5	0	0	0	436
WNW	1	2	10	25	38	115	188	61	10	0	0	0	450
NW	2	1	4	21	24	122	128	29	5	0	0	0	336
NNW	1	1	7	19	36	128	173	96	7	0	0	0	468
TOTAL	12	33	118	556	1028	3112	2849	537	58	0	0	0	8303

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 457

NUMBER OF VALID HOURS: 8303

TOTAL HOURS FOR THE PERIOD: 8760

Annual Radioactive Effluent Release Report

Stability Class A

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	0	0	0	4	37	36	6	0	0	0	0	83
NNE	0	0	0	1	16	34	44	5	0	0	0	0	100
NE	0	0	0	5	6	30	28	2	0	0	0	0	71
ENE	0	0	0	2	7	56	60	2	0	0	0	0	127
E	0	0	0	3	6	27	28	10	0	0	0	0	74
ESE	0	0	0	2	7	13	25	11	3	0	0	0	61
SE	0	0	0	3	1	17	27	7	0	0	0	0	55
SSE	0	0	0	1	3	20	31	17	3	0	0	0	75
S	0	0	0	1	4	33	54	2	1	0	0	0	95
SSW	0	0	0	0	7	23	57	0	0	0	0	0	87
SW	0	0	0	3	7	26	20	1	0	0	0	0	57
WSW	0	0	0	0	12	58	25	1	0	0	0	0	96
W	0	0	0	2	18	97	26	2	0	0	0	0	145
WNW	0	0	0	3	3	41	26	4	2	0	0	0	79
NW	0	0	0	0	5	26	22	3	0	0	0	0	56
NNW	0	0	0	0	5	24	21	12	0	0	0	0	62
TOTAL	0	0	0	26	111	562	530	85	9	0	0	0	1323

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1323

TOTAL HOURS FOR THE PERIOD: 1323

Annual Radioactive Effluent Release Report

Stability Class B

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	0	0	3	4	6	7	6	0	0	0	0	26
NNE	0	0	0	3	4	18	12	1	0	0	0	0	38
NE	0	0	0	5	5	14	7	0	0	0	0	0	31
ENE	0	0	0	2	2	12	12	1	0	0	0	0	29
E	0	0	0	2	4	11	4	1	0	0	0	0	22
ESE	0	0	0	2	3	12	9	4	1	0	0	0	31
SE	0	0	0	0	2	11	13	1	0	0	0	0	27
SSE	0	0	0	3	1	17	30	6	0	0	0	0	57
S	0	0	0	1	5	22	22	4	0	0	0	0	54
SSW	0	0	0	1	6	22	12	0	0	0	0	0	41
SW	0	0	0	2	5	14	3	1	0	0	0	0	25
WSW	0	0	0	7	6	11	2	0	0	0	0	0	26
W	0	0	0	8	10	21	1	0	0	0	0	0	40
WNW	0	0	0	2	4	7	5	5	0	0	0	0	23
NW	0	0	0	1	2	6	11	2	0	0	0	0	22
NNW	0	0	0	0	2	4	10	3	1	0	0	0	20
TOTAL	0	0	0	42	65	208	160	35	2	0	0	0	512

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 512

TOTAL HOURS FOR THE PERIOD: 512

Annual Radioactive Effluent Release Report

Stability Class C

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	0	0	1	5	15	8	6	0	0	0	0	35
NNE	0	0	0	5	2	7	8	1	0	0	0	0	23
NE	0	0	0	1	5	7	6	1	0	0	0	0	20
ENE	0	0	0	2	9	13	5	1	0	0	0	0	30
E	0	0	1	1	4	6	1	1	0	0	0	0	14
ESE	0	0	0	4	3	4	4	2	1	0	0	0	18
SE	0	0	0	1	4	6	10	1	1	0	0	0	23
SSE	0	0	0	1	3	10	22	10	0	0	0	0	46
S	0	0	0	2	4	5	20	5	0	0	0	0	36
SSW	0	0	0	3	3	12	17	0	0	0	0	0	35
SW	0	0	0	0	4	10	5	0	0	0	0	0	19
WSW	0	1	1	1	6	5	3	0	0	0	0	0	17
W	0	0	1	7	4	5	2	0	0	0	0	0	19
WNW	0	0	0	3	1	3	5	2	0	0	0	0	14
NW	0	0	0	2	1	8	5	1	0	0	0	0	17
NNW	0	0	0	1	3	4	8	6	0	0	0	0	22
TOTAL	0	1	3	35	61	120	129	37	2	0	0	0	388

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 388

TOTAL HOURS FOR THE PERIOD: 388

Annual Radioactive Effluent Release Report

Stability Class D

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	0	1	13	13	34	65	27	1	0	0	0	154
NNE	0	0	2	13	15	52	48	14	3	0	0	0	147
NE	0	0	1	7	14	34	24	4	0	0	0	0	84
ENE	0	0	4	3	16	29	37	8	0	0	0	0	97
E	0	1	1	7	16	20	14	9	0	0	0	0	68
ESE	0	1	2	11	24	43	75	29	5	0	0	0	190
SE	0	1	4	5	21	40	71	26	6	0	0	0	174
SSE	0	1	0	9	14	46	93	32	3	0	0	0	198
S	0	0	2	8	19	55	106	24	2	0	0	0	216
SSW	1	0	3	15	16	50	61	4	0	0	0	0	150
SW	0	0	2	4	13	24	14	0	0	0	0	0	57
WSW	0	1	0	15	7	13	3	2	0	0	0	0	41
W	0	0	4	13	10	8	9	0	1	0	0	0	45
WNW	0	0	2	5	8	16	48	35	7	0	0	0	121
NW	0	0	2	8	2	16	30	19	4	0	0	0	81
NNW	0	0	2	4	5	18	87	71	6	0	0	0	193
TOTAL	1	5	32	140	213	498	785	304	38	0	0	0	2016

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2016

TOTAL HOURS FOR THE PERIOD: 2016

Annual Radioactive Effluent Release Report

Stability Class E

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	1	1	2	4	8	43	46	1	0	0	0	0	106
NNE	0	3	3	5	21	80	59	3	0	0	0	0	174
NE	0	2	6	10	24	62	53	5	0	0	0	0	162
ENE	0	1	1	18	27	42	41	7	0	0	0	0	137
E	0	2	3	18	29	42	17	4	0	0	0	0	115
ESE	0	1	1	11	23	101	135	9	0	0	0	0	281
SE	1	0	1	9	16	73	80	4	0	0	0	0	184
SSE	0	0	1	5	21	68	32	0	1	0	0	0	128
S	0	0	0	4	9	72	73	3	0	0	0	0	161
SSW	0	1	1	8	18	92	53	1	0	0	0	0	174
SW	0	0	1	4	12	33	25	1	0	0	0	0	76
WSW	0	0	2	5	13	22	11	2	0	0	0	0	55
W	0	1	3	6	13	23	16	6	4	0	0	0	72
WNW	0	1	1	6	5	9	72	15	1	0	0	0	110
NW	0	0	1	3	4	18	48	3	1	0	0	0	78
NNW	0	0	2	8	6	31	30	4	0	0	0	0	81
TOTAL	2	13	29	124	249	811	791	68	7	0	0	0	2094

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2094

TOTAL HOURS FOR THE PERIOD: 2094

Annual Radioactive Effluent Release Report

Stability Class F

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	1	2	0	1	24	32	0	0	0	0	0	60
NNE	0	0	1	4	7	35	36	0	0	0	0	0	83
NE	0	0	1	7	9	30	35	0	0	0	0	0	82
ENE	0	0	1	5	11	24	32	0	0	0	0	0	73
E	0	0	2	6	13	12	4	0	0	0	0	0	37
ESE	0	0	0	10	12	37	42	3	0	0	0	0	104
SE	0	0	1	3	10	43	18	0	0	0	0	0	75
SSE	0	0	0	8	15	36	9	0	0	0	0	0	68
S	0	0	1	10	14	35	15	0	0	0	0	0	75
SSW	2	0	0	6	15	25	6	0	0	0	0	0	54
SW	1	0	1	3	4	6	6	0	0	0	0	0	21
WSW	0	0	1	5	3	21	6	0	0	0	0	0	36
W	0	1	1	1	9	29	2	3	0	0	0	0	46
WNW	0	1	2	3	7	11	17	0	0	0	0	0	41
NW	1	0	0	4	2	19	7	1	0	0	0	0	34
NNW	0	0	2	1	6	14	4	0	0	0	0	0	27
TOTAL	4	3	16	76	138	401	271	7	0	0	0	0	916

NUMBER OF CALMS: 9

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 916

TOTAL HOURS FOR THE PERIOD: 916

Annual Radioactive Effluent Release Report

Stability Class G

Period of Record: 01/01/2022 - 12/31/2022

Elevation: Primary Sensors – 150 Foot

Wind Speed (meters/second)													
Wind Direction	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	10.1-13.0	13.1-18.0	>18.0	Total
N	0	1	2	8	18	39	38	0	0	0	0	0	106
NNE	0	1	2	10	15	61	25	0	0	0	0	0	114
NE	0	0	2	9	16	36	7	0	0	0	0	0	70
ENE	0	1	7	12	16	54	9	0	0	0	0	0	99
E	0	0	5	6	17	45	6	0	0	0	0	0	79
ESE	0	2	1	4	8	38	17	0	0	0	0	0	70
SE	1	0	3	4	9	26	20	0	0	0	0	0	63
SSE	0	0	0	6	6	15	7	0	0	0	0	0	34
S	0	1	1	5	8	19	5	0	0	0	0	0	39
SSW	0	3	2	4	10	20	3	0	0	0	0	0	42
SW	0	0	1	9	8	22	7	0	0	0	0	0	47
WSW	1	0	3	11	8	21	5	0	0	0	0	0	49
W	0	0	2	14	25	26	1	1	0	0	0	0	69
WNW	1	0	5	3	10	28	15	0	0	0	0	0	62
NW	1	1	1	3	8	29	5	0	0	0	0	0	48
NNW	1	1	1	5	9	33	13	0	0	0	0	0	63
TOTAL	5	11	38	113	191	512	183	1	0	0	0	0	1054

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1054

TOTAL HOURS FOR THE PERIOD: 1054

Annual Radioactive Effluent Release Report

7.2 Stability Class

Table 15, Classification of Atmospheric Stability

Stability Condition	Pasquill Categories	Hours (Percentage)
Extremely Unstable	A	16
Moderately Stable	B	6
Slightly Unstable	C	5
Neutral	D	24
Slightly Stable	E	25
Moderately Stable	F	11
Extremely Stable	G	13

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 Garden		D/Q - 50.3	D/Q - 18.0
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	2/1/2022	pCi/L	< 2.9E+00	< 3.2E+00	< 6.0E+00	< 3.1E+00	< 6.4E+00	< 3.5E+00	< 5.4E+00	< 9.5E+00	< 3.2E+00	< 3.0E+00	< 2.1E+01	< 7.4E+00
MW-124	2/1/2022	pCi/L	< 2.4E+00	< 2.6E+00	< 5.3E+00	< 2.2E+00	< 5.1E+00	< 2.7E+00	< 4.5E+00	< 8.7E+00	< 2.7E+00	< 2.5E+00	< 1.9E+01	< 5.4E+00
MW-125	2/1/2022	pCi/L	< 2.4E+00	< 2.6E+00	< 5.4E+00	< 2.8E+00	< 5.4E+00	< 2.7E+00	< 4.8E+00	< 8.5E+00	< 2.6E+00	< 2.6E+00	< 1.9E+01	< 6.0E+00
MW-126	2/1/2022	pCi/L	< 2.2E+00	< 2.3E+00	< 5.4E+00	< 2.2E+00	< 4.8E+00	< 2.4E+00	< 4.0E+00	< 7.1E+00	< 2.4E+00	< 2.2E+00	< 1.6E+01	< 5.8E+00
MW-142	2/1/2022	pCi/L	< 2.9E+00	< 2.9E+00	< 6.3E+00	< 2.9E+00	< 5.9E+00	< 2.7E+00	< 5.6E+00	< 8.3E+00	< 2.8E+00	< 2.7E+00	< 1.8E+01	< 6.2E+00
MW-142	2/1/2022	pCi/L	< 2.5E+00	< 2.8E+00	< 6.1E+00	< 2.5E+00	< 4.8E+00	< 2.9E+00	< 4.8E+00	< 8.7E+00	< 3.1E+00	< 2.8E+00	< 1.9E+01	< 6.7E+00
MW-144	2/1/2022	pCi/L	< 2.2E+00	< 2.2E+00	< 4.9E+00	< 2.2E+00	< 4.4E+00	< 2.3E+00	< 4.3E+00	< 8.0E+00	< 2.4E+00	< 2.3E+00	< 1.7E+01	< 5.5E+00
MW-146	2/1/2022	pCi/L	< 4.0E+00	< 4.8E+00	< 9.8E+00	< 3.8E+00	< 9.3E+00	< 4.8E+00	< 8.2E+00	< 1.5E+01	< 5.0E+00	< 4.2E+00	< 3.0E+01	< 7.4E+00
MW-147	2/1/2022	pCi/L	< 2.1E+00	< 2.3E+00	< 5.7E+00	< 2.2E+00	< 4.6E+00	< 2.7E+00	< 4.1E+00	< 7.0E+00	< 2.5E+00	< 2.2E+00	< 1.6E+01	< 5.3E+00
MW-148	2/1/2022	pCi/L	< 2.9E+00	< 2.9E+00	< 7.1E+00	< 3.1E+00	< 5.9E+00	< 3.1E+00	< 5.7E+00	< 9.9E+00	< 3.4E+00	< 3.3E+00	< 2.1E+01	< 7.4E+00
MW-151	2/1/2022	pCi/L	< 3.9E+00	< 4.5E+00	< 1.1E+01	< 4.1E+00	< 9.7E+00	< 4.5E+00	< 7.8E+00	< 1.4E+01	< 5.1E+00	< 4.5E+00	< 3.6E+01	< 1.0E+01
MW-155	2/1/2022	pCi/L	< 4.6E+00	< 5.3E+00	< 1.1E+01	< 6.1E+00	< 9.3E+00	< 4.9E+00	< 8.2E+00	< 1.4E+01	< 4.9E+00	< 4.5E+00	< 3.0E+01	< 1.1E+01
MW-156	2/1/2022	pCi/L	< 4.2E+00	< 4.3E+00	< 8.5E+00	< 4.5E+00	< 8.0E+00	< 4.4E+00	< 9.0E+00	< 1.2E+01	< 4.5E+00	< 4.7E+00	< 2.7E+01	< 1.2E+01
MW-157	2/1/2022	pCi/L	< 4.6E+00	< 4.0E+00	< 1.0E+01	< 4.3E+00	< 1.1E+01	< 5.3E+00	< 7.8E+00	< 1.4E+01	< 4.9E+00	< 4.7E+00	< 3.2E+01	< 1.3E+01
MW-158	2/1/2022	pCi/L	< 4.9E+00	< 5.3E+00	< 9.4E+00	< 4.8E+00	< 1.0E+01	< 4.6E+00	< 8.9E+00	< 1.5E+01	< 5.4E+00	< 4.5E+00	< 3.2E+01	< 6.4E+00
MW-159	2/1/2022	pCi/L	< 2.3E+00	< 2.7E+00	< 5.4E+00	< 2.3E+00	< 4.2E+00	< 2.7E+00	< 4.3E+00	< 8.8E+00	< 2.6E+00	< 2.5E+00	< 1.9E+01	< 5.4E+00
MW-162	2/1/2022	pCi/L	< 3.4E+00	< 3.5E+00	< 8.3E+00	< 3.7E+00	< 7.6E+00	< 4.4E+00	< 6.1E+00	< 1.2E+01	< 3.8E+00	< 3.5E+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-164	2/1/2022	pCi/L	< 2.6E+00	< 3.1E+00	< 6.0E+00	< 3.1E+00	< 5.4E+00	< 2.9E+00	< 4.4E+00	< 9.3E+00	< 2.7E+00	< 2.7E+00	< 1.8E+01	< 6.7E+00
MW-165	2/1/2022	pCi/L	< 4.2E+00	< 5.7E+00	< 9.8E+00	< 4.2E+00	< 9.2E+00	< 4.9E+00	< 9.0E+00	< 1.4E+01	< 4.4E+00	< 4.8E+00	< 2.5E+01	< 1.2E+01
MW-178	2/1/2022	pCi/L	< 4.2E+00	< 4.7E+00	< 1.2E+01	< 4.9E+00	< 8.6E+00	< 5.0E+00	< 8.6E+00	< 1.4E+01	< 5.6E+00	< 4.5E+00	< 3.3E+01	< 1.2E+01
MW-178	2/1/2022	pCi/L	< 4.8E+00	< 5.4E+00	< 9.3E+00	< 5.5E+00	< 9.1E+00	< 5.4E+00	< 8.7E+00	< 1.4E+01	< 5.7E+00	< 5.0E+00	< 3.1E+01	< 1.4E+01
MW-179	2/1/2022	pCi/L	< 4.5E+00	< 5.3E+00	< 1.0E+01	< 5.1E+00	< 8.5E+00	< 4.6E+00	< 8.0E+00	< 1.4E+01	< 5.2E+00	< 4.2E+00	< 3.5E+01	< 9.8E+00
MW-185	2/1/2022	pCi/L	< 2.6E+00	< 2.9E+00	< 6.3E+00	< 2.7E+00	< 5.7E+00	< 2.8E+00	< 4.8E+00	< 8.5E+00	< 2.8E+00	< 2.7E+00	< 1.9E+01	< 6.5E+00
MW-186	2/1/2022	pCi/L	< 3.8E+00	< 3.4E+00	< 7.5E+00	< 3.7E+00	< 6.6E+00	< 3.6E+00	< 6.3E+00	< 1.2E+01	< 3.5E+00	< 4.2E+00	< 2.6E+01	< 9.6E+00
MW-187	2/1/2022	pCi/L	< 3.3E+00	< 3.8E+00	< 8.3E+00	< 3.3E+00	< 6.3E+00	< 3.6E+00	< 5.9E+00	< 1.2E+01	< 3.8E+00	< 3.7E+00	< 2.5E+01	< 8.0E+00
MW-188	2/1/2022	pCi/L	< 3.7E+00	< 4.7E+00	< 1.2E+01	< 4.1E+00	< 7.7E+00	< 4.1E+00	< 8.2E+00	< 1.3E+01	< 4.2E+00	< 4.4E+00	< 3.1E+01	< 9.8E+00
MW-211	2/1/2022	pCi/L	< 4.3E+00	< 3.5E+00	< 6.9E+00	< 3.6E+00	< 8.0E+00	< 4.1E+00	< 7.8E+00	< 1.4E+01	< 3.8E+00	< 3.4E+00	< 3.0E+01	< 9.2E+00
MW-211	2/1/2022	pCi/L	< 4.6E+00	< 5.2E+00	< 1.0E+01	< 4.5E+00	< 7.4E+00	< 5.2E+00	< 1.0E+01	< 1.4E+01	< 5.0E+00	< 5.0E+00	< 3.0E+01	< 1.3E+01
MW-110	2/2/2022	pCi/L	< 4.7E+00	< 5.7E+00	< 1.0E+01	< 5.2E+00	< 1.2E+01	< 5.7E+00	< 9.1E+00	< 1.3E+01	< 5.0E+00	< 5.2E+00	< 3.2E+01	< 1.2E+01
MW-112	2/2/2022	pCi/L	< 4.6E+00	< 4.5E+00	< 8.4E+00	< 5.4E+00	< 9.0E+00	< 5.0E+00	< 7.7E+00	< 1.3E+01	< 6.0E+00	< 4.9E+00	< 3.1E+01	< 1.4E+01
MW-114	2/2/2022	pCi/L	< 4.8E+00	< 5.5E+00	< 1.1E+01	< 5.9E+00	< 1.1E+01	< 5.7E+00	< 1.0E+01	< 1.5E+01	< 4.9E+00	< 6.0E+00	< 3.6E+01	< 8.8E+00
MW-116	2/2/2022	pCi/L	< 4.9E+00	< 4.5E+00	< 9.5E+00	< 4.8E+00	< 9.8E+00	< 4.5E+00	< 7.6E+00	< 1.4E+01	< 4.4E+00	< 4.6E+00	< 2.8E+01	< 1.2E+01
MW-118	2/2/2022	pCi/L	< 5.1E+00	< 6.7E+00	< 1.7E+01	< 5.5E+00	< 1.2E+01	< 7.4E+00	< 9.7E+00	< 1.4E+01	< 4.8E+00	< 6.4E+00	< 3.6E+01	< 1.3E+01
MW-137	2/2/2022	pCi/L	< 3.8E+00	< 3.6E+00	< 7.9E+00	< 4.7E+00	< 6.6E+00	< 4.2E+00	< 6.6E+00	< 1.3E+01	< 3.9E+00	< 4.0E+00	< 2.9E+01	< 8.8E+00

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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-139	2/2/2022	pCi/L	< 2.8E+00	< 3.3E+00	< 7.2E+00	< 3.2E+00	< 5.0E+00	< 3.1E+00	< 5.6E+00	< 9.7E+00	< 3.1E+00	< 3.1E+00	< 2.2E+01	< 7.1E+00
MW-141	2/2/2022	pCi/L	< 3.3E+00	< 3.9E+00	< 9.2E+00	< 4.0E+00	< 8.0E+00	< 4.4E+00	< 7.2E+00	< 1.2E+01	< 4.0E+00	< 4.1E+00	< 2.6E+01	< 9.6E+00
MW-153	2/2/2022	pCi/L	< 4.8E+00	< 3.8E+00	< 9.4E+00	< 4.5E+00	< 9.3E+00	< 3.8E+00	< 7.9E+00	< 1.5E+01	< 3.5E+00	< 4.2E+00	< 2.6E+01	< 9.3E+00
MW-161	2/2/2022	pCi/L	< 4.2E+00	< 4.6E+00	< 9.5E+00	< 4.2E+00	< 9.3E+00	< 5.6E+00	< 6.9E+00	< 1.3E+01	< 4.8E+00	< 4.5E+00	< 2.9E+01	< 1.0E+01
MW-170	2/2/2022	pCi/L	< 2.6E+00	< 3.1E+00	< 6.6E+00	< 3.2E+00	< 5.7E+00	< 3.2E+00	< 5.2E+00	< 8.7E+00	< 3.2E+00	< 2.6E+00	< 1.9E+01	< 7.3E+00
MW-182	2/2/2022	pCi/L	< 4.1E+00	< 4.2E+00	< 9.2E+00	< 4.5E+00	< 8.2E+00	< 4.6E+00	< 7.3E+00	< 1.3E+01	< 4.4E+00	< 3.9E+00	< 3.0E+01	< 8.8E+00
MW-209	2/2/2022	pCi/L	< 3.7E+00	< 4.2E+00	< 8.2E+00	< 4.4E+00	< 8.0E+00	< 5.0E+00	< 7.0E+00	< 1.3E+01	< 4.8E+00	< 4.4E+00	< 3.0E+01	< 9.0E+00
MW-221	2/2/2022	pCi/L	< 5.2E+00	< 5.2E+00	< 1.3E+01	< 6.3E+00	< 1.0E+01	< 5.7E+00	< 9.2E+00	< 1.4E+01	< 6.3E+00	< 4.9E+00	< 3.1E+01	< 1.0E+01
MW-223	2/2/2022	pCi/L	< 5.2E+00	< 4.9E+00	< 1.1E+01	< 5.1E+00	< 9.7E+00	< 4.2E+00	< 8.9E+00	< 1.3E+01	< 5.6E+00	< 4.8E+00	< 3.4E+01	< 9.7E+00
MW-223	2/2/2022	pCi/L	< 5.5E+00	< 6.2E+00	< 1.0E+01	< 6.1E+00	< 1.2E+01	< 5.5E+00	< 9.7E+00	< 1.4E+01	< 6.0E+00	< 4.7E+00	< 3.4E+01	< 1.4E+01
PZ-01	2/2/2022	pCi/L	< 4.9E+00	< 4.9E+00	< 1.4E+01	< 5.1E+00	< 1.1E+01	< 6.5E+00	< 9.9E+00	< 1.4E+01	< 6.5E+00	< 5.4E+00	< 3.5E+01	< 1.2E+01
SW-103	2/2/2022	pCi/L	< 2.5E+00	< 2.7E+00	< 6.1E+00	< 2.6E+00	< 5.3E+00	< 2.9E+00	< 4.9E+00	< 8.0E+00	< 2.9E+00	< 2.7E+00	< 1.9E+01	< 5.4E+00
SW-104	2/2/2022	pCi/L	< 3.6E+00	< 4.2E+00	< 9.4E+00	< 4.0E+00	< 8.1E+00	< 4.0E+00	< 6.9E+00	< 1.1E+01	< 4.1E+00	< 4.2E+00	< 2.7E+01	< 1.0E+01
MW-148	2/28/2022	pCi/L	< 5.0E+00	< 4.9E+00	< 9.0E+00	< 6.5E+00	< 8.3E+00	< 5.5E+00	< 1.1E+01	< 1.1E+01	< 6.0E+00	< 4.8E+00	< 2.2E+01	< 1.3E+01
MW-124	5/24/2022	pCi/L	< 1.7E+00	< 1.9E+00	< 4.3E+00	< 1.7E+00	< 3.5E+00	< 2.0E+00	< 3.5E+00	< 1.2E+01	< 1.9E+00	< 1.7E+00	< 1.8E+01	< 6.1E+00
MW-125	5/24/2022	pCi/L	< 1.9E+00	< 2.0E+00	< 4.9E+00	< 1.9E+00	< 4.0E+00	< 2.2E+00	< 3.8E+00	< 1.3E+01	< 2.1E+00	< 2.0E+00	< 2.2E+01	< 6.7E+00
MW-142	5/24/2022	pCi/L	< 3.5E+00	< 3.6E+00	< 8.3E+00	< 3.5E+00	< 7.7E+00	< 3.8E+00	< 7.0E+00	< 1.1E+01	< 3.6E+00	< 3.2E+00	< 2.8E+01	< 9.0E+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-142	5/24/2022	pCi/L	< 4.7E+00	< 5.0E+00	< 8.2E+00	< 5.2E+00	< 9.0E+00	< 4.3E+00	< 8.0E+00	< 1.4E+01	< 5.1E+00	< 4.6E+00	< 3.3E+01	< 8.7E+00
MW-144	5/24/2022	pCi/L	< 1.7E+00	< 1.8E+00	< 4.7E+00	< 1.9E+00	< 3.3E+00	< 2.0E+00	< 3.4E+00	< 1.0E+01	< 1.9E+00	< 1.8E+00	< 1.8E+01	< 6.5E+00
MW-146	5/24/2022	pCi/L	< 1.4E+00	< 1.6E+00	< 3.7E+00	< 1.5E+00	< 3.1E+00	< 1.8E+00	< 2.9E+00	< 1.2E+01	< 1.6E+00	< 1.5E+00	< 1.9E+01	< 5.9E+00
MW-147	5/24/2022	pCi/L	< 1.8E+00	< 2.0E+00	< 4.8E+00	< 1.7E+00	< 3.7E+00	< 1.9E+00	< 3.7E+00	< 1.1E+01	< 2.0E+00	< 1.8E+00	< 1.9E+01	< 7.3E+00
MW-148	5/24/2022	pCi/L	< 2.1E+00	< 2.3E+00	< 5.1E+00	< 2.0E+00	< 4.2E+00	< 2.4E+00	< 4.0E+00	< 1.2E+01	< 2.2E+00	< 2.0E+00	< 2.2E+01	< 7.5E+00
MW-155	5/24/2022	pCi/L	< 1.6E+00	< 2.0E+00	< 4.7E+00	< 1.7E+00	< 3.5E+00	< 2.0E+00	< 3.4E+00	< 1.1E+01	< 1.7E+00	< 1.6E+00	< 1.8E+01	< 6.8E+00
MW-158	5/24/2022	pCi/L	< 1.6E+00	< 1.7E+00	< 3.8E+00	< 1.7E+00	< 3.1E+00	< 1.8E+00	< 3.2E+00	< 1.1E+01	< 1.7E+00	< 1.7E+00	< 1.8E+01	< 6.2E+00
MW-159	5/24/2022	pCi/L	< 1.6E+00	< 1.8E+00	< 4.4E+00	< 1.7E+00	< 3.4E+00	< 1.9E+00	< 3.3E+00	< 1.2E+01	< 1.8E+00	< 1.6E+00	< 1.9E+01	< 6.3E+00
MW-161	5/24/2022	pCi/L	< 1.7E+00	< 1.8E+00	< 4.4E+00	< 1.7E+00	< 3.4E+00	< 1.9E+00	< 3.4E+00	< 1.0E+01	< 1.8E+00	< 1.7E+00	< 1.7E+01	< 6.0E+00
MW-162	5/24/2022	pCi/L	< 4.9E+00	< 4.1E+00	< 8.8E+00	< 3.1E+00	< 1.1E+01	< 4.4E+00	< 7.2E+00	< 1.4E+01	< 4.5E+00	< 4.1E+00	< 3.2E+01	< 1.1E+01
MW-185	5/24/2022	pCi/L	< 3.7E+00	< 4.1E+00	< 8.2E+00	< 3.9E+00	< 7.4E+00	< 4.1E+00	< 6.6E+00	< 1.1E+01	< 3.4E+00	< 4.9E+00	< 2.4E+01	< 1.1E+01
MW-205	5/24/2022	pCi/L	< 4.5E+00	< 5.8E+00	< 9.6E+00	< 4.4E+00	< 6.7E+00	< 5.2E+00	< 8.6E+00	< 1.4E+01	< 5.8E+00	< 5.5E+00	< 3.0E+01	< 8.6E+00
MW-227	5/24/2022	pCi/L	< 4.9E+00	< 5.0E+00	< 1.0E+01	< 5.0E+00	< 8.5E+00	< 5.0E+00	< 8.1E+00	< 1.4E+01	< 5.4E+00	< 4.8E+00	< 3.8E+01	< 1.0E+01
MW-100	5/25/2022	pCi/L	< 4.5E+00	< 4.4E+00	< 1.1E+01	< 4.2E+00	< 8.1E+00	< 4.1E+00	< 9.9E+00	< 1.4E+01	< 4.1E+00	< 4.2E+00	< 3.1E+01	< 1.3E+01
MW-106	5/25/2022	pCi/L	< 4.6E+00	< 5.0E+00	< 1.2E+01	< 5.8E+00	< 1.2E+01	< 5.6E+00	< 7.9E+00	< 1.2E+01	< 5.9E+00	< 5.4E+00	< 3.3E+01	< 1.3E+01
MW-110	5/25/2022	pCi/L	< 1.4E+00	< 1.7E+00	< 3.9E+00	< 1.5E+00	< 2.9E+00	< 1.7E+00	< 2.9E+00	< 1.1E+01	< 1.6E+00	< 1.5E+00	< 1.7E+01	< 5.2E+00
MW-112	5/25/2022	pCi/L	< 1.9E+00	< 2.0E+00	< 4.7E+00	< 2.1E+00	< 3.7E+00	< 2.1E+00	< 3.6E+00	< 1.2E+01	< 1.9E+00	< 1.9E+00	< 2.2E+01	< 7.8E+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-114	5/25/2022	pCi/L	< 1.6E+00	< 1.7E+00	< 4.3E+00	< 1.7E+00	< 3.4E+00	< 1.8E+00	< 3.2E+00	< 1.2E+01	< 1.7E+00	< 1.5E+00	< 1.8E+01	< 6.4E+00
MW-116	5/25/2022	pCi/L	< 1.5E+00	< 1.8E+00	< 4.4E+00	< 1.6E+00	< 3.0E+00	< 1.9E+00	< 3.2E+00	< 1.1E+01	< 1.7E+00	< 1.5E+00	< 1.9E+01	< 6.5E+00
MW-118	5/25/2022	pCi/L	< 1.6E+00	< 2.0E+00	< 4.3E+00	< 1.7E+00	< 3.4E+00	< 2.0E+00	< 3.4E+00	< 1.2E+01	< 1.8E+00	< 1.6E+00	< 2.0E+01	< 6.3E+00
MW-120	5/25/2022	pCi/L	< 3.9E+00	< 5.6E+00	< 1.1E+01	< 6.3E+00	< 1.2E+01	< 4.6E+00	< 9.9E+00	< 1.4E+01	< 5.6E+00	< 5.6E+00	< 3.2E+01	< 7.9E+00
MW-122R	5/25/2022	pCi/L	< 5.5E+00	< 6.0E+00	< 1.1E+01	< 5.6E+00	< 9.4E+00	< 5.8E+00	< 8.5E+00	< 1.4E+01	< 6.1E+00	< 5.9E+00	< 3.6E+01	< 1.4E+01
MW-122R	5/25/2022	pCi/L	< 4.9E+00	< 6.6E+00	< 1.4E+01	< 5.4E+00	< 7.6E+00	< 6.0E+00	< 9.2E+00	< 1.4E+01	< 6.7E+00	< 4.9E+00	< 3.3E+01	< 1.1E+01
MW-126	5/25/2022	pCi/L	< 1.6E+00	< 2.0E+00	< 4.8E+00	< 1.8E+00	< 3.4E+00	< 1.9E+00	< 3.4E+00	< 1.2E+01	< 1.8E+00	< 1.7E+00	< 1.9E+01	< 6.9E+00
MW-128	5/25/2022	pCi/L	< 4.6E+00	< 5.7E+00	< 1.0E+01	< 6.4E+00	< 1.2E+01	< 5.5E+00	< 8.5E+00	< 1.3E+01	< 6.8E+00	< 4.9E+00	< 3.1E+01	< 1.4E+01
MW-130	5/25/2022	pCi/L	< 5.5E+00	< 6.5E+00	< 1.3E+01	< 6.0E+00	< 1.4E+01	< 6.2E+00	< 1.2E+01	< 1.4E+01	< 5.2E+00	< 5.8E+00	< 3.5E+01	< 1.1E+01
MW-131	5/25/2022	pCi/L	< 5.8E+00	< 5.2E+00	< 1.2E+01	< 4.3E+00	< 8.6E+00	< 4.7E+00	< 9.6E+00	< 1.2E+01	< 5.6E+00	< 4.6E+00	< 3.6E+01	< 1.0E+01
MW-132	5/25/2022	pCi/L	< 4.2E+00	< 5.1E+00	< 1.1E+01	< 4.5E+00	< 1.0E+01	< 5.4E+00	< 7.6E+00	< 1.5E+01	< 4.9E+00	< 5.1E+00	< 3.1E+01	< 9.9E+00
MW-137	5/25/2022	pCi/L	< 1.5E+00	< 1.7E+00	< 4.3E+00	< 1.6E+00	< 3.4E+00	< 1.9E+00	< 3.2E+00	< 1.4E+01	< 1.6E+00	< 1.5E+00	< 2.0E+01	< 6.7E+00
MW-139	5/25/2022	pCi/L	< 5.9E+00	< 4.9E+00	< 1.0E+01	< 5.8E+00	< 1.1E+01	< 5.1E+00	< 9.1E+00	< 1.4E+01	< 4.7E+00	< 4.6E+00	< 3.7E+01	< 1.0E+01
MW-141	5/25/2022	pCi/L	< 1.6E+00	< 2.0E+00	< 4.6E+00	< 1.7E+00	< 3.8E+00	< 1.9E+00	< 3.8E+00	< 1.4E+01	< 1.9E+00	< 1.8E+00	< 2.2E+01	< 7.7E+00
MW-151	5/25/2022	pCi/L	< 5.8E+00	< 5.4E+00	< 9.9E+00	< 5.4E+00	< 7.7E+00	< 6.8E+00	< 9.3E+00	< 1.4E+01	< 6.5E+00	< 5.7E+00	< 3.5E+01	< 1.1E+01
MW-153	5/25/2022	pCi/L	< 1.4E+00	< 1.7E+00	< 3.8E+00	< 1.5E+00	< 2.8E+00	< 1.8E+00	< 3.1E+00	< 1.2E+01	< 1.5E+00	< 1.5E+00	< 1.8E+01	< 6.0E+00
MW-156	5/25/2022	pCi/L	< 1.7E+00	< 2.2E+00	< 5.1E+00	< 2.2E+00	< 4.2E+00	< 2.0E+00	< 3.5E+00	< 1.2E+01	< 2.0E+00	< 1.8E+00	< 2.1E+01	< 6.7E+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-157	5/25/2022	pCi/L	< 2.2E+00	< 2.4E+00	< 5.0E+00	< 2.3E+00	< 4.6E+00	< 2.5E+00	< 4.5E+00	< 1.4E+01	< 2.2E+00	< 2.1E+00	< 2.4E+01	< 8.0E+00
MW-164	5/25/2022	pCi/L	< 5.3E+00	< 5.8E+00	< 1.2E+01	< 4.9E+00	< 1.1E+01	< 5.2E+00	< 9.6E+00	< 1.4E+01	< 5.6E+00	< 5.4E+00	< 3.1E+01	< 1.2E+01
MW-165	5/25/2022	pCi/L	< 6.1E+00	< 5.1E+00	< 1.2E+01	< 7.9E+00	< 1.1E+01	< 6.7E+00	< 8.3E+00	< 1.5E+01	< 4.9E+00	< 5.9E+00	< 3.9E+01	< 1.2E+01
MW-167	5/25/2022	pCi/L	< 5.2E+00	< 5.6E+00	< 1.2E+01	< 5.5E+00	< 1.0E+01	< 4.5E+00	< 8.3E+00	< 1.4E+01	< 5.5E+00	< 5.4E+00	< 3.5E+01	< 1.1E+01
MW-170	5/25/2022	pCi/L	< 4.5E+00	< 4.6E+00	< 1.1E+01	< 4.8E+00	< 8.9E+00	< 5.6E+00	< 9.0E+00	< 1.4E+01	< 4.9E+00	< 4.2E+00	< 3.7E+01	< 9.4E+00
MW-178	5/25/2022	pCi/L	< 1.9E+00	< 2.1E+00	< 4.7E+00	< 2.0E+00	< 3.6E+00	< 2.2E+00	< 3.9E+00	< 1.4E+01	< 2.0E+00	< 1.8E+00	< 2.1E+01	< 7.5E+00
MW-179	5/25/2022	pCi/L	< 1.4E+00	< 1.7E+00	< 3.4E+00	< 1.7E+00	< 2.5E+00	< 1.7E+00	< 3.0E+00	< 1.0E+01	< 1.5E+00	< 1.4E+00	< 1.6E+01	< 5.5E+00
MW-180	5/25/2022	pCi/L	< 5.8E+00	< 7.3E+00	< 1.5E+01	< 6.0E+00	< 1.1E+01	< 6.0E+00	< 1.1E+01	< 1.4E+01	< 6.8E+00	< 5.2E+00	< 3.9E+01	< 1.4E+01
MW-182	5/25/2022	pCi/L	< 5.6E+00	< 4.8E+00	< 1.2E+01	< 5.0E+00	< 9.3E+00	< 6.8E+00	< 9.5E+00	< 1.4E+01	< 5.6E+00	< 5.7E+00	< 3.9E+01	< 7.3E+00
MW-186	5/25/2022	pCi/L	< 5.2E+00	< 6.2E+00	< 1.2E+01	< 7.0E+00	< 9.2E+00	< 5.9E+00	< 7.9E+00	< 1.4E+01	< 6.0E+00	< 3.9E+00	< 3.3E+01	< 1.2E+01
MW-187	5/25/2022	pCi/L	< 4.5E+00	< 6.0E+00	< 9.1E+00	< 5.8E+00	< 1.2E+01	< 6.3E+00	< 1.0E+01	< 1.4E+01	< 6.4E+00	< 5.2E+00	< 2.5E+01	< 9.8E+00
MW-188	5/25/2022	pCi/L	< 3.9E+00	< 4.9E+00	< 1.0E+01	< 5.1E+00	< 1.0E+01	< 4.4E+00	< 8.3E+00	< 1.5E+01	< 4.9E+00	< 4.5E+00	< 2.8E+01	< 9.0E+00
MW-201	5/25/2022	pCi/L	< 5.7E+00	< 5.5E+00	< 1.2E+01	< 5.6E+00	< 1.3E+01	< 6.5E+00	< 1.0E+01	< 1.4E+01	< 4.8E+00	< 5.7E+00	< 2.7E+01	< 1.2E+01
MW-209	5/25/2022	pCi/L	< 5.1E+00	< 5.9E+00	< 1.4E+01	< 6.6E+00	< 9.7E+00	< 6.4E+00	< 7.9E+00	< 1.3E+01	< 5.2E+00	< 5.4E+00	< 2.6E+01	< 1.3E+01
MW-211	5/25/2022	pCi/L	< 1.6E+00	< 1.8E+00	< 4.1E+00	< 1.7E+00	< 3.3E+00	< 1.9E+00	< 3.1E+00	< 9.8E+00	< 1.8E+00	< 1.7E+00	< 1.7E+01	< 5.4E+00
MW-211	5/25/2022	pCi/L	< 1.9E+00	< 2.1E+00	< 4.9E+00	< 1.9E+00	< 3.7E+00	< 2.3E+00	< 4.0E+00	< 1.4E+01	< 2.1E+00	< 2.0E+00	< 2.3E+01	< 7.6E+00
MW-213	5/25/2022	pCi/L	< 4.9E+00	< 5.9E+00	< 1.4E+01	< 5.5E+00	< 1.3E+01	< 6.7E+00	< 1.1E+01	< 1.3E+01	< 7.2E+00	< 5.8E+00	< 3.8E+01	< 1.3E+01

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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-215	5/25/2022	pCi/L	< 4.4E+00	< 4.8E+00	< 1.3E+01	< 5.3E+00	< 1.2E+01	< 5.2E+00	< 1.1E+01	< 1.3E+01	< 6.1E+00	< 4.3E+00	< 3.5E+01	< 1.2E+01
MW-217	5/25/2022	pCi/L	< 4.7E+00	< 5.4E+00	< 1.5E+01	< 5.9E+00	< 1.1E+01	< 5.3E+00	< 1.0E+01	< 1.4E+01	< 5.5E+00	< 4.9E+00	< 3.2E+01	< 1.5E+01
MW-219	5/25/2022	pCi/L	< 5.3E+00	< 4.1E+00	< 1.5E+01	< 5.3E+00	< 1.3E+01	< 6.5E+00	< 8.0E+00	< 1.2E+01	< 5.4E+00	< 5.6E+00	< 3.0E+01	< 1.1E+01
MW-221	5/25/2022	pCi/L	< 1.5E+00	< 1.7E+00	< 4.3E+00	< 1.6E+00	< 3.0E+00	< 1.9E+00	< 3.1E+00	< 1.2E+01	< 1.6E+00	< 1.5E+00	< 1.9E+01	< 6.4E+00
MW-225	5/25/2022	pCi/L	< 4.5E+00	< 5.1E+00	< 1.1E+01	< 4.8E+00	< 8.3E+00	< 5.2E+00	< 7.8E+00	< 1.3E+01	< 5.1E+00	< 5.0E+00	< 2.9E+01	< 9.7E+00
MW-231	5/25/2022	pCi/L	< 4.8E+00	< 4.5E+00	< 1.3E+01	< 5.4E+00	< 1.0E+01	< 6.2E+00	< 8.0E+00	< 1.3E+01	< 6.0E+00	< 4.8E+00	< 3.0E+01	< 9.4E+00
MW-231	5/25/2022	pCi/L	< 5.3E+00	< 5.8E+00	< 1.1E+01	< 5.3E+00	< 7.0E+00	< 4.5E+00	< 9.0E+00	< 1.4E+01	< 5.8E+00	< 5.7E+00	< 3.6E+01	< 1.3E+01
MW-233	5/25/2022	pCi/L	< 4.5E+00	< 4.3E+00	< 1.1E+01	< 5.7E+00	< 1.3E+01	< 6.0E+00	< 8.2E+00	< 1.2E+01	< 4.5E+00	< 5.4E+00	< 3.1E+01	< 1.3E+01
MW-235	5/25/2022	pCi/L	< 4.6E+00	< 5.4E+00	< 9.0E+00	< 5.2E+00	< 8.8E+00	< 6.1E+00	< 8.7E+00	< 1.4E+01	< 5.4E+00	< 4.6E+00	< 3.0E+01	< 9.5E+00
PZ-01	5/25/2022	pCi/L	< 1.6E+00	< 1.9E+00	< 5.0E+00	< 1.7E+00	< 3.5E+00	< 2.0E+00	< 3.4E+00	< 1.2E+01	< 1.8E+00	< 1.7E+00	< 2.0E+01	< 6.6E+00
PZ-01	5/25/2022	pCi/L	< 1.7E+00	< 1.9E+00	< 4.4E+00	< 1.6E+00	< 3.3E+00	< 2.0E+00	< 3.4E+00	< 1.3E+01	< 1.8E+00	< 1.6E+00	< 2.0E+01	< 7.0E+00
PZ-03	5/25/2022	pCi/L	< 4.8E+00	< 7.2E+00	< 1.2E+01	< 5.9E+00	< 1.3E+01	< 6.1E+00	< 1.0E+01	< 1.4E+01	< 5.8E+00	< 6.2E+00	< 3.1E+01	< 1.5E+01
MW-134	5/26/2022	pCi/L	< 6.1E+00	< 5.1E+00	< 1.2E+01	< 4.6E+00	< 9.2E+00	< 5.8E+00	< 9.2E+00	< 1.4E+01	< 5.8E+00	< 5.5E+00	< 3.4E+01	< 8.9E+00
MW-169	5/26/2022	pCi/L	< 5.9E+00	< 5.2E+00	< 1.0E+01	< 5.0E+00	< 8.5E+00	< 6.0E+00	< 8.8E+00	< 1.1E+01	< 5.0E+00	< 5.4E+00	< 3.4E+01	< 1.1E+01
MW-207	5/26/2022	pCi/L	< 5.0E+00	< 4.6E+00	< 1.3E+01	< 5.7E+00	< 1.1E+01	< 5.0E+00	< 8.6E+00	< 1.4E+01	< 5.6E+00	< 4.8E+00	< 3.1E+01	< 9.9E+00
MW-223	5/26/2022	pCi/L	< 5.9E+00	< 5.3E+00	< 1.2E+01	< 5.3E+00	< 9.0E+00	< 5.4E+00	< 9.4E+00	< 1.3E+01	< 5.2E+00	< 5.7E+00	< 2.7E+01	< 9.3E+00
MW-223	5/26/2022	pCi/L	< 7.5E+00	< 6.2E+00	< 1.4E+01	< 6.1E+00	< 1.3E+01	< 6.0E+00	< 1.2E+01	< 1.4E+01	< 7.2E+00	< 6.5E+00	< 3.7E+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-229	5/26/2022	pCi/L	< 5.9E+00	< 5.9E+00	< 1.3E+01	< 5.3E+00	< 9.7E+00	< 5.8E+00	< 1.2E+01	< 1.4E+01	< 6.4E+00	< 5.2E+00	< 3.5E+01	< 1.3E+01
SW-102	5/26/2022	pCi/L	< 4.8E+00	< 6.0E+00	< 1.3E+01	< 5.3E+00	< 9.5E+00	< 5.4E+00	< 1.1E+01	< 1.4E+01	< 5.9E+00	< 6.2E+00	< 3.5E+01	< 1.1E+01
SW-104	5/26/2022	pCi/L	< 6.7E+00	< 5.3E+00	< 1.4E+01	< 7.2E+00	< 1.2E+01	< 5.0E+00	< 9.4E+00	< 1.3E+01	< 6.6E+00	< 5.5E+00	< 2.9E+01	< 1.5E+01
MW-100	8/30/2022	pCi/L	< 3.7E+00	< 4.5E+00	< 9.2E+00	< 4.1E+00	< 7.6E+00	< 4.6E+00	< 7.4E+00	< 1.5E+01	< 4.7E+00	< 4.5E+00	< 2.7E+01	< 8.6E+00
MW-124	8/30/2022	pCi/L	< 1.7E+00	< 1.8E+00	< 4.8E+00	< 1.9E+00	< 3.7E+00	< 1.9E+00	< 3.7E+00	< 1.2E+01	< 1.8E+00	< 1.6E+00	< 2.0E+01	< 6.3E+00
MW-125	8/30/2022	pCi/L	< 1.7E+00	< 2.1E+00	< 4.5E+00	< 1.9E+00	< 3.3E+00	< 2.0E+00	< 3.6E+00	< 1.1E+01	< 1.9E+00	< 1.7E+00	< 1.9E+01	< 6.9E+00
MW-125	8/30/2022	pCi/L	< 1.8E+00	< 2.0E+00	< 5.0E+00	< 1.8E+00	< 3.5E+00	< 2.2E+00	< 3.6E+00	< 1.2E+01	< 2.1E+00	< 1.7E+00	< 2.1E+01	< 6.8E+00
MW-126	8/30/2022	pCi/L	< 1.8E+00	< 2.1E+00	< 5.2E+00	< 2.0E+00	< 3.8E+00	< 2.3E+00	< 4.0E+00	< 1.3E+01	< 2.0E+00	< 2.0E+00	< 2.1E+01	< 6.5E+00
MW-126	8/30/2022	pCi/L	< 1.7E+00	< 1.8E+00	< 4.5E+00	< 1.7E+00	< 3.2E+00	< 2.0E+00	< 3.2E+00	< 1.3E+01	< 1.8E+00	< 1.7E+00	< 2.0E+01	< 6.3E+00
MW-142	8/30/2022	pCi/L	< 2.0E+00	< 2.1E+00	< 5.4E+00	< 2.1E+00	< 4.0E+00	< 2.3E+00	< 4.1E+00	< 1.2E+01	< 2.1E+00	< 1.8E+00	< 2.2E+01	< 7.1E+00
MW-144	8/30/2022	pCi/L	< 3.9E+00	< 4.6E+00	< 1.1E+01	< 4.6E+00	< 9.2E+00	< 4.5E+00	< 8.9E+00	< 1.4E+01	< 4.9E+00	< 3.6E+00	< 2.6E+01	< 9.6E+00
MW-146	8/30/2022	pCi/L	< 1.7E+00	< 2.0E+00	< 4.6E+00	< 1.8E+00	< 3.6E+00	< 2.3E+00	< 3.8E+00	< 1.5E+01	< 1.9E+00	< 1.9E+00	< 2.3E+01	< 7.0E+00
MW-147	8/30/2022	pCi/L	< 1.6E+00	< 1.9E+00	< 4.5E+00	< 1.7E+00	< 3.2E+00	< 1.9E+00	< 3.5E+00	< 1.2E+01	< 1.6E+00	< 1.7E+00	< 2.0E+01	< 6.1E+00
MW-148	8/30/2022	pCi/L	< 2.0E+00	< 2.1E+00	< 5.0E+00	< 1.8E+00	< 3.9E+00	< 2.3E+00	< 4.0E+00	< 1.2E+01	< 2.1E+00	< 2.1E+00	< 2.2E+01	< 6.6E+00
MW-151	8/30/2022	pCi/L	< 4.4E+00	< 5.0E+00	< 1.1E+01	< 4.7E+00	< 8.7E+00	< 4.6E+00	< 7.9E+00	< 1.4E+01	< 5.7E+00	< 4.6E+00	< 3.4E+01	< 1.0E+01
MW-155	8/30/2022	pCi/L	< 2.1E+00	< 2.3E+00	< 5.3E+00	< 2.1E+00	< 4.3E+00	< 2.5E+00	< 3.9E+00	< 1.3E+01	< 2.1E+00	< 2.1E+00	< 2.2E+01	< 7.1E+00
MW-156	8/30/2022	pCi/L	< 1.6E+00	< 1.7E+00	< 3.5E+00	< 1.4E+00	< 3.1E+00	< 1.7E+00	< 3.3E+00	< 1.1E+01	< 1.8E+00	< 1.6E+00	< 2.0E+01	< 6.1E+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-157	8/30/2022	pCi/L	< 1.6E+00	< 1.8E+00	< 3.8E+00	< 1.7E+00	< 3.3E+00	< 1.8E+00	< 3.1E+00	< 1.1E+01	< 1.7E+00	< 1.5E+00	< 1.8E+01	< 6.1E+00
MW-158	8/30/2022	pCi/L	< 1.8E+00	< 1.9E+00	< 4.7E+00	< 1.9E+00	< 3.3E+00	< 2.2E+00	< 3.7E+00	< 1.2E+01	< 1.8E+00	< 1.8E+00	< 2.2E+01	< 7.5E+00
MW-159	8/30/2022	pCi/L	< 1.9E+00	< 2.3E+00	< 5.2E+00	< 2.0E+00	< 3.9E+00	< 2.2E+00	< 4.0E+00	< 1.4E+01	< 2.0E+00	< 1.9E+00	< 2.4E+01	< 9.0E+00
MW-162	8/30/2022	pCi/L	< 5.2E+00	< 5.9E+00	< 1.3E+01	< 5.1E+00	< 7.9E+00	< 5.9E+00	< 8.9E+00	< 1.5E+01	< 6.0E+00	< 5.0E+00	< 3.0E+01	< 1.1E+01
MW-164	8/30/2022	pCi/L	< 4.5E+00	< 5.1E+00	< 9.7E+00	< 4.9E+00	< 8.9E+00	< 4.9E+00	< 8.5E+00	< 1.5E+01	< 4.9E+00	< 4.6E+00	< 3.2E+01	< 9.5E+00
MW-164	8/30/2022	pCi/L	< 4.1E+00	< 5.2E+00	< 1.0E+01	< 5.2E+00	< 9.6E+00	< 4.3E+00	< 7.8E+00	< 1.3E+01	< 5.0E+00	< 4.4E+00	< 3.2E+01	< 1.0E+01
MW-165	8/30/2022	pCi/L	< 5.1E+00	< 7.0E+00	< 1.3E+01	< 6.6E+00	< 1.5E+01	< 6.3E+00	< 1.1E+01	< 1.5E+01	< 5.6E+00	< 4.4E+00	< 3.6E+01	< 1.2E+01
MW-178	8/30/2022	pCi/L	< 1.6E+00	< 1.9E+00	< 4.6E+00	< 1.7E+00	< 3.3E+00	< 2.0E+00	< 3.3E+00	< 1.2E+01	< 1.8E+00	< 1.7E+00	< 1.8E+01	< 6.7E+00
MW-179	8/30/2022	pCi/L	< 1.6E+00	< 1.7E+00	< 4.1E+00	< 1.5E+00	< 3.1E+00	< 1.9E+00	< 3.2E+00	< 1.3E+01	< 1.7E+00	< 1.5E+00	< 1.9E+01	< 6.7E+00
MW-185	8/30/2022	pCi/L	< 4.6E+00	< 4.5E+00	< 1.0E+01	< 3.8E+00	< 8.2E+00	< 4.7E+00	< 7.7E+00	< 1.5E+01	< 4.7E+00	< 4.3E+00	< 3.3E+01	< 8.5E+00
MW-186	8/30/2022	pCi/L	< 4.3E+00	< 5.1E+00	< 1.1E+01	< 4.8E+00	< 7.1E+00	< 4.8E+00	< 8.3E+00	< 1.4E+01	< 4.7E+00	< 5.2E+00	< 3.3E+01	< 1.1E+01
MW-187	8/30/2022	pCi/L	< 4.6E+00	< 4.4E+00	< 9.8E+00	< 4.0E+00	< 8.0E+00	< 4.0E+00	< 8.6E+00	< 1.3E+01	< 4.3E+00	< 4.4E+00	< 3.1E+01	< 1.1E+01
MW-188	8/30/2022	pCi/L	< 4.0E+00	< 4.3E+00	< 8.2E+00	< 4.5E+00	< 1.0E+01	< 4.8E+00	< 7.7E+00	< 1.5E+01	< 4.1E+00	< 4.8E+00	< 2.9E+01	< 7.7E+00
MW-211	8/30/2022	pCi/L	< 1.9E+00	< 2.3E+00	< 5.2E+00	< 2.3E+00	< 4.2E+00	< 2.3E+00	< 3.9E+00	< 1.3E+01	< 2.0E+00	< 2.0E+00	< 2.1E+01	< 7.4E+00
MW-211	8/30/2022	pCi/L	< 1.9E+00	< 2.3E+00	< 5.2E+00	< 2.1E+00	< 4.1E+00	< 2.4E+00	< 4.1E+00	< 1.4E+01	< 2.1E+00	< 2.0E+00	< 2.3E+01	< 7.0E+00
MW-110	8/31/2022	pCi/L	< 1.7E+00	< 2.1E+00	< 4.8E+00	< 1.9E+00	< 3.8E+00	< 2.2E+00	< 3.5E+00	< 1.5E+01	< 1.9E+00	< 1.8E+00	< 2.3E+01	< 7.3E+00
MW-110	8/31/2022	pCi/L	< 1.7E+00	< 1.9E+00	< 4.1E+00	< 1.8E+00	< 3.0E+00	< 2.0E+00	< 3.3E+00	< 1.3E+01	< 1.7E+00	< 1.6E+00	< 2.1E+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-112	8/31/2022	pCi/L	< 1.6E+00	< 1.9E+00	< 4.7E+00	< 1.7E+00	< 3.4E+00	< 2.0E+00	< 3.4E+00	< 1.3E+01	< 1.8E+00	< 1.6E+00	< 2.0E+01	< 7.0E+00
MW-114	8/31/2022	pCi/L	< 1.8E+00	< 2.2E+00	< 4.5E+00	< 2.0E+00	< 3.6E+00	< 2.2E+00	< 3.8E+00	< 1.4E+01	< 2.0E+00	< 1.7E+00	< 2.2E+01	< 8.6E+00
MW-116	8/31/2022	pCi/L	< 1.4E+00	< 1.6E+00	< 3.9E+00	< 1.9E+00	< 2.9E+00	< 1.6E+00	< 2.6E+00	< 1.0E+01	< 1.5E+00	< 1.4E+00	< 1.7E+01	< 5.6E+00
MW-118	8/31/2022	pCi/L	< 1.7E+00	< 2.0E+00	< 4.9E+00	< 1.9E+00	< 3.7E+00	< 2.1E+00	< 3.5E+00	< 1.3E+01	< 1.9E+00	< 1.7E+00	< 2.3E+01	< 7.2E+00
MW-137	8/31/2022	pCi/L	< 1.8E+00	< 2.2E+00	< 5.2E+00	< 2.1E+00	< 3.7E+00	< 2.4E+00	< 3.7E+00	< 1.3E+01	< 2.0E+00	< 1.8E+00	< 2.2E+01	< 7.5E+00
MW-139	8/31/2022	pCi/L	< 5.8E+00	< 5.5E+00	< 1.0E+01	< 7.2E+00	< 9.3E+00	< 4.7E+00	< 9.7E+00	< 1.3E+01	< 5.8E+00	< 5.0E+00	< 3.4E+01	< 9.5E+00
MW-141	8/31/2022	pCi/L	< 1.7E+00	< 1.9E+00	< 4.9E+00	< 1.7E+00	< 3.6E+00	< 2.1E+00	< 3.6E+00	< 1.3E+01	< 1.8E+00	< 1.7E+00	< 2.0E+01	< 7.3E+00
MW-153	8/31/2022	pCi/L	< 1.8E+00	< 2.4E+00	< 5.7E+00	< 2.0E+00	< 3.9E+00	< 2.4E+00	< 4.2E+00	< 1.5E+01	< 2.2E+00	< 2.1E+00	< 2.5E+01	< 8.5E+00
MW-161	8/31/2022	pCi/L	< 1.7E+00	< 2.1E+00	< 4.9E+00	< 1.7E+00	< 3.7E+00	< 2.3E+00	< 3.7E+00	< 1.4E+01	< 2.0E+00	< 1.8E+00	< 2.3E+01	< 7.3E+00
MW-170	8/31/2022	pCi/L	< 4.9E+00	< 5.9E+00	< 9.5E+00	< 3.5E+00	< 7.5E+00	< 5.2E+00	< 9.2E+00	< 1.1E+01	< 3.8E+00	< 4.5E+00	< 2.9E+01	< 1.3E+01
MW-182	8/31/2022	pCi/L	< 4.7E+00	< 5.7E+00	< 1.2E+01	< 4.7E+00	< 1.2E+01	< 5.4E+00	< 8.8E+00	< 1.3E+01	< 5.4E+00	< 5.5E+00	< 3.3E+01	< 1.4E+01
MW-209	8/31/2022	pCi/L	< 3.7E+00	< 5.2E+00	< 1.4E+01	< 6.1E+00	< 8.9E+00	< 5.0E+00	< 9.9E+00	< 1.3E+01	< 5.7E+00	< 4.5E+00	< 3.3E+01	< 8.2E+00
MW-221	8/31/2022	pCi/L	< 1.8E+00	< 2.2E+00	< 4.8E+00	< 1.6E+00	< 3.4E+00	< 2.1E+00	< 4.0E+00	< 1.4E+01	< 1.9E+00	< 1.9E+00	< 2.2E+01	< 6.5E+00
MW-223	8/31/2022	pCi/L	< 4.7E+00	< 4.6E+00	< 9.7E+00	< 4.6E+00	< 9.3E+00	< 5.0E+00	< 9.4E+00	< 1.4E+01	< 5.4E+00	< 5.1E+00	< 2.7E+01	< 1.1E+01
PZ-01	8/31/2022	pCi/L	< 1.8E+00	< 2.1E+00	< 5.2E+00	< 1.9E+00	< 3.4E+00	< 2.3E+00	< 3.7E+00	< 1.3E+01	< 2.0E+00	< 1.8E+00	< 2.3E+01	< 7.9E+00
SW-102	8/31/2022	pCi/L	< 5.6E+00	< 4.6E+00	< 1.2E+01	< 5.3E+00	< 9.3E+00	< 4.9E+00	< 8.4E+00	< 1.3E+01	< 5.0E+00	< 4.0E+00	< 3.0E+01	< 9.4E+00
SW-103	8/31/2022	pCi/L	< 4.8E+00	< 4.5E+00	< 1.3E+01	< 5.5E+00	< 1.0E+01	< 5.0E+00	< 7.4E+00	< 1.5E+01	< 5.3E+00	< 4.2E+00	< 3.0E+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
SW-104	8/31/2022	pCi/L	< 6.3E+00	< 5.7E+00	< 1.2E+01	< 6.4E+00	< 1.0E+01	< 5.8E+00	< 1.1E+01	< 1.3E+01	< 6.1E+00	< 6.4E+00	< 3.4E+01	< 1.3E+01
MW-110	11/8/2022	pCi/L	< 6.6E+00	< 6.3E+00	< 1.2E+01	< 6.1E+00	< 1.4E+01	< 8.7E+00	< 9.7E+00	< 1.4E+01	< 7.4E+00	< 5.0E+00	< 3.7E+01	< 1.0E+01
MW-112	11/8/2022	pCi/L	< 5.2E+00	< 5.3E+00	< 1.1E+01	< 5.6E+00	< 1.3E+01	< 7.0E+00	< 1.0E+01	< 1.4E+01	< 5.4E+00	< 5.0E+00	< 3.1E+01	< 8.7E+00
MW-114	11/8/2022	pCi/L	< 5.4E+00	< 6.6E+00	< 8.4E+00	< 8.4E+00	< 1.2E+01	< 6.5E+00	< 1.3E+01	< 1.5E+01	< 6.3E+00	< 6.7E+00	< 4.2E+01	< 1.3E+01
MW-116	11/8/2022	pCi/L	< 4.9E+00	< 6.2E+00	< 1.3E+01	< 5.8E+00	< 1.3E+01	< 5.4E+00	< 1.2E+01	< 1.3E+01	< 5.9E+00	< 5.8E+00	< 3.5E+01	< 1.4E+01
MW-118	11/8/2022	pCi/L	< 5.1E+00	< 7.5E+00	< 1.7E+01	< 8.3E+00	< 1.3E+01	< 7.8E+00	< 1.2E+01	< 1.4E+01	< 6.5E+00	< 6.4E+00	< 4.0E+01	< 1.1E+01
MW-124	11/8/2022	pCi/L	< 5.9E+00	< 4.6E+00	< 1.1E+01	< 7.2E+00	< 1.4E+01	< 6.6E+00	< 9.5E+00	< 1.4E+01	< 6.4E+00	< 6.1E+00	< 3.2E+01	< 1.1E+01
MW-125	11/8/2022	pCi/L	< 6.7E+00	< 5.6E+00	< 1.3E+01	< 5.9E+00	< 1.3E+01	< 6.7E+00	< 9.8E+00	< 1.5E+01	< 6.2E+00	< 5.7E+00	< 3.2E+01	< 1.1E+01
MW-137	11/8/2022	pCi/L	< 6.2E+00	< 6.0E+00	< 1.2E+01	< 6.8E+00	< 1.2E+01	< 7.4E+00	< 1.1E+01	< 1.2E+01	< 7.0E+00	< 6.2E+00	< 2.5E+01	< 1.4E+01
MW-137	11/8/2022	pCi/L	< 6.7E+00	< 5.3E+00	< 1.1E+01	< 5.9E+00	< 1.4E+01	< 6.2E+00	< 1.0E+01	< 1.3E+01	< 6.6E+00	< 6.5E+00	< 3.5E+01	< 8.9E+00
MW-141	11/8/2022	pCi/L	< 7.3E+00	< 7.0E+00	< 1.3E+01	< 4.5E+00	< 1.5E+01	< 7.6E+00	< 1.0E+01	< 1.3E+01	< 6.7E+00	< 7.4E+00	< 4.4E+01	< 1.3E+01
MW-142	11/8/2022	pCi/L	< 6.3E+00	< 6.3E+00	< 1.3E+01	< 6.1E+00	< 1.6E+01	< 6.9E+00	< 1.1E+01	< 1.4E+01	< 6.8E+00	< 6.5E+00	< 3.3E+01	< 1.3E+01
MW-142	11/8/2022	pCi/L	< 7.6E+00	< 6.4E+00	< 1.4E+01	< 6.0E+00	< 1.4E+01	< 8.4E+00	< 1.0E+01	< 1.4E+01	< 7.1E+00	< 8.5E+00	< 4.0E+01	< 1.1E+01
MW-144	11/8/2022	pCi/L	< 7.2E+00	< 6.9E+00	< 1.3E+01	< 6.5E+00	< 1.1E+01	< 7.2E+00	< 9.4E+00	< 1.4E+01	< 5.9E+00	< 7.1E+00	< 3.6E+01	< 1.2E+01
MW-146	11/8/2022	pCi/L	< 5.7E+00	< 5.8E+00	< 9.4E+00	< 6.8E+00	< 1.1E+01	< 7.0E+00	< 1.0E+01	< 1.4E+01	< 6.7E+00	< 5.6E+00	< 3.3E+01	< 1.2E+01
MW-147	11/8/2022	pCi/L	< 6.9E+00	< 6.6E+00	< 1.8E+01	< 7.0E+00	< 1.5E+01	< 5.8E+00	< 1.0E+01	< 1.4E+01	< 8.0E+00	< 6.3E+00	< 3.5E+01	< 1.3E+01
MW-148	11/8/2022	pCi/L	< 5.1E+00	< 6.2E+00	< 1.7E+01	< 7.5E+00	< 1.5E+01	< 7.6E+00	< 1.3E+01	< 1.0E+01	< 6.7E+00	< 7.1E+00	< 3.6E+01	< 8.5E+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-153	11/8/2022	pCi/L	< 6.9E+00	< 5.9E+00	< 1.3E+01	< 7.4E+00	< 1.2E+01	< 8.0E+00	< 1.2E+01	< 1.3E+01	< 6.7E+00	< 6.0E+00	< 3.5E+01	< 9.9E+00
MW-158	11/8/2022	pCi/L	< 5.8E+00	< 6.4E+00	< 1.1E+01	< 7.6E+00	< 1.2E+01	< 8.1E+00	< 1.4E+01	< 1.3E+01	< 7.3E+00	< 6.0E+00	< 3.5E+01	< 1.3E+01
MW-159	11/8/2022	pCi/L	< 5.6E+00	< 7.8E+00	< 1.4E+01	< 7.2E+00	< 1.7E+01	< 5.1E+00	< 8.5E+00	< 1.4E+01	< 8.6E+00	< 7.8E+00	< 4.4E+01	< 1.5E+01
MW-161	11/8/2022	pCi/L	< 6.0E+00	< 5.0E+00	< 1.2E+01	< 5.1E+00	< 1.4E+01	< 6.2E+00	< 9.1E+00	< 1.2E+01	< 7.2E+00	< 7.5E+00	< 4.0E+01	< 1.4E+01
MW-161	11/8/2022	pCi/L	< 7.4E+00	< 6.1E+00	< 1.2E+01	< 6.6E+00	< 1.2E+01	< 6.8E+00	< 1.0E+01	< 1.4E+01	< 4.4E+00	< 5.9E+00	< 3.6E+01	< 1.2E+01
MW-162	11/8/2022	pCi/L	< 5.0E+00	< 5.2E+00	< 9.7E+00	< 5.6E+00	< 9.9E+00	< 5.2E+00	< 8.6E+00	< 1.2E+01	< 5.2E+00	< 6.5E+00	< 2.7E+01	< 9.1E+00
MW-174	11/8/2022	pCi/L	< 4.3E+00	< 5.2E+00	< 1.3E+01	< 6.0E+00	< 1.3E+01	< 5.8E+00	< 1.1E+01	< 1.1E+01	< 7.4E+00	< 5.3E+00	< 3.3E+01	< 1.0E+01
MW-221	11/8/2022	pCi/L	< 7.4E+00	< 6.9E+00	< 1.1E+01	< 5.1E+00	< 1.5E+01	< 7.7E+00	< 1.1E+01	< 1.4E+01	< 7.0E+00	< 5.9E+00	< 3.9E+01	< 1.2E+01
MW-223	11/8/2022	pCi/L	< 4.8E+00	< 5.1E+00	< 1.4E+01	< 5.7E+00	< 1.3E+01	< 6.7E+00	< 9.4E+00	< 1.3E+01	< 6.9E+00	< 5.5E+00	< 3.2E+01	< 8.8E+00
PZ-01	11/8/2022	pCi/L	< 4.8E+00	< 5.6E+00	< 1.3E+01	< 6.6E+00	< 1.2E+01	< 7.4E+00	< 8.5E+00	< 1.2E+01	< 6.9E+00	< 5.5E+00	< 3.0E+01	< 1.3E+01
MW-04	11/9/2022	pCi/L	< 5.4E+00	< 5.5E+00	< 1.3E+01	< 5.9E+00	< 9.8E+00	< 6.2E+00	< 1.1E+01	< 1.2E+01	< 5.8E+00	< 5.7E+00	< 3.3E+01	< 1.1E+01
MW-05	11/9/2022	pCi/L	< 5.9E+00	< 5.0E+00	< 1.2E+01	< 6.1E+00	< 1.2E+01	< 7.0E+00	< 1.3E+01	< 9.7E+00	< 6.0E+00	< 5.0E+00	< 3.0E+01	< 1.3E+01
MW-08	11/9/2022	pCi/L	< 7.2E+00	< 7.9E+00	< 1.1E+01	< 7.9E+00	< 1.6E+01	< 7.7E+00	< 1.4E+01	< 1.4E+01	< 7.7E+00	< 7.1E+00	< 3.7E+01	< 1.4E+01
MW-100	11/9/2022	pCi/L	< 5.8E+00	< 5.9E+00	< 1.4E+01	< 7.8E+00	< 1.4E+01	< 6.6E+00	< 9.0E+00	< 1.2E+01	< 7.8E+00	< 7.3E+00	< 2.8E+01	< 9.7E+00
MW-103	11/9/2022	pCi/L	< 6.3E+00	< 7.3E+00	< 1.2E+01	< 7.6E+00	< 1.3E+01	< 6.3E+00	< 1.2E+01	< 9.9E+00	< 8.1E+00	< 6.4E+00	< 3.2E+01	< 1.2E+01
MW-104	11/9/2022	pCi/L	< 6.1E+00	< 5.2E+00	< 9.7E+00	< 8.7E+00	< 1.4E+01	< 6.6E+00	< 1.1E+01	< 1.2E+01	< 9.0E+00	< 8.5E+00	< 3.6E+01	< 1.4E+01
MW-111	11/9/2022	pCi/L	< 4.9E+00	< 5.0E+00	< 1.0E+01	< 7.6E+00	< 1.0E+01	< 5.7E+00	< 1.1E+01	< 1.0E+01	< 6.0E+00	< 5.7E+00	< 2.7E+01	< 8.4E+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-120	11/9/2022	pCi/L	< 7.0E+00	< 9.1E+00	< 1.1E+01	< 9.3E+00	< 1.0E+01	< 7.1E+00	< 1.4E+01	< 1.4E+01	< 7.4E+00	< 8.5E+00	< 3.7E+01	< 9.2E+00
MW-122R	11/9/2022	pCi/L	< 4.8E+00	< 5.4E+00	< 1.3E+01	< 7.2E+00	< 1.1E+01	< 5.9E+00	< 1.1E+01	< 1.0E+01	< 6.1E+00	< 5.7E+00	< 2.8E+01	< 8.2E+00
MW-126	11/9/2022	pCi/L	< 7.0E+00	< 7.3E+00	< 1.6E+01	< 8.9E+00	< 1.8E+01	< 8.1E+00	< 1.5E+01	< 1.4E+01	< 8.0E+00	< 8.0E+00	< 4.0E+01	< 1.1E+01
MW-128	11/9/2022	pCi/L	< 7.4E+00	< 6.6E+00	< 1.3E+01	< 6.4E+00	< 1.3E+01	< 7.2E+00	< 1.2E+01	< 1.5E+01	< 7.5E+00	< 8.8E+00	< 3.4E+01	< 7.7E+00
MW-130	11/9/2022	pCi/L	< 5.9E+00	< 5.5E+00	< 1.7E+01	< 6.0E+00	< 1.1E+01	< 5.1E+00	< 1.1E+01	< 1.1E+01	< 6.9E+00	< 5.8E+00	< 3.3E+01	< 1.1E+01
MW-131	11/9/2022	pCi/L	< 7.8E+00	< 8.0E+00	< 1.3E+01	< 6.6E+00	< 1.5E+01	< 9.0E+00	< 1.4E+01	< 1.1E+01	< 8.1E+00	< 6.5E+00	< 2.9E+01	< 1.2E+01
MW-139	11/9/2022	pCi/L	< 7.8E+00	< 7.4E+00	< 1.2E+01	< 5.9E+00	< 1.1E+01	< 7.6E+00	< 1.3E+01	< 9.9E+00	< 6.9E+00	< 7.6E+00	< 3.1E+01	< 1.1E+01
MW-14	11/9/2022	pCi/L	< 6.6E+00	< 6.5E+00	< 1.4E+01	< 9.4E+00	< 1.2E+01	< 6.7E+00	< 1.4E+01	< 1.2E+01	< 8.5E+00	< 7.2E+00	< 2.8E+01	< 1.0E+01
MW-151	11/9/2022	pCi/L	< 7.0E+00	< 6.0E+00	< 1.3E+01	< 5.0E+00	< 8.6E+00	< 5.5E+00	< 1.1E+01	< 1.2E+01	< 4.7E+00	< 5.8E+00	< 2.8E+01	< 7.8E+00
MW-155	11/9/2022	pCi/L	< 6.7E+00	< 6.9E+00	< 1.3E+01	< 6.4E+00	< 1.3E+01	< 6.5E+00	< 1.1E+01	< 1.4E+01	< 5.8E+00	< 7.1E+00	< 3.1E+01	< 1.0E+01
MW-156	11/9/2022	pCi/L	< 4.9E+00	< 6.0E+00	< 1.6E+01	< 5.5E+00	< 1.0E+01	< 6.8E+00	< 1.3E+01	< 1.4E+01	< 6.7E+00	< 6.6E+00	< 3.9E+01	< 1.0E+01
MW-157	11/9/2022	pCi/L	< 6.3E+00	< 7.1E+00	< 1.4E+01	< 6.4E+00	< 1.4E+01	< 6.7E+00	< 1.0E+01	< 1.5E+01	< 6.2E+00	< 7.2E+00	< 3.5E+01	< 1.5E+01
MW-164	11/9/2022	pCi/L	< 6.6E+00	< 6.9E+00	< 1.2E+01	< 5.3E+00	< 1.3E+01	< 6.6E+00	< 1.1E+01	< 1.2E+01	< 7.9E+00	< 6.8E+00	< 3.2E+01	< 1.2E+01
MW-165	11/9/2022	pCi/L	< 7.2E+00	< 7.6E+00	< 1.7E+01	< 8.7E+00	< 1.6E+01	< 8.0E+00	< 1.1E+01	< 1.3E+01	< 8.7E+00	< 7.9E+00	< 3.6E+01	< 1.4E+01
MW-167	11/9/2022	pCi/L	< 4.3E+00	< 6.9E+00	< 1.2E+01	< 5.0E+00	< 1.1E+01	< 5.6E+00	< 7.6E+00	< 9.6E+00	< 5.8E+00	< 6.4E+00	< 2.9E+01	< 1.2E+01
MW-170	11/9/2022	pCi/L	< 7.7E+00	< 8.1E+00	< 1.7E+01	< 8.7E+00	< 1.1E+01	< 7.1E+00	< 1.5E+01	< 1.3E+01	< 8.8E+00	< 7.8E+00	< 4.2E+01	< 1.1E+01
MW-178	11/9/2022	pCi/L	< 4.4E+00	< 7.0E+00	< 1.5E+01	< 5.3E+00	< 1.3E+01	< 6.5E+00	< 1.2E+01	< 1.3E+01	< 5.1E+00	< 8.6E+00	< 3.6E+01	< 9.1E+00

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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-179	11/9/2022	pCi/L	< 3.6E+00	< 3.5E+00	< 8.2E+00	< 3.7E+00	< 7.6E+00	< 3.9E+00	< 6.6E+00	< 8.0E+00	< 3.9E+00	< 3.9E+00	< 2.0E+01	< 6.4E+00
MW-18	11/9/2022	pCi/L	< 7.8E+00	< 8.5E+00	< 1.6E+01	< 6.6E+00	< 1.7E+01	< 8.8E+00	< 1.4E+01	< 1.3E+01	< 9.1E+00	< 7.3E+00	< 4.0E+01	< 1.4E+01
MW-180	11/9/2022	pCi/L	< 5.8E+00	< 5.3E+00	< 1.7E+01	< 6.0E+00	< 1.4E+01	< 5.7E+00	< 9.2E+00	< 1.1E+01	< 6.5E+00	< 6.8E+00	< 3.3E+01	< 9.6E+00
MW-182	11/9/2022	pCi/L	< 7.1E+00	< 5.9E+00	< 1.3E+01	< 7.6E+00	< 1.3E+01	< 6.6E+00	< 1.2E+01	< 1.1E+01	< 7.6E+00	< 7.6E+00	< 3.0E+01	< 9.8E+00
MW-185	11/9/2022	pCi/L	< 5.9E+00	< 5.9E+00	< 1.5E+01	< 8.5E+00	< 1.4E+01	< 6.5E+00	< 1.3E+01	< 1.2E+01	< 6.8E+00	< 6.5E+00	< 3.5E+01	< 9.4E+00
MW-187	11/9/2022	pCi/L	< 9.1E+00	< 6.2E+00	< 1.6E+01	< 7.4E+00	< 1.6E+01	< 6.0E+00	< 1.5E+01	< 1.2E+01	< 9.2E+00	< 7.7E+00	< 3.5E+01	< 1.0E+01
MW-201	11/9/2022	pCi/L	< 9.3E+00	< 7.2E+00	< 1.5E+01	< 5.7E+00	< 8.1E+00	< 6.6E+00	< 1.4E+01	< 1.3E+01	< 8.0E+00	< 6.1E+00	< 3.7E+01	< 1.1E+01
MW-205	11/9/2022	pCi/L	< 5.2E+00	< 6.1E+00	< 1.5E+01	< 7.3E+00	< 1.3E+01	< 8.1E+00	< 1.1E+01	< 1.4E+01	< 6.9E+00	< 6.2E+00	< 3.2E+01	< 1.4E+01
MW-205	11/9/2022	pCi/L	< 7.0E+00	< 7.7E+00	< 1.4E+01	< 7.6E+00	< 1.7E+01	< 5.7E+00	< 1.3E+01	< 1.1E+01	< 7.6E+00	< 8.3E+00	< 3.5E+01	< 1.4E+01
MW-209	11/9/2022	pCi/L	< 6.0E+00	< 7.1E+00	< 1.3E+01	< 8.5E+00	< 8.5E+00	< 7.2E+00	< 1.1E+01	< 1.2E+01	< 9.1E+00	< 6.8E+00	< 3.8E+01	< 1.5E+01
MW-209	11/9/2022	pCi/L	< 6.6E+00	< 5.0E+00	< 1.5E+01	< 5.1E+00	< 1.0E+01	< 7.1E+00	< 1.1E+01	< 1.0E+01	< 7.2E+00	< 6.3E+00	< 3.1E+01	< 5.7E+00
MW-211	11/9/2022	pCi/L	< 6.3E+00	< 6.5E+00	< 1.7E+01	< 8.6E+00	< 1.1E+01	< 8.7E+00	< 1.1E+01	< 1.2E+01	< 8.3E+00	< 8.5E+00	< 3.9E+01	< 7.6E+00
MW-211	11/9/2022	pCi/L	< 7.1E+00	< 4.1E+00	< 1.5E+01	< 7.3E+00	< 1.4E+01	< 7.9E+00	< 9.2E+00	< 1.4E+01	< 8.2E+00	< 6.5E+00	< 3.7E+01	< 9.2E+00
MW-213	11/9/2022	pCi/L	< 5.8E+00	< 6.3E+00	< 1.1E+01	< 7.6E+00	< 1.2E+01	< 6.9E+00	< 1.1E+01	< 1.1E+01	< 5.9E+00	< 7.7E+00	< 3.3E+01	< 1.2E+01
MW-219	11/9/2022	pCi/L	< 8.4E+00	< 6.6E+00	< 1.5E+01	< 7.1E+00	< 1.5E+01	< 8.0E+00	< 1.1E+01	< 1.1E+01	< 9.3E+00	< 7.9E+00	< 1.9E+01	< 1.0E+01
MW-225	11/9/2022	pCi/L	< 6.8E+00	< 8.1E+00	< 1.8E+01	< 9.0E+00	< 1.6E+01	< 8.2E+00	< 1.5E+01	< 9.4E+00	< 8.3E+00	< 7.5E+00	< 3.8E+01	< 1.2E+01
MW-225	11/9/2022	pCi/L	< 7.8E+00	< 6.4E+00	< 1.2E+01	< 6.9E+00	< 1.5E+01	< 6.2E+00	< 1.1E+01	< 1.0E+01	< 5.1E+00	< 6.6E+00	< 2.4E+01	< 1.4E+01

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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	11/9/2022	pCi/L	< 6.7E+00	< 8.5E+00	< 1.7E+01	< 1.1E+01	< 1.8E+01	< 8.3E+00	< 1.1E+01	< 1.4E+01	< 5.7E+00	< 7.7E+00	< 2.7E+01	< 1.1E+01
MW-233	11/9/2022	pCi/L	< 8.1E+00	< 7.3E+00	< 1.0E+01	< 9.1E+00	< 1.6E+01	< 8.2E+00	< 1.1E+01	< 1.2E+01	< 8.3E+00	< 8.6E+00	< 3.6E+01	< 1.5E+01
MW-235	11/9/2022	pCi/L	< 6.4E+00	< 7.7E+00	< 1.5E+01	< 8.7E+00	< 1.1E+01	< 5.6E+00	< 9.7E+00	< 1.1E+01	< 5.7E+00	< 7.4E+00	< 3.9E+01	< 1.4E+01
PZ-03	11/9/2022	pCi/L	< 7.5E+00	< 7.4E+00	< 1.2E+01	< 8.9E+00	< 1.2E+01	< 8.7E+00	< 1.2E+01	< 1.4E+01	< 5.4E+00	< 7.2E+00	< 3.2E+01	< 1.2E+01
T-14	11/9/2022	pCi/L	< 7.0E+00	< 5.0E+00	< 1.7E+01	< 7.8E+00	< 1.6E+01	< 9.6E+00	< 1.3E+01	< 1.1E+01	< 8.7E+00	< 7.6E+00	< 4.0E+01	< 1.0E+01
MW-106	11/10/2022	pCi/L	< 7.0E+00	< 6.2E+00	< 1.3E+01	< 6.8E+00	< 1.4E+01	< 5.6E+00	< 1.3E+01	< 1.1E+01	< 7.2E+00	< 6.3E+00	< 3.5E+01	< 9.3E+00
MW-107	11/10/2022	pCi/L	< 5.6E+00	< 7.3E+00	< 1.3E+01	< 7.6E+00	< 1.2E+01	< 5.6E+00	< 1.5E+01	< 1.3E+01	< 7.2E+00	< 6.1E+00	< 3.5E+01	< 9.2E+00
MW-108	11/10/2022	pCi/L	< 6.4E+00	< 7.1E+00	< 1.1E+01	< 7.4E+00	< 1.2E+01	< 5.5E+00	< 8.6E+00	< 1.2E+01	< 9.0E+00	< 7.8E+00	< 2.9E+01	< 1.5E+01
MW-132	11/10/2022	pCi/L	< 6.5E+00	< 8.1E+00	< 1.6E+01	< 9.4E+00	< 1.4E+01	< 7.1E+00	< 1.3E+01	< 1.3E+01	< 7.7E+00	< 6.4E+00	< 3.9E+01	< 1.2E+01
MW-134	11/10/2022	pCi/L	< 6.7E+00	< 7.2E+00	< 1.6E+01	< 7.7E+00	< 1.0E+01	< 5.8E+00	< 1.1E+01	< 1.1E+01	< 1.0E+01	< 7.0E+00	< 3.4E+01	< 1.4E+01
MW-169	11/10/2022	pCi/L	< 6.4E+00	< 5.9E+00	< 1.3E+01	< 7.6E+00	< 1.7E+01	< 6.8E+00	< 1.3E+01	< 9.8E+00	< 8.6E+00	< 9.3E+00	< 3.7E+01	< 1.2E+01
MW-172	11/10/2022	pCi/L	< 7.7E+00	< 7.5E+00	< 1.3E+01	< 8.0E+00	< 1.8E+01	< 8.7E+00	< 1.3E+01	< 1.4E+01	< 8.7E+00	< 6.7E+00	< 3.8E+01	< 8.6E+00
MW-188	11/10/2022	pCi/L	< 8.2E+00	< 5.0E+00	< 1.1E+01	< 7.6E+00	< 9.6E+00	< 6.2E+00	< 1.4E+01	< 1.1E+01	< 6.3E+00	< 6.8E+00	< 3.3E+01	< 1.2E+01
MW-207	11/10/2022	pCi/L	< 5.2E+00	< 8.1E+00	< 1.5E+01	< 8.8E+00	< 1.3E+01	< 7.5E+00	< 1.6E+01	< 1.2E+01	< 7.5E+00	< 8.4E+00	< 2.9E+01	< 1.1E+01
MW-215	11/10/2022	pCi/L	< 6.6E+00	< 5.4E+00	< 1.9E+01	< 8.7E+00	< 1.6E+01	< 7.7E+00	< 1.2E+01	< 1.1E+01	< 7.3E+00	< 5.3E+00	< 3.6E+01	< 7.1E+00
MW-217	11/10/2022	pCi/L	< 6.7E+00	< 6.2E+00	< 1.5E+01	< 9.2E+00	< 1.5E+01	< 7.7E+00	< 1.4E+01	< 1.3E+01	< 7.5E+00	< 7.0E+00	< 4.1E+01	< 9.9E+00
MW-227	11/10/2022	pCi/L	< 5.2E+00	< 6.7E+00	< 1.3E+01	< 7.3E+00	< 1.6E+01	< 6.6E+00	< 1.3E+01	< 1.0E+01	< 5.2E+00	< 6.9E+00	< 2.7E+01	< 6.7E+00

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-229	11/10/2022	pCi/L	< 6.6E+00	< 8.7E+00	< 1.3E+01	< 6.0E+00	< 1.2E+01	< 7.2E+00	< 1.1E+01	< 1.4E+01	< 7.7E+00	< 8.7E+00	< 3.2E+01	< 1.3E+01
SW-103	11/10/2022	pCi/L	< 5.7E+00	< 8.5E+00	< 1.3E+01	< 4.2E+00	< 1.7E+01	< 6.1E+00	< 1.0E+01	< 1.2E+01	< 7.9E+00	< 6.2E+00	< 3.3E+01	< 1.3E+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-125	2/1/2022	pCi/L	< 7.5E+01	< 2.0E+01	< 7.5E+00	< 8.8E-01	< 2.2E-01	< 5.1E-02	< 3.9E-01
MW-157	11/9/2022	pCi/L	< 6.2E+01	< 1.7E+01	< 5.6E+00	< 2.2E+00	< 1.3E-01	< 3.4E-02	< 7.7E-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-100	2/1/2022	pCi/L	< 5.4E+02		MW-156	2/1/2022	pCi/L	1.10E+04
MW-124	2/1/2022	pCi/L	9.10E+04		MW-157	2/1/2022	pCi/L	2.00E+05
MW-125	2/1/2022	pCi/L	3.70E+05		MW-158	2/1/2022	pCi/L	2.70E+05
MW-126	2/1/2022	pCi/L	2.90E+04		MW-159	2/1/2022	pCi/L	4.50E+04
MW-142	2/1/2022	pCi/L	< 5.5E+02		MW-162	2/1/2022	pCi/L	< 5.6E+02
MW-142	2/1/2022	pCi/L	< 5.3E+02		MW-164	2/1/2022	pCi/L	< 5.5E+02
MW-144	2/1/2022	pCi/L	1.10E+03		MW-165	2/1/2022	pCi/L	< 5.9E+02
MW-146	2/1/2022	pCi/L	7.70E+04		MW-178	2/1/2022	pCi/L	7.60E+03
MW-147	2/1/2022	pCi/L	5.70E+03		MW-178	2/1/2022	pCi/L	9.30E+03
MW-148	2/1/2022	pCi/L	2.30E+04		MW-179	2/1/2022	pCi/L	2.00E+05
MW-151	2/1/2022	pCi/L	< 5.7E+02		MW-185	2/1/2022	pCi/L	< 5.3E+02
MW-155	2/1/2022	pCi/L	1.10E+05		MW-186	2/1/2022	pCi/L	< 5.4E+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-187	2/1/2022	pCi/L	< 5.4E+02		MW-153	2/2/2022	pCi/L	1.60E+03
MW-188	2/1/2022	pCi/L	< 5.1E+02		MW-161	2/2/2022	pCi/L	3.70E+03
MW-211	2/1/2022	pCi/L	1.10E+03		MW-170	2/2/2022	pCi/L	< 5.4E+02
MW-211	2/1/2022	pCi/L	1.00E+03		MW-182	2/2/2022	pCi/L	< 5.1E+02
MW-110	2/2/2022	pCi/L	1.90E+04		MW-209	2/2/2022	pCi/L	< 5.4E+02
MW-112	2/2/2022	pCi/L	2.60E+03		MW-221	2/2/2022	pCi/L	1.30E+03
MW-114	2/2/2022	pCi/L	2.10E+03		MW-223	2/2/2022	pCi/L	< 5.3E+02
MW-116	2/2/2022	pCi/L	5.40E+03		MW-223	2/2/2022	pCi/L	< 5.6E+02
MW-118	2/2/2022	pCi/L	4.00E+03		PZ-01	2/2/2022	pCi/L	1.60E+04
MW-137	2/2/2022	pCi/L	5.40E+03		SW-102	2/2/2022	pCi/L	< 5.6E+02
MW-139	2/2/2022	pCi/L	< 5.3E+02		SW-103	2/2/2022	pCi/L	< 5.7E+02
MW-141	2/2/2022	pCi/L	2.10E+03		SW-104	2/2/2022	pCi/L	< 5.5E+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-148	2/28/2022	pCi/L	1.10E+04		MW-161	5/24/2022	pCi/L	1.90E+03
MW-124	5/24/2022	pCi/L	4.80E+04		MW-162	5/24/2022	pCi/L	< 4.9E+02
MW-125	5/24/2022	pCi/L	2.70E+05		MW-185	5/24/2022	pCi/L	< 4.9E+02
MW-142	5/24/2022	pCi/L	9.90E+02		MW-205	5/24/2022	pCi/L	< 5.2E+02
MW-142	5/24/2022	pCi/L	6.20E+02		MW-227	5/24/2022	pCi/L	< 5.4E+02
MW-144	5/24/2022	pCi/L	< 4.8E+02		MW-100	5/25/2022	pCi/L	< 4.9E+02
MW-146	5/24/2022	pCi/L	5.50E+04		MW-106	5/25/2022	pCi/L	< 6.9E+02
MW-147	5/24/2022	pCi/L	4.40E+03		MW-110	5/25/2022	pCi/L	1.80E+04
MW-148	5/24/2022	pCi/L	3.10E+03		MW-112	5/25/2022	pCi/L	2.80E+03
MW-155	5/24/2022	pCi/L	1.20E+05		MW-114	5/25/2022	pCi/L	1.60E+03
MW-158	5/24/2022	pCi/L	2.10E+05		MW-116	5/25/2022	pCi/L	4.00E+03
MW-159	5/24/2022	pCi/L	3.90E+04		MW-118	5/25/2022	pCi/L	3.10E+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-120	5/25/2022	pCi/L	< 7.0E+02		MW-153	5/25/2022	pCi/L	1.60E+03
MW-122R	5/25/2022	pCi/L	< 4.8E+02		MW-156	5/25/2022	pCi/L	1.20E+04
MW-122R	5/25/2022	pCi/L	< 5.2E+02		MW-157	5/25/2022	pCi/L	2.30E+05
MW-126	5/25/2022	pCi/L	1.50E+04		MW-164	5/25/2022	pCi/L	< 4.9E+02
MW-128	5/25/2022	pCi/L	< 5.5E+02		MW-165	5/25/2022	pCi/L	< 5.2E+02
MW-130	5/25/2022	pCi/L	< 5.4E+02		MW-167	5/25/2022	pCi/L	< 5.0E+02
MW-131	5/25/2022	pCi/L	< 5.3E+02		MW-170	5/25/2022	pCi/L	< 5.1E+02
MW-132	5/25/2022	pCi/L	< 5.2E+02		MW-178	5/25/2022	pCi/L	7.20E+03
MW-137	5/25/2022	pCi/L	3.50E+03		MW-179	5/25/2022	pCi/L	4.80E+04
MW-139	5/25/2022	pCi/L	< 5.4E+02		MW-180	5/25/2022	pCi/L	< 5.5E+02
MW-141	5/25/2022	pCi/L	1.60E+03		MW-182	5/25/2022	pCi/L	< 5.3E+02
MW-151	5/25/2022	pCi/L	< 5.1E+02		MW-186	5/25/2022	pCi/L	< 5.2E+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-187	5/25/2022	pCi/L	< 4.9E+02		MW-231	5/25/2022	pCi/L	< 5.1E+02
MW-188	5/25/2022	pCi/L	< 5.4E+02		MW-231	5/25/2022	pCi/L	< 5.1E+02
MW-201	5/25/2022	pCi/L	< 4.9E+02		MW-233	5/25/2022	pCi/L	< 6.7E+02
MW-209	5/25/2022	pCi/L	< 5.3E+02		MW-235	5/25/2022	pCi/L	< 6.9E+02
MW-211	5/25/2022	pCi/L	9.00E+02		PZ-01	5/25/2022	pCi/L	1.70E+04
MW-211	5/25/2022	pCi/L	1.00E+03		PZ-01	5/25/2022	pCi/L	1.60E+04
MW-213	5/25/2022	pCi/L	< 5.3E+02		PZ-03	5/25/2022	pCi/L	< 5.2E+02
MW-215	5/25/2022	pCi/L	< 5.2E+02		MW-134	5/26/2022	pCi/L	< 6.9E+02
MW-217	5/25/2022	pCi/L	< 4.8E+02		MW-169	5/26/2022	pCi/L	< 6.8E+02
MW-219	5/25/2022	pCi/L	< 6.9E+02		MW-207	5/26/2022	pCi/L	< 5.4E+02
MW-221	5/25/2022	pCi/L	1.10E+03		MW-223	5/26/2022	pCi/L	< 5.1E+02
MW-225	5/25/2022	pCi/L	< 5.5E+02		MW-223	5/26/2022	pCi/L	< 5.2E+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-229	5/26/2022	pCi/L	< 5.2E+02		MW-146	8/30/2022	pCi/L	4.20E+04
SW-102	5/26/2022	pCi/L	< 5.5E+02		MW-147	8/30/2022	pCi/L	1.30E+04
SW-103	5/26/2022	pCi/L	< 6.4E+02		MW-148	8/30/2022	pCi/L	< 5.7E+02
SW-104	5/26/2022	pCi/L	< 7.0E+02		MW-151	8/30/2022	pCi/L	< 5.8E+02
MW-100	8/30/2022	pCi/L	< 5.5E+02		MW-155	8/30/2022	pCi/L	1.40E+05
MW-124	8/30/2022	pCi/L	4.70E+04		MW-156	8/30/2022	pCi/L	1.80E+04
MW-125	8/30/2022	pCi/L	2.60E+05		MW-157	8/30/2022	pCi/L	2.90E+05
MW-125	8/30/2022	pCi/L	2.30E+05		MW-158	8/30/2022	pCi/L	1.70E+05
MW-126	8/30/2022	pCi/L	1.80E+04		MW-159	8/30/2022	pCi/L	5.20E+04
MW-126	8/30/2022	pCi/L	1.60E+04		MW-162	8/30/2022	pCi/L	< 5.8E+02
MW-142	8/30/2022	pCi/L	9.70E+02		MW-164	8/30/2022	pCi/L	< 5.5E+02
MW-144	8/30/2022	pCi/L	< 6.0E+02		MW-164	8/30/2022	pCi/L	< 4.9E+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-165	8/30/2022	pCi/L	< 5.9E+02		MW-114	8/31/2022	pCi/L	1.90E+03
MW-178	8/30/2022	pCi/L	4.20E+03		MW-116	8/31/2022	pCi/L	2.80E+03
MW-179	8/30/2022	pCi/L	1.20E+05		MW-118	8/31/2022	pCi/L	3.10E+03
MW-185	8/30/2022	pCi/L	< 5.5E+02		MW-137	8/31/2022	pCi/L	6.90E+03
MW-186	8/30/2022	pCi/L	< 5.4E+02		MW-139	8/31/2022	pCi/L	< 5.0E+02
MW-187	8/30/2022	pCi/L	< 5.5E+02		MW-141	8/31/2022	pCi/L	1.70E+03
MW-188	8/30/2022	pCi/L	< 5.5E+02		MW-153	8/31/2022	pCi/L	1.30E+03
MW-211	8/30/2022	pCi/L	1.40E+03		MW-161	8/31/2022	pCi/L	2.10E+03
MW-211	8/30/2022	pCi/L	1.10E+03		MW-170	8/31/2022	pCi/L	< 5.6E+02
MW-110	8/31/2022	pCi/L	1.70E+04		MW-182	8/31/2022	pCi/L	< 5.9E+02
MW-110	8/31/2022	pCi/L	1.80E+04		MW-209	8/31/2022	pCi/L	< 5.6E+02
MW-112	8/31/2022	pCi/L	2.30E+03		MW-221	8/31/2022	pCi/L	1.10E+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-223	8/31/2022	pCi/L	< 5.4E+02		MW-137	11/8/2022	pCi/L	9.40E+03
PZ-01	8/31/2022	pCi/L	2.60E+04		MW-137	11/8/2022	pCi/L	9.40E+03
SW-102	8/31/2022	pCi/L	< 5.4E+02		MW-141	11/8/2022	pCi/L	1.40E+03
SW-103	8/31/2022	pCi/L	< 4.6E+02		MW-142	11/8/2022	pCi/L	1.00E+03
SW-104	8/31/2022	pCi/L	< 4.9E+02		MW-142	11/8/2022	pCi/L	8.40E+02
MW-110	11/8/2022	pCi/L	2.30E+04		MW-144	11/8/2022	pCi/L	< 6.2E+02
MW-112	11/8/2022	pCi/L	2.70E+03		MW-146	11/8/2022	pCi/L	3.00E+04
MW-114	11/8/2022	pCi/L	1.20E+03		MW-147	11/8/2022	pCi/L	1.30E+04
MW-116	11/8/2022	pCi/L	5.60E+03		MW-148	11/8/2022	pCi/L	1.00E+03
MW-118	11/8/2022	pCi/L	2.90E+03		MW-153	11/8/2022	pCi/L	1.10E+03
MW-124	11/8/2022	pCi/L	9.30E+04		MW-158	11/8/2022	pCi/L	2.00E+05
MW-125	11/8/2022	pCi/L	2.80E+05		MW-159	11/8/2022	pCi/L	4.50E+04

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-161	11/8/2022	pCi/L	1.30E+03		MW-104	11/9/2022	pCi/L	< 6.2E+02
MW-161	11/8/2022	pCi/L	1.30E+03		MW-111	11/9/2022	pCi/L	< 6.2E+02
MW-162	11/8/2022	pCi/L	< 6.1E+02		MW-120	11/9/2022	pCi/L	< 6.7E+02
MW-174	11/8/2022	pCi/L	< 5.7E+02		MW-122R	11/9/2022	pCi/L	< 5.7E+02
MW-221	11/8/2022	pCi/L	1.30E+03		MW-126	11/9/2022	pCi/L	1.30E+04
MW-223	11/8/2022	pCi/L	< 5.2E+02		MW-128	11/9/2022	pCi/L	< 5.6E+02
PZ-01	11/8/2022	pCi/L	3.10E+04		MW-130	11/9/2022	pCi/L	< 6.1E+02
MW-04	11/9/2022	pCi/L	< 5.6E+02		MW-131	11/9/2022	pCi/L	< 6.7E+02
MW-05	11/9/2022	pCi/L	< 6.0E+02		MW-139	11/9/2022	pCi/L	< 6.0E+02
MW-08	11/9/2022	pCi/L	< 6.0E+02		MW-14	11/9/2022	pCi/L	< 5.9E+02
MW-100	11/9/2022	pCi/L	< 5.7E+02		MW-151	11/9/2022	pCi/L	< 5.6E+02
MW-103	11/9/2022	pCi/L	< 6.4E+02		MW-155	11/9/2022	pCi/L	8.70E+04

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Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-156	11/9/2022	pCi/L	3.00E+04		MW-187	11/9/2022	pCi/L	< 6.5E+02
MW-157	11/9/2022	pCi/L	2.30E+05		MW-201	11/9/2022	pCi/L	< 6.0E+02
MW-164	11/9/2022	pCi/L	< 6.2E+02		MW-205	11/9/2022	pCi/L	< 5.7E+02
MW-165	11/9/2022	pCi/L	< 6.0E+02		MW-205	11/9/2022	pCi/L	< 6.2E+02
MW-167	11/9/2022	pCi/L	< 6.4E+02		MW-209	11/9/2022	pCi/L	< 6.2E+02
MW-170	11/9/2022	pCi/L	< 6.3E+02		MW-209	11/9/2022	pCi/L	< 6.0E+02
MW-178	11/9/2022	pCi/L	3.10E+03		MW-211	11/9/2022	pCi/L	1.20E+03
MW-179	11/9/2022	pCi/L	1.30E+05		MW-211	11/9/2022	pCi/L	1.20E+03
MW-18	11/9/2022	pCi/L	< 6.4E+02		MW-213	11/9/2022	pCi/L	< 6.5E+02
MW-180	11/9/2022	pCi/L	< 6.3E+02		MW-219	11/9/2022	pCi/L	< 6.0E+02
MW-182	11/9/2022	pCi/L	< 5.6E+02		MW-225	11/9/2022	pCi/L	< 5.9E+02
MW-185	11/9/2022	pCi/L	< 6.2E+02		MW-225	11/9/2022	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-231	11/9/2022	pCi/L	< 6.0E+02		MW-169	11/10/2022	pCi/L	< 6.4E+02
MW-233	11/9/2022	pCi/L	< 6.1E+02		MW-172	11/10/2022	pCi/L	< 6.2E+02
MW-235	11/9/2022	pCi/L	< 5.9E+02		MW-188	11/10/2022	pCi/L	< 6.0E+02
PZ-03	11/9/2022	pCi/L	< 6.4E+02		MW-207	11/10/2022	pCi/L	< 5.6E+02
T-14	11/9/2022	pCi/L	< 6.6E+02		MW-215	11/10/2022	pCi/L	< 6.1E+02
MW-106	11/10/2022	pCi/L	< 6.0E+02		MW-217	11/10/2022	pCi/L	< 6.2E+02
MW-107	11/10/2022	pCi/L	< 5.6E+02		MW-227	11/10/2022	pCi/L	< 6.7E+02
MW-108	11/10/2022	pCi/L	< 6.2E+02		MW-229	11/10/2022	pCi/L	< 6.2E+02
MW-132	11/10/2022	pCi/L	< 6.3E+02		SW-103	11/10/2022	pCi/L	< 6.2E+02
MW-134	11/10/2022	pCi/L	< 5.8E+02		SW-104	11/10/2022	pCi/L	< 6.1E+02