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DTE

April 29, 2022
NRC-22-0021

TS 5.6.2
TS 5.6.3
10 CFR 72.44(d)(3)

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

Fermi 2 Power Plant
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Annual Radioactive Effluent Release Report
and Radiological Environmental Operating Report

In accordance with Technical Specifications (TS) 5.6.2 and 5.6.3, DTE Electric Company hereby submits the Annual Radioactive Effluent Release Report and the Annual Radiological Environmental Operating Report for Fermi 2. Enclosure 1 provides the 2021 Annual Radioactive Effluent Release Report. Enclosure 2 provides the 2021 Annual Radiological Environmental Operating Report. Both reports cover the time period from January 1, 2021 through December 31, 2021.

Enclosure 1 also includes the Independent Spent Fuel Storage Installation (ISFSI) Environmental Report as required by 10 CFR 72.44(d)(3). The ISFSI Environmental Report covers the time period from January 1, 2021 through December 31, 2021.

No new commitments are being made in this submittal.

Should you have any questions regarding these reports, please contact Ms. Jerri Walters, Manager - Radiation Protection, at (734) 586-7066.

Sincerely,

Peter Dietrich
Senior Site Vice President and Chief Nuclear Officer

Enclosures: 1) Annual Radioactive Effluent Release Report
2) Annual Radiological Environmental Operating Report

cc: NRC Project Manager
NRC Resident Office
Regional Administrator, Region III

Enclosure 1 to
NRC-22-0021

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Fermi 2 Annual Radioactive Effluent Release Report

FERMI 2 POWER PLANT

DTE Electric Company

OPERATING LICENSE NO. NPF - 43

2021

Annual Radioactive Effluent Release Report

for the period of
January 1, 2021 through December 31, 2021

Prepared by:

Fermi 2
Radiological Engineering

Table of Contents *Page*

List of Figures *Page*

List of Tables *Page*

Executive Summary

This report is published to provide information regarding radioactive effluent monitoring at the Fermi 2 nuclear power plant, including the Independent Spent Fuel Storage Installation (ISFSI). The 2021 Annual Radioactive Effluent Release Report covers the period from January 1, 2021 through December 31, 2021.

The Radioactive Effluent Release Report is produced annually, to document plant releases and offsite dose resulting from these releases. The data presented indicate that the operation of Fermi 2 results in offsite radiation exposures that are well below the applicable allowable levels set by the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA).

There were no releases of liquid radioactive effluents from Fermi 2 in 2021. Data on releases of radioactive isotopes in gaseous effluents, as well as regulatory limits and sampling methods for these releases, are contained in the body of the report and in Appendix A.

Regulatory limits for radioactive effluents pertain to allowable offsite doses rather than to quantities of radioactivity released. The highest potential single organ dose to a person living offsite due to iodines, particulates, tritium, and carbon-14 released from the plant was calculated to be 0.63 mrem to the bone. This corresponds to 4.2% of the federal limit of 15 mrem to any organ specified in 10 CFR 50, Appendix I.

During 2021, no direct radiation dose to members of the public beyond the site boundary was attributed to the operation of Fermi 2, based on analysis of readings of thermoluminescent dosimeters (TLDs) placed at various locations near the Fermi site. The offsite dose due to effluents is a small fraction of the 40 CFR 190 limits. Therefore, the combined direct radiation and effluent dose due to Fermi 2 was in compliance with 40 CFR 190 in 2021.

Data on radioactivity contained in radioactive waste shipments from Fermi 2 to points offsite are contained in the body of the report and in Appendix A. Appendix B of this report describes the Fermi Integrated Ground Water Protection Program. This program was established as part of the site's commitment to conformance with an industry-wide ground water protection initiative. This appendix also contains the results of 2021 quarterly ground water sampling, from 60 monitor wells around Fermi 2 (ground water sampling has been performed under this program since the fall of 2007). Appendix C of this report provides data on tritium concentrations in rainwater samples collected onsite which represent the recapture phenomenon as described in NRC RIS 2008-03. Appendix D of this report contains the meteorological joint frequency distribution tables of wind speed measurements for 2021. Appendix E and Appendix F are revisions 24 and 25 to the ODCM. Additional sections of the report (in the report body) address Off Site Dose Calculation Manual (ODCM) required monitors which were out of service for more than 30 days in 2021, ODCM revisions, major changes in radioactive waste processing, the contents of outside temporary tanks, abnormal releases, errata to previous years' reports, and ISFSI monitoring.

Introduction

During the normal operation of a nuclear power plant, most of the fission products are retained within the fuel and fuel cladding. However, small amounts of radioactive fission products and trace amounts of the component and structure surface corrosion products that have been activated are present in the primary coolant water, as well as tritium and carbon-14. The five types of radioactive material released are noble gases, iodines, particulates, tritium, and carbon-14.

Noble Gases

Some of the fission products released in airborne effluents are radioactive isotopes of noble gases, such as xenon and krypton. These noble gases are released continuously at low levels while the reactor is operating. Noble gas releases to the environment are reduced by plant systems which delay release of these gases from the plant, which allows a portion of the noble gas activity to decay within plant systems prior to release.

Noble gases are biologically and chemically nonreactive and are readily dispersed in the atmosphere. They do not concentrate in humans or other organisms; however, they contribute to human radiation dose by being an external source of radiation exposure to the body.

Iodines and Particulates

Fermi 2 calculates offsite dose due to releases of iodine-131 and iodine-133, which are radioisotopes of iodine with half-lives of 8 days and 1 day, respectively, and particulates with half-lives greater than 8 days in gaseous and liquid effluents, and tritium. The principal radioactive particulates released are fission products (e.g., yttrium-91m and barium-139) and activation products (e.g., cobalt-58 and cobalt-60). Gaseous and liquid processing systems, and radioactive waste systems, minimize their discharge.

The main contribution of radioactive iodine to human radiation dose is to the thyroid gland, where the body concentrates iodine. This exposure results from inhalation or ingestion of these iodines. Radioactive isotopes such as cesiums and cobalts, when ingested or inhaled, contribute to radiation exposure of tissues such as the muscle, liver, and intestines. These iodines and particulates are also a source of external radiation exposure if deposited on the ground.

Tritium

For a Boiling Water Reactor (BWR) plant like Fermi 2, tritium, a radioactive isotope of hydrogen with a half-life of 12.3 years, is released predominantly in the chemical form of tritiated water HTO (^{3}HOH), in which a tritium nucleus replaces the proton in one of the hydrogen atoms in a regular water molecule (H_2O). It is detected at Fermi 2 primarily in ventilation exhaust samples. The total tritium activity released in 2021 is 55.8 curies, as shown in Table 4.

A much smaller amount of tritium was released from the Condensate Storage and Condensate Return Tanks, due to water level changes which push air out of the tanks. It was calculated based on saturated water vapor density, tank tritium concentrations in the liquid and changes in tank levels. This non-ventilation system tritium release was calculated to be below 0.02 Ci total for 2021, contributing less than 0.04% of Fermi 2 total tritium releases in 2021.

Carbon-14

Starting in 2009, U.S. nuclear power plants are expected to report releases of carbon-14 (C-14, half-life of approximately 5730 years, decays to N-14 through β^--decay). The releases reported are based on calculations using the thermal power rating of the unit and 2021 monthly capacity factors. These calculations conform to a method recommended by the Electric Power Research Institute (EPRI).

US-NRC Regulatory Guide 1.21, Revision 2 states, "The quantity of C-14 discharged can be estimated by sample measurements or by use of a normalized C-14 source term and scaling factors based on power generation." In a public meeting held on January 20, 2011, US-NRC commission agreed to accept the method developed by the Electric Power Research Institute Technical Report "Estimation of Carbon-14 in Nuclear Power Plant Effluents, EPRI Report 1021106". As a proxy value, EPRI suggested the use of a BWR scale factor of 5.1 Ci per GWth-year thermal power production for C-14 release.

For Boiling Water Reactors, 80-95% of C-14 in airborne releases is in the chemical form of $^{14}CO_2$, 5-20% of C-14 released is in the form of C-14 hydrocarbons (International Atomic Energy Agency, July 2004, Technical Reports Series No. 421, Management of Waste Containing Tritium and Carbon-14). For dose calculation, we followed USNRC Regulatory Guide 1.109 (1977), and conservatively assumed that all C-14 is in the oxide form (CO or CO_2).

The total 2021 C-14 release for Fermi 2 is estimated to be 16.8 curies, as shown in Table 4.

Plant Effluent Monitoring

Effluents are strictly monitored to ensure that radioactivity released to the environment is as low as reasonably achievable and does not exceed regulatory limits. Effluent control includes the operation of monitoring systems, in-plant and environmental sampling and analyses programs, quality assurance programs for effluent and environmental programs, and procedures covering all aspects of effluent and environmental monitoring.

The radioactive waste treatment systems at Fermi 2 are designed to collect, process, and/or delay the release of liquid and gaseous wastes that contain radioactivity. For example, the 2.0 and 2.2 minute holdup pipes delay the release of radioactive gases so that radioactive decay can occur prior to release. The off-gas system provides additional delay for such gases.

Radioactivity monitoring systems are used to verify that all releases are below regulatory limits. These instruments provide a continuous indication of radioactivity present at the release points. Each instrument is equipped with alarms and indicators in the control room. The alarm setpoints are low enough to ensure that applicable limits will not be exceeded. In some cases, these alarms restrict the release. For example, several alarms cause building ventilation systems to be shut down and/or gaseous releases to be diverted to the standby gas treatment system.

All liquid and gaseous radioactive effluents are evaluated to identify the specific concentrations of radionuclides being released. Sampling and analysis provide a more sensitive and precise method of determining effluent composition than monitoring instruments.

A meteorological tower is located on the Fermi 2 site. It is linked to computers that record the meteorological data. This data is used in calculating dispersion and deposition factors, which are essentially dilution factors between plant release points and points offsite. Coupled with the effluent release data, these factors are used to calculate dose to the public.

Beyond the plant, devices maintained in conjunction with the Radiological Environmental Monitoring Program constantly sample the air in the surrounding environment. Also, frequent samples of other environmental media, such as water and vegetation, are collected to verify that the station radiological effluent program is being appropriately implemented without adverse impact to the surrounding environment.

Exposure Pathways to People

Radiological exposure pathways define the methods by which people may become exposed to radioactive material. The major pathways of concern are those that could cause the highest calculated radiation dose. These projected pathways are determined from the type and amount of radioactive material released, the environmental transport mechanism, and the use of the environment. The environmental transport mechanism includes consideration of physical factors, such as the hydrological and meteorological characteristics of the area.

An important factor in evaluating the exposure pathways is the use of the environment. This is evaluated in the annual Land Use Census. Many factors are considered, such as the locations of homes, gardens, and milk or meat animals in the area.

The release of radioactive gaseous effluents involves pathways such as external whole body exposure, deposition of radioactive material on plants, deposition on soil, inhalation and ingestion by animals raised for human consumption, and inhalation by humans. The release of radioactive material in liquid effluents involves pathways such as drinking water and fish consumption.

Although radionuclides can reach humans by many different pathways, some result in greater dose than others. The most significant pathway is the exposure pathway that will provide the greatest dose to a population, or to a specific individual. Identification of the most significant pathway depends on the radionuclides involved, the age and diet of the individual, and the location of the individual's residence. Doses delivered to the total body and to specific organs are calculated. The organ receiving the greatest dose is important in determining compliance with dose limits. The standard assumptions used in dose calculation result in conservative dose estimates.

Dose Assessment

Radiation dose is energy deposited by radiation in an exposed individual. Whole body exposure to radiation involves the exposure of all organs. Most exposures due to external sources of radiation are of this type. Both non-radioactive and radioactive elements can enter the body through inhalation or ingestion. When they do, they are usually not distributed evenly. For example, iodine concentrates in the thyroid gland, cesium collects in muscle and liver tissue, and strontium collects in bone.

The total dose to organs from a given radionuclide depends on the amount of radioactive material present in the organ and the amount of time that the radionuclide remains in the organ. Some radionuclides remain for very short times due to their rapid radioactive decay and/or elimination rate from the body, while other radionuclides may remain in the body for longer periods of time. The form of the radionuclide (soluble vs. insoluble) and the method of uptake also influence residence times in the body.

The maximum dose to the general public in the area surrounding Fermi 2 is calculated for periods of gaseous release and for each liquid release. The dose due to radioactive material released in gaseous effluents is calculated using factors such as the amount of radioactive material released, the concentration beyond the site boundary, the locations of exposure pathways (for example cow milk, goat milk, vegetable gardens and residences), and usage factors (inhalation and food consumption). The dose due to radioactive material released in liquid effluents may be calculated using factors such as radionuclide concentrations, the total volume of liquid released, the total volume of dilution water, near field dilution, and usage factors (water and fish consumption). These calculations produce a conservative estimation of the dose.

For 2021, the maximum offsite dose was conservatively assumed to be received by the “critical receptor” -- a child at the closest residence to the plant, who was exposed by the inhalation pathway, vegetation pathway and direct radiation from material deposited on the ground. (As previously noted, there were no liquid radioactive discharges from Fermi in 2021, as such, there were no liquid radioactive effluent pathways to consider in 2021.) Although there may not be a child living at this residence in any given year, the use of this age group provides conservative dose estimates for comparison with regulatory limits. Similarly, the calculation of dose due to vegetation ingestion (from a garden) at this residence may not apply in any given year, but it also leads to conservative dose estimates. The use of dose pathways and age groups which may be hypothetical is consistent with federal regulatory guidance and with industry practices.

Radioactive Effluent Monitoring Results

This section summarizes the results of effluent monitoring and offsite dose calculation for the year 2021. Calculated offsite doses are compared with Nuclear Regulatory Commission limits, and these limits are summarized in Appendix A. Appendix A also contains a detailed discussion of the methods used to determine quantities of radioactivity released in effluents, the types of solid radioactive waste shipped offsite, as well as tables of individual radionuclides released in effluents and shipped as solid radioactive waste.

Liquid Releases. There were no routine or abnormal releases of liquid radioactive effluents from Fermi 2 in 2021. There has not been a routine liquid radioactive discharge from Fermi 2 since 1994.

Batch and Incidental Gaseous Releases. These gaseous effluent releases include batch releases from primary containment, as well as other small releases from the Condensate Storage Tank and the Condensate Return Tank. In these releases, tritium was the only radioisotope detected. In 2021 there were 14 containment (drywell/torus) ventings and no containment purges in which tritium was released. In purge events the entire volume of the containment (drywell or torus) is assumed to be released; in ventings, a much smaller volume is released. (Noble gases were not detected in containment samples preceding these batch releases in 2021.) The total estimated release from these ventings and incidental releases was less than 0.02 curies of tritium. As in previous years, the amount of radioactivity (tritium) released in containment ventings was very small (less than 0.04%) compared to the amount in continuous releases. All containment batch releases are routed through the monitored reactor building continuous release point, or the standby gas treatment system monitored release point.

Continuous Gaseous Releases. Differences in the quarterly release quantities listed below are primarily due to variable plant conditions, such as startups, shutdowns, maintenance activities and fuel performance. For example, increases in I-131 releases could be due to depressurization events and decreases in I-131 releases may be associated with outage periods; increases in long lived particulate releases could be due to reactor water cleanup system valve leaks or to outage work activities. Reported noble gas levels vary as a function of fuel performance; in 2021 noble gas releases were low due to good fuel performance.

The following tables show the radioactivity released in continuous gaseous releases in 2021.

Table 1 - Fission and Activation Gases (Noble Gases) Summary

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	**2021 Total**
Noble Gases Release (curies)	4.99E-03	Not Detected*	Not Detected*	1.20E-3	6.19E-03

*Individual LLD's are listed in Appendix A

Table 2 - Radioiodine I-131 Summary

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	**2021 Total**
I-131 Release (curies)	8.53E-05	7.51E-05	1.00-04	4.15E-04	6.75E-04

Table 3 - Particulates with Half-Life Longer than 8 Days Summary

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	**2021 Total**
Particulates with half-lives > 8 days (curies)	6.37E-06	4.71E-05	8.48E-05	1.07E-04	2.45E-04
Gross Alpha Radioactivity (curies)	<5.3E-15* µCi/cc	<5.3E-15* µCi/cc	<5.3E-15* µCi/cc	<5.3E-15* µCi/cc	<5.3E-15* µCi/cc

*In the above table, the "less than" value in units of microcuries per cubic centimeter (µCi/cc) is used when no radioactivity was detected and represents the lower limit of detection (LLD) value for a single sample.

Table 4 - Tritium (H-3) and Carbon-14 (C-14) Summary

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	**2021 Total**
Tritium Release (curies)	1.07E+01	9.24E+00	8.82E+00	2.70E+01	5.58E+01
C-14 Release* (curies)	4.36E+00	4.02E+00	4.29E+00	4.09E+00	1.68E+01

*Carbon-14 releases are calculated based on a function of power level times time.

The offsite dose impact of the above releases was evaluated by calculating organ doses to the assumed most highly exposed individual living near the plant (a child in residence 0.71-mile WNW) due to I-131, I-133, tritium, C-14 and particulates with half-lives greater than 8 days. The most significant pathways of exposure to this individual are assumed to be inhalation, vegetation ingestion, and direct radiation from material deposited on the ground. The results of this calculation, which employs conservative assumptions, are listed in the following table:

Table 5 - Single Organ and Total Body Dose for 2021

Organ	2021 Gaseous Effluent Dose to Receptor with Highest Single Organ Dose
Bone	6.27E-01mrem
Liver	1.40E-01mrem
Thyroid	1.53E-01mrem
Kidney	1.40E-01mrem
Lung	1.40E-01mrem
GI-LLI	1.40E-01mrem
Total Body	1.40E-01mrem

The highest single organ dose is 0.627 mrem to the bone. This corresponds to 4.2% of the federal limit of 15 mrem specified in 10 CFR 50, Appendix-I. (The Fermi 2 Offsite Dose Calculation Manual requires maximum receptor dose calculation for releases of I-131, I-133, H-3, and particulates with half-lives greater than 8 days; for these isotopes, not including C-14, the thyroid is the highest dose organ.)

In addition, gamma and beta air doses at the site boundary (0.57mile NW) due to noble gas releases were calculated. In 2021, gamma air dose was 1.44E-6 mrad (compared to the 10 mrad annual limit); beta air dose in 2021 was 5.53E-7 mrad (compared to the 20 mrad annual limit).

Title 40, Part 190 of the Code of Federal Regulations requires that dose to an individual in the unrestricted area from the uranium fuel cycle facility, including direct radiation dose, be limited to 25 mrem/year to the total body and 75 mrem/year to the thyroid. Based on Table 5 above, the offsite dose due to effluents is 0.56% and 0.20% of 40 CFR 190 limits for the total body and thyroid, respectively. Also, Fermi 1 was not monitored for effluents in 2021 since no work was performed in a Fermi 1 Radiologically Controlled Area that would require ventilation and make detectable effluent releases likely.

The next closest uranium fuel cycle facility, the Davis-Besse Nuclear Plant, located near Oak Harbor, Ohio, is similar to Fermi in that it releases low amounts of radioactive material, but it is too far from Fermi (25 miles direct distance) to contribute significantly to Fermi area doses. Therefore, Fermi 2 was in compliance with the fuel cycle limits of 40 CFR 190 in 2021.

Potential dose to members of the public at Fermi 2 due to all radioactive effluents, including noble gases, was also calculated. Fermi 2 considers persons touring the site (16 hours/year), and persons performing work onsite but not employed by Fermi 2, either directly or under contract (400 hours/year), to be exposed as members of the public. The average dose to a member of the public at Fermi 2 in 2021 was less than 0.02 mrem to the total body. This dose is a small fraction of the 100 mrem/year limit for individual members of the public due to licensed operation of the plant provided in 10 CFR 20.1301.

Summary of Radioactive Waste Shipments

The radioactivity and volume of Fermi 2 solid waste shipped offsite in 2021 is summarized in the following table:

Table 6 - Waste Shipped Offsite

Type of Waste	Units	12 Month Period	Est. total activity error, %
Spent resins, sludges, etc.	m^3 curies	9.08E+01 6.77E+02	± 25
Dry compressible waste, contaminated equipment, etc.	m^3 curies	8.83E+02 5.47E-01	± 25
Irradiated components, control rods, etc.	m^3 curies	0.00E+00 0.00E+00	N/A
Other			
Filters	m^3 curies	0.00E+00 0.00E+00	± 25
Aqueous Liquids	m^3 curies	3.62E+01 1.07E-01	± 25

Radioactive solid waste shipments from Fermi 2 in 2021 (to either disposal or to intermediate processors) are summarized in the following table:

Table 7 – Waste shipments

Number of shipments	Mode of transportation	Destination
15	Highway	EnergySolutions, BCO, Oak Ridge, TN
19	Highway	EnergySolutions, CWF, Clive, UT

Additional Required Information

Appendices

Appendix A, Effluent and Radioactive Waste Data, provides more detailed data on radiological effluents and radioactive waste shipments.

Appendix B, Ground Water Protection Program Data and Analysis, contains a description of the Fermi 2 Integrated Groundwater Protection Program, 2021 sampling data for this program, and a discussion of sampling results.

Appendix C, Rainwater Data and Analysis, contains data on tritium concentrations in rainwater collected onsite and explains the significance of this data.

Appendix D, 2021 Meteorological Joint Frequency Distributions, contains meteorological joint frequency distributions of wind speed and wind direction by atmospheric stability class, for all of 2021. Fermi 2 meteorological data for 2021 were analyzed, and the Joint Frequency Distribution Analysis Results were obtained, as shown in Appendix D. Compared to 2020 data, no significant changes in wind speed and direction were observed. A total of 8337 hours (95.7%) of valid meteorological data were recovered in 2021 (365 days), which satisfies the 90 percent data recovery requirement of Regulatory Guide 1.23.

ODCM Revisions

There were 2 separate revisions to the ODCM in 2021. The first revision, documented in revision 24, changed the calibration frequency definition "R" from "18 months (550 days)" to "24 Months (732 days)" to support the transition to 24-month fuel cycle. The second revision, revision 25, addressed several items: it defined semimonthly in Table 2.1, changed "fresh leafy vegetable" to "broad leaf vegetation" in 3.12.1.c to be consistent with Table 3.12.1-1, added clarity to 3.12.1.c by providing specific action for broad leaf vegetation samples that are unobtainable due to seasonal unavailability, corrected meteorological sector/azimuth directions in Table 10.0-1 to state ENE-SSE for Lake Erie, removed station number from Table 10.0-1, update Table of Contents, and standardized formatting for text and tables.

ODCM Monitors Out of Service

During 2021, the Fermi 2 Nuclear Production Operation Logs recorded entries for LCO conditions associated with loss of FSS-1 communication to the Turbine Building, RadWaste Building, On site Storage Facility, Standby Gas Treatment System Division I and II, and Reactor Building SPINGS between August and December, 2021; however none of the monitors were out of service for more than 30 days.

Outside Temporary Tanks

In 2021 no outside temporary tank exceeded the 10 Ci content limit for nuclides other than tritium and dissolved or entrained noble gases.

Major Changes to Radioactive Waste Systems

There were no changes made to the Fermi 2 Radioactive Waste Systems during 2021.

Abnormal Radiological Releases

There were no abnormal radiological releases in 2021.

Errata/Corrections to Previous Annual Radioactive Effluent Release Report (ARERRs)

During a review of past radiological effluent data, an incorrect entry into the database was identified. An extent of condition investigation was conducted and found several errors from 2016-2019. The errors with the correct information are provided by year below

2016

12/27/16 the tritium detected in a weekly SPING sample was incorrectly entered in the release calculation resulting in a reported release 1.6E+04 uCi less than what should have been reported.

2017

8/22/17 – The charcoal cartridge and particulate filter were counted together and then the particulate filter was also counted separately leading to double counted results. The calculated release was over reported by 1.53E+02 uCi.

9/12/17 – An incorrect value was used for I-133 in the release calculations. This led to over reporting the results for I-133 by 5.50E+01 uCi.

11/28/17 – The charcoal cartridge and particulate filter were counted together and then the particulate filter was also counted separately leading to double counted results. The calculated release was over reported by 1.80E+02 uCi

12/19/17 – The incorrect value was used for Co-60 in the release calculations. The release for Co-60 was over reported by 1.30E+04 uCi

2018

1/8/18 – The incorrect value was used for I-131 in the release calculations. This led to over reporting the I-131 release by 3.38E+04 uCi

3/5/18 – The incorrect value was used for I-133 in the release calculations. This led to under reporting the I-133 release by 3.20E+01 uCi.

4/9/18 – For 2 different samples a tritium release calculation was not performed. The total tritium released for those two samples was 2.45E+06 uCi, which was not originally reported.

2019

7/29/19 – Co-60 was not originally included in the release calculations. Co-60 was under reported by 1.7 uCi.

9/9/19 – A tritium release calculation was not performed at the time of sample analysis. The amount of tritium not reported is 2.83E+05 uCi.

Independent Spent Fuel Storage Installation (ISFSI)

As required by 10 CFR 72.44(d)(3), Fermi reports any detected effluent releases from the ISFSI. None were detected in the 12-month monitoring period in 2021. Fermi has collected quarterly water samples from storm water Outfall 014 since fuel has been stored on the pad, with the exception of 3rd quarter 2019, and the 1st quarter of 2020. These outfall samples are relevant because water collected by the under-drain system at the periphery of the pad is routed through Outfall 014 to the overflow canal. No plant related radioactivity was detected in these samples in 2021. Since there was no detection of radioactive effluents or direct radiation in 2021 from the ISFSI installation, it may be concluded that the limits specified in 10 CFR 72.104(a) for radiation dose to the public (25 mrem/year to the whole body and 75 mrem/year to the thyroid - the same as the 40 CFR 190 limits) have not been exceeded due to the existence of the ISFSI installation.

END OF ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT BODY

Appendix A

Effluent and Radioactive Waste Data

Regulatory Limits for Radioactive Effluents

The Nuclear Regulatory Commission (NRC) limits on liquid and gaseous effluents are incorporated into the Fermi 2 Offsite Dose Calculation Manual. These limits prescribe the maximum doses and dose rates due to radioactive effluents resulting from normal operation of Fermi 2. These limits are described in the following sections.

A. Gaseous Effluents

I. Dose rate due to radioactivity released in gaseous effluents to areas at and beyond the site boundary shall be limited to the following:

a) Noble gases

Less than or equal to 500 mrem/year to the total body.
Less than or equal to 3000 mrem/year to the skin.

b) Iodine-131, iodine-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days

Less than or equal to 1500 mrem/year to any organ.

II. Air dose due to noble gases to areas at and beyond the site boundary shall be limited to the following:

a) Less than or equal to 5 mrad for gamma radiation
Less than or equal to 10 mrad for beta radiation
- During any calendar quarter

b) Less than or equal to 10 mrad for gamma radiation
Less than or equal to 20 mrad for beta radiation
- During any calendar year

III. Dose to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:

a) Less than or equal to 7.5 mrem to any organ
- During any calendar quarter

b) Less than or equal to 15 mrem to any organ
- During any calendar year

Note: The calculated site boundary dose rates for Fermi 2 are based on identification of individual isotopes and on use of dose factors specific to each identified isotope or a highly conservative dose factor. Since individual isotopes are identified, average energy values are not used in these calculations, and therefore are not reported even though their use in these calculations is allowed by Regulatory Guide 1.21.

B. Liquid Effluents

I. The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to ten times the concentrations specified in Title 10 of the Code of Federal Regulations (10 CFR) Part 20 (Standards for Protection Against Radiation), Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases, as required by the Fermi 2 Offsite Dose Calculation Manual. For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 (.0002) microcuries/ml total activity. This limit is based on the Xe-135 air submersion dose limit converted to an equivalent concentration in water as discussed in the International Commission on Radiological Protection (ICRP) Publication 2.

II. The dose or dose commitment to a member of the public from radioactive materials in liquid effluents released to unrestricted areas shall be limited to the following:

a) Less than or equal to 1.5 mrem to the total body
Less than or equal to 5 mrem to any organ
- During any calendar quarter

b) Less than or equal to 3 mrem to the total body
Less than or equal to 10 mrem to any organ
- During any calendar year

As noted previously, Fermi 2 did not perform radioactive liquid releases in 2021.

Measurements and Approximations of Total Activity in Radioactive Effluents

As required by NRC Regulatory Guide 1.21, this section describes the methods used to measure the total radioactivity in effluent releases and to estimate the overall errors associated with these measurements. The effluent monitoring systems are described in Chapter 11.4 of the Fermi 2 Updated Final Safety Analysis Report (UFSAR).

A. Gaseous Effluents

I. Fission and Activation Gases (Noble Gases)

Grab samples are obtained from each of the six plant radiation monitors which continuously monitor the five ventilation exhaust points. In addition, a post-offgas treatment "offgas vent pipe" sample is taken immediately upstream of the reactor building release point to assist in determining noble gas concentrations at the release point. The fission and activation gases are quantified by gamma spectroscopy analysis of periodic samples.

The summary values reported are the sums of all fission and activation gases quantified at all monitored release points.

II. Radioiodines

Samples are obtained from each of the six plant radiation monitors which continuously monitor the five ventilation exhaust points. The radioiodines are entrained on charcoal and then quantified by gamma spectroscopy analysis. For each sample, the duration of sampling and continuous flow rate through the charcoal are used in determining the concentration of radioiodines. Then from the flow rate of the ventilation system, a rate of release can be determined.

The summary values reported are the sums of all radioiodines quantified at all continuously monitored release points.

III. Particulates

Samples are obtained from each of the six plant effluent radiation monitors which continuously monitor the five ventilation exhaust points. The particulates are collected on a filter and then quantified by gamma spectroscopy analysis.

For each sample, the duration of sampling and the continuous flow rate through the filter are used in determining the concentration of particulates. From the flow rate of the ventilation system, a rate of release can be determined.

Quarterly, the filters from each ventilation release point are composited and then radiochemically separated and analyzed for Strontium (Sr)-89/90, Iron (Fe)-55, and Nickel (Ni)-63.

The summary values reported are the sums of all particulates quantified at all monitored release points.

IV. Tritium

Grab samples are obtained from each of the six plant effluent radiation monitors which monitor the five ventilation exhaust points. The sample is passed through a bottle containing water and the gaseous tritium is collected in this water. Portions of the collecting water are analyzed for tritium using liquid scintillation counting techniques. For each sample, the duration of sample and sample flow rate is used to determine the radioactivity concentration. Then from the flow rate of the ventilation system, a release rate can be determined.

In addition to tritium releases from the five ventilation exhaust points, gaseous tritium releases from the Condensate Storage Tank and Condensate Return Tank have been calculated. These releases are due to evaporation of tritiated water in these tanks which is released through tank vents. Also there were periodic ventings and purges of primary containment. None of these non-ventilation system pathways were significant release points for tritium, contributing less than 0.04% of total tritium releases. These releases were calculated to be well below 0.02 curies in 2021; adding them to reported tritium releases from the ventilation release points does not change the reported release quantities at the level of precision reported.

The summary values reported are the sums of all tritium quantified at all monitored release points.

V. Gross Alpha

The gaseous particulate filters from the six plant effluent radiation monitors are stored for one week to allow for decay of naturally occurring alpha emitters. These filters are then analyzed for gross alpha radioactivity by gas proportional counting, and any such radioactivity found is assumed to be plant related. The quantity of alpha emitters released can then be determined from sample flow rate, sample duration, and stack flow rate.

The summary values reported would be the sums of all alpha emitters quantified at all monitored release points. However, in 2021 alpha activity was not detected, i.e. was less than the critical level activity, in these particulate filters.

VI. Carbon-14

Carbon-14 releases are calculated using a method published by the Electric Power Research Institute in December 2010. Plant rated thermal power and monthly capacity factors were used in the calculation of quarterly releases.

B. Liquid Effluents

The liquid radwaste processing system and the liquid effluent monitoring system are described in the Fermi 2 UFSAR. Fermi 2 did not perform any releases of radioactive liquid effluents in 2021.

C. Statistical Measurement Uncertainties

The estimated total measurement uncertainty in this section has been calculated and is summarized in the following table:

Table A-1 – Statistical Measurement Uncertainties

Measurement Type	Sample Type	One Sigma Uncertainty
Fission and Activation Gases	Gaseous	30%
Radioiodines	Gaseous	16%
Particulates	Gaseous	17%
Tritium	Gaseous	30%
Gross Alpha	Gaseous	16%

Gaseous Releases by Individual Nuclide

Values in the following tables which are preceded by the "less than" symbol represent the lower limit of detection (LLD) in units of microcuries per cubic centimeter (µCi/cc) for individual samples and indicate that the nuclide in question was not detected in gaseous effluent samples in the indicated quarter of 2021. For quantities of gross alpha radioactivity, tritium, and carbon-14 in gaseous effluents, review provided tables. Less than (<) values are listed as LLDs in units of µCi/cc, therefore do not impact the sum values. To obtain the corresponding release rates in unit of µCi/sec, the effluent release activity listed below should be divided by 3.15E+07 (sec/year) or 7.88E+06 (sec/quarter).

Table A-2 - Particulate Radionuclides (micro Curies (µCi) *)

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mn-54	<2.91E-14	<2.91E-14	<2.91E-14	<2.91E-14
Co-57	<1.15E-14	5.77E-02	<1.15E-14	<1.15E-14
Co-60	<5.92E-14	<5.92E-14	1.85E+01	4.10E+01
Zn-65	<1.07E-13	<1.07E-13	<1.07E-13	3.13E+01
Cr-51	<1.85E-13	<1.85E-13	<1.85E-13	<1.85E-13
Fe-55	6.37E+00	4.70E+01	6.63E+01	3.11E+01
Ba-139	2.41E+04	6.15E+03	3.54E+04	2.74E+04
Y-91m	2.14E+03	<4.00E-12	2.45E+02	7.77E+02
Sr-90	<3.32E-15	<3.32E-15	<3.32E-15	<3.32E-15
Ni-63	<2.32E-15	<2.32E-15	<2.32E-15	<2.32E-15
Cs-134	<1.98E-14	<1.98E-14	<1.98E-14	<1.98E-14
Cs-137	<3.90E-14	<3.90E-14	<3.90E-14	<3.90E-14
Na-24	<2.31E-13	<2.31E-13	<2.31E-13	1.73E+02
As-76	<2.14E-13	<2.14E-13	<2.14E-13	2.37E+01
Ce-141	<2.35E-14	<2.35E-14	<2.35E-14	3.62E+00
Rb-89	1.09E+04	<3.13E-11	<3.13E-11	<3.13E-11
Cs-138	<1.47E-11	<1.47E-11	1.48E+04	<1.47E-11
Tc-99m	<2.57E13	<2.57E13	4.14E+01	<2.57E13
Zn-69m	<2.16E-13	<2.16E-13	<2.16E-13	1.80E+01
Total	3.71E+04	6.20E+03	5.06E+04	2.85E+04

*Less than (<) values are listed as LLDs in units of µCi/cc, therefore do not impact the sum values.

Table A-3 - Noble Gases (micro Curies (µCi) *)

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Ar-41	4.99E+03	<1.1E-07	<1.1E-07	<1.1E-07
Kr-85m	<9.5E-09	<9.5E-09	<9.5E-09	<9.5E-09
Xe-135	<9.5E-09	<9.5E-09	<9.5E-09	<9.5E-09
Xe-135m	<2.0E-06	<2.0E-06	<2.0E-06	<2.0E-06
Xe-138	<8.0E-06	<8.0E-06	<8.0E-06	1.20E+03
Xe-133	<7.3E-08	<7.3E-08	<7.3E-08	<7.3E-08
Kr-87	<2.5E-07	<2.5E-07	<2.5E-07	<2.5E-07
Total	**4.99E+03**	**-**	**-**	**1.20E+03**

* Less than (<) values are listed as LLDs in units of µCi/cc, therefore do not impact the sum values.

Table A-4 - Radioiodines (micro Curies (µCi) *)

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
I-131	8.53E+01	7.51E+01	1.00E+02	4.15E+02
I-132	4.85E+02	<3.28E-12	<3.28E-12	<3.28E-12
I-133	7.23E+02	6.33E+02	1.09E+03	4.37E+03
I-134	<1.23E-11	<1.23E-11	<1.23E-11	<1.23E-11
I-135	<3.32E-12	<3.32E-12	<3.32E-12	<3.32E-12
Total	**1.29E+03**	**7.08E+02**	**1.19E+03**	**4.79E+03**

* Less than (<) values are listed as LLDs in units of µCi/cc, therefore do not impact the sum values

Shipments of Radwaste

Fermi 2 complies with the extensive federal regulations which govern radioactive waste shipments. Radioactive solid waste shipments from the Fermi 2 site consist of waste generated during water treatment, radioactive trash, irradiated components, etc. Shipment destinations are either a licensed burial site or intermediate processing facilities. Waste shipped to intermediate processing facilities is shipped directly from these facilities to a licensed burial site after processing. The following tables contain estimates of major nuclide composition, by class of waste, of Fermi 2 radioactive waste shipped offsite in 2021. The waste volumes listed in these tables are the volumes shipped, not the final volumes sent for burial after processing.

a. Spent resins, sludges, etc.

Waste in this category in 2021 was Class A waste and consisted of spent resins and sludges. Spent resins were shipped in shielded transportation casks (Type B and General Design Bulk

Packages), directly to the Clive, UT burial facility. Spent resins were dewatered prior to shipment for disposal. All quantities were determined by measurement.

Table A-5 - Spent resins, sludges, etc., (Class A)

Isotope	**mCi**	**%**
H-3	9.60E+01	0.01%
C-14	9.32E+02	0.14%
Cr-51	2.19E+02	0.03%
Mn-54	2.72E+04	4.02%
Fe-55	3.83E+05	56.56%
Fe-59	2.92E+02	0.04%
Co-57	1.50E+00	0%
Co-58	5.57E+02	0.08%
Co-60	2.45E+05	36.17%
Ni-59	1.19E+01	0%
Ni-63	5.20E+03	0.77%
Zn-65	1.32E+04	1.95%
Sr-89	5.74E+01	0.01%
Sr-90	5.24E+01	0.01%
Zr-95	2.67E+01	0%
Nb-95	5.38E+01	0.01%
Tc-99	7.73E+01	0.01%
Ag-110m	2.96E+01	0%
Sm-113	1.05E-02	0%
Sb-124	2.01E+01	0%
Sb-125	9.80E+01	0.01%
I-129	1.90E-04	0%
I-131	6.41E-02	0%
Cs-134	1.44E+02	0.02%
Cs-137	8.81E+02	0.13%
Ce-144	3.27E+00	0%
Hf-181	1.09E-07	0%
Cm-242	1.44E-04	0%
Total Activity	6.77E+05	100
Volume Shipped m^3	9.08E+01	

b. Dry compressible waste, contaminated equipment, etc.

Waste in this category in 2021 was Class A waste and shipped in strong tight containers (General Design Bulk Packages) of various sizes and was classified as Dry Active Waste (DAW). DAW waste was shipped to an intermediate processor for processing, e.g. compaction or incineration. All quantities were determined by measurement.

Table A-6 - Dry Active Waste (Class A)

Isotope	**mCi**	**%**
H-3	5.20E+01	9.51E+00
Cr-51	9.26E+00	1.69E+00
Mn-54	3.70E+01	6.76E+00
Fe-55	2.10E+02	3.84E+01
Fe-59	3.13E+00	5.73E-01
Co-58	3.25E+00	5.94E-01
Co-60	2.21E+02	4.04E+01
Ni-63	1.99E+00	3.64E-01
Zn-65	9.06E+00	1.66E+00
Tc-99	1.42E-01	2.60E-02
Sb-125	7.10E-06	6.27E-03
I-129	9.27E-02	1.30E-06
Pu-238	1.46E-04	3.15E-05
Pu-241	3.07E-04	1.69E-02
Am-241	2.32E-04	2.67E-05
Cm-242	2.32E-04	5.61E-05
Cm-243	5.20E+01	4.24E-05
Cm-244	9.26E+00	4.24E-05
Total Activity	5.47E+02	1.00E+02
Volume Shipped m^3	8.83E+02	

c. Irradiated components, control rods, etc.

No waste for this category was sent off site during 2021.

d. Other – Filters/ Oil, Mixed Waste, etc.

Waste in this category in 2021 was Class A waste and shipped in a strong tight container (1 General Design Bulk Package) and was classified as Aqueous (Water and Oil); this waste was shipped to an intermediate processor. Filter waste was processed by filtration, absorption, or incineration. All quantities were determined by measurement.

Table A-7 – Other – Aqueous Liquids, (Class A)

Isotope	**mCi**	**%**
H-3	1.03E+02	9.64E+01
Cr-51	1.14E-01	1.07E-01
Mn-54	4.15E-01	3.89E-01
Fe-55	7.48E-01	7.00E-01
Fe-59	3.85E-02	3.61E-02
Co-58	3.95E-02	3.70E-02
Co-60	2.32E+00	2.17E+00
Ni-63	9.91E-03	9.28E-03
Zn-65	1.06E-01	9.93E-02
Tc-99	3.02E-06	2.83E-06
I-129	7.44E-08	6.97E-08
Pu-241	1.14E-03	1.07E-03
Total	1.07E+02	100
Volume Shipped m^3	3.62E+01	

Appendix B

Ground Water Protection Program Data and Analysis

EXECUTIVE SUMMARY

Monitoring of groundwater wells at the Fermi site was conducted without incident in 2021. Analysis of periodic samples from these wells showed no positive tritium results in 2021. (There were no positive tritium results in 2020 or 2019, and only three low level positive tritium results in the shallow aquifer in 2018).

Therefore, there is no indication of any leak from plant systems into the groundwater at Fermi 2.

PROGRAM OVERVIEW

Quarterly sampling and gauging of the Fermi 2 Integrated Ground Water Protection Program (IGWPP) monitor wells continued uninterrupted in 2021.

Procedurally, each integrated groundwater protection program (IGWPP) specified monitor well is required to be sampled for tritium during each sample event. Monitor wells adjacent to plant systems where plant-related radioisotopes other than tritium are more likely to be present are also sampled for plant-related gamma-emitting radioisotopes during each sample event. Furthermore, once per year water from three monitor wells most likely to be contaminated by leaked or spilled material may also be analyzed for hard-to-detect (HTD) radionuclides (e.g., Fe-55, Sr-89, and Sr-90).

Samples analyzed for gamma-emitting radionuclides, as well as HTDs, are counted to required environmental lower limits of detection (LLD) for each given radioisotope of interest, with the exception of La-140, Ba-140, and I-131 (due to their short half-lives). For tritium there is no required limit of detection under the IGWPP, beyond what is prescribed for ground water samples taken as part of the site's Radiological Environmental Monitoring Program (REMP). The REMP Lower Limit of Detection (LLD) is set at 2,000 pCi/L which is 1/10th of the EPA's drinking water limit of 20,000 pCi/L. For all ground-water samples analyzed in 2021, Fermi 2's contract laboratory achieved minimum detectable concentrations (MDCs) lower than the requested tritium LLD of 500 pCi/L.

Sampling and gauging of the monitor wells installed at the Enrico Fermi Atomic Power Plant (Fermi 1) is part of the site Integrated Ground Water Protection Program. Most of the Fermi 1 monitor wells were installed to monitor ground water in the vicinity of the facility as part of decommissioning and license termination work. With the Fermi 1 decommissioning project placed back in "passive" SAFSTOR decommissioning mode, this ongoing ground water monitoring was incorporated into the existing Fermi 2 IGWPP. Fermi 1 monitor wells are designated in the attached tables by the prefix "EFT-". Fermi 1 construction utilized silty-clay fill adjacent to the structures to bring the site up to the final grade. All shallow wells are screened in this material and they typically do not produce much water. Fermi 1 monitor wells are sampled semi-annually because the rates of lateral flow through the silty-clay are quite low, the facility is static with no work activity which could result in release of radioactive material, the levels of contamination remaining at the site are low, and no liquid wastes are stored at the facility.

RESULTS

Deep Wells (Table B-1)

Tritium was not detected in any samples from the IGWPP deep monitor wells in 2021 and has not been detected previously in deep wells in the history of the IGWPP.

Plant-related gamma-emitting radioisotopes and hard-to-detect radioisotopes were not detected in any ground-water samples collected from deep monitor wells in 2021, or in previous years.

Shallow and Intermediate Wells (Table B-2)

Most shallow monitor wells have consistently yielded results indicating that tritium is not present above the detection limit. In 2021, tritium was not detected in any samples from the IGWPP shallow and intermediate wells.

Plant-related gamma-emitting radioisotopes and hard-to-detect radioisotopes were not detected in any ground-water samples collected from shallow and intermediate monitor wells in 2021.

Other Analytical Results

As noted, plant-related gamma-emitting radioisotopes and hard-to-detect radioisotopes were not detected in any ground-water samples collected from any monitor wells in 2021. However, the naturally occurring radioisotopes Bi-214, Pb-214, And K-40 were occasionally identified in ground water samples. Such radioisotopes are normally found in the environment and are geological in origin.

DISCUSSION

The 2019, 2020 and 2021 results were unusual in that no positive tritium results were seen--in deep, shallow, or intermediate wells. By contrast, in 2018, three positive ground water results for tritium were detected in shallow wells, the highest of which was 540 pCi/liter. Furthermore, since the Integrated Ground Water Protection Program was initiated in the fall of 2007, plant-related gamma isotopes and hard-to-detect isotopes have never been identified in ground-water samples from any of the monitor wells. It may also be noted that ground water from many of the site's wells have never yielded a positive result for tritium or plant related radionuclides.

If the tritium found in ground water from shallow wells (in previous years) were attributable to a leaking plant system then one would expect the levels to steadily increase over time, especially during the winter when there is, normally, less recharge from surface water. Instead the results from shallow monitor wells have shown periodic low-level hits for tritium in ground water with no trend. This pattern is more consistent with what one would expect to see if the tritium were attributable to recapture (washout) in precipitation. Recapture of tritium emitted from nuclear power plant stacks in precipitation is well documented and these emissions are continuously monitored and reported annually by the utility as part of an approved effluents program. A tritium rain-water washout study performed at the Fermi site revealed that tritium is found in rain water collected at the site. Tritium activity in rain water samples, taken at the site over a period of two months as part of that study, ranged from approximately 400 pCi/L to 5,750 pCi/L in a rooftop sample near the turbine building vent (the tritium release point with the greatest quantity of tritium release).

Tritium activity was detected in 2021 above the minimum detectable activity (MDA) level in three precipitation samples in the second quarter of 2021, at concentrations of 457 pCi/liter to 743 pCi/liter. These positive samples were located to the north and south of the plant, downwind of plant due to the wind shifting from south-southeast to east-northeast during the rain event, and close to the largest tritium release point—the Turbine Building stack. These concentrations are consistent with the rainwater washout phenomenon, and with previous years' results. This shows that the phenomenon of rainwater washout is still in effect at Fermi 2, but this year did not result in detectable tritium in the shallow groundwater. For more detail on tritium in precipitation samples taken at Fermi in 2021 see Appendix C of this report.

Table B-1 - Deep Monitor Well Tritium Analysis Results for Year 2021 (Periodic Sample Events)

Monitor Well	Quarter	QA Type	Lab ID	Parameter	Prefix	Value	Units
EF2-07-01D	Q1	NORMAL	GEL	H-3	<	3.77E+02	pCi/L
EF2-07-01D	Q2	NORMAL	GEL	H-3	<	4.22E+02	pCi/L
EF2-07-01D	Q3	NORMAL	GEL	H-3	<	4.47E+02	pCi/L
EF2-07-01D	Q4	NORMAL	GEL	H-3	<	4.40E+02	pCi/L
EF2-07-03D	Q1	NORMAL	GEL	H-3	<	3.70E+02	pCi/L
EF2-07-03D	Q2	NORMAL	GEL	H-3	<	4.27E+02	pCi/L
EF2-07-03D	Q3	NORMAL	GEL	H-3	<	4.29E+02	pCi/L
EF2-07-03D	Q4	NORMAL	GEL	H-3	<	4.39E+02	pCi/L
EF2-07-04D	Q1	NORMAL	GEL	H-3	<	3.78E+02	pCi/L
EF2-07-04D	Q2	NORMAL	GEL	H-3	<	4.24E+02	pCi/L
EF2-07-04D	Q3	NORMAL	GEL	H-3	<	4.45E+02	pCi/L
EF2-07-04D	Q4	NORMAL	GEL	H-3	<	4.38E+02	pCi/L
EF2-07-06D	Q1	NORMAL	GEL	H-3	<	3.73E+02	pCi/L
EF2-07-06D	Q2	NORMAL	GEL	H-3	<	2.24E+02	pCi/L
EF2-07-06D	Q3	NORMAL	GEL	H-3	<	4.51E+02	pCi/L
EF2-07-06D	Q4	NORMAL	GEL	H-3	<	4.41E+02	pCi/L
EF2-07-08D	Q1	NORMAL	GEL	H-3	<	3.82E+02	pCi/L
EF2-07-08D	Q2	NORMAL	GEL	H-3	<	4.20E+02	pCi/L
EF2-07-08D	Q3	NORMAL	GEL	H-3	<	4.50E+02	pCi/L
EF2-07-08D	Q4	NORMAL	GEL	H-3	<	4.37E+02	pCi/L
EF2-07-09D	Q1	NORMAL	GEL	H-3	<	3.87E+02	pCi/L
EF2-07-09D	Q2	NORMAL	GEL	H-3	<	4.26E+02	pCi/L
EF2-07-09D	Q3	NORMAL	GEL	H-3	<	4.46E+02	pCi/L
EF2-07-09D	Q4	NORMAL	GEL	H-3	<	4.42E+02	pCi/L
EF2-07-15D	Q1	NORMAL	GEL	H-3	<	3.74E+02	pCi/L
EF2-07-15D	Q2	NORMAL	GEL	H-3	<	4.22E+02	pCi/L
EF2-07-15D	Q3	NORMAL	GEL	H-3	<	4.48E+02	pCi/L
EF2-07-15D	Q4	NORMAL	GEL	H-3	<	4.36E+02	pCi/L
EF2-07-20D	Q1	NORMAL	GEL	H-3	<	3.70E+02	pCi/L

Table B-1 - Deep Monitor Well Tritium Analysis Results for Year 2021 (Continued).

Monitor Well	Quarter	QA Type	Lab ID	Parameter	Prefix	Value	Units
EF2-07-20D	Q2	NORMAL	GEL	H-3	<	4.23E+02	pCi/L
EF2-07-20D	Q3	NORMAL	GEL	H-3	<	4.84E+02	pCi/L
EF2-07-20D	Q4	NORMAL	GEL	H-3	<	4.41E+02	pCi/L
EF2-07-29D	Q1	NORMAL	GEL	H-3	<	3.70E+02	pCi/L
EF2-07-29D	Q2	NORMAL	GEL	H-3	<	4.18E+02	pCi/L
EF2-07-29D	Q3	NORMAL	GEL	H-3	<	4.70E+02	pCi/L
EF2-07-29D	Q4	NORMAL	GEL	H-3	<	4.39E+02	pCi/L
EFT-1D	Q2	NORMAL	GEL	H-3	<	4.28E+02	pCi/L
EFT-1D	Q4	NORMAL	GEL	H-3	<	4.43E+02	pCi/L
EFT-2D	Q2	NORMAL		Note 2			
EFT-2D	Q4	NORMAL		Note 2			
EFT-4D	Q2	NORMAL	GEL	H-3	<	4.23E+02	pCi/L
EFT-4D	Q4	NORMAL	GEL	H-3	<	4.08E+02	pCi/L
EFT-5D	Q2	NORMAL	GEL	H-3	<	3.91E+02	pCi/L
EFT-5D	Q4	NORMAL	GEL	H-3	<	3.72E+02	pCi/L
EFT-6D	Q2	NORMAL	GEL	H-3	<	3.74E+02	pCi/L
EFT-6D	Q4	NORMAL	GEL	H-3	<	4.04E+02	pCi/L
EFT-11D	Q2	NORMAL	GEL	H-3	<	4.13E+02	pCi/L
EFT-11D	Q4	NORMAL	GEL	H-3	<	4.01E+02	pCi/L
EFT-12D	Q2	NORMAL	GEL	H-3	<	3.96E+02	pCi/L
EFT-12D	Q4	NORMAL	GEL	H-3	<	4.06E+02	pCi/L

Table B-2 - Shallow and Intermediate Monitor Well Tritium Analysis Results for Year 2021 (Periodic Sample Events)

Monitor Well	Quarter	QA Type	Lab ID	Parameter	Prefix	Value	Units
EF2-07-02S	Q1	NORMAL		Note 3			
EF2-07-02S	Q2	NORMAL	GEL	H-3	<	4.20E+02	pCi/L
EF2-07-02S	Q3	NORMAL	GEL	H-3	<	4.48E+02	pCi/L
EF2-07-02S	Q4	NORMAL	GEL	H-3	<	4.41E+02	pCi/L
EF2-07-03S	Q1	NORMAL	GEL	H-3	<	3.78E+02	pCi/L
EF2-07-03S	Q2	NORMAL		Note 2			
EF2-07-03S	Q3	NORMAL	GEL	H-3	<	4.46E+02	pCi/L
EF2-07-03S	Q4	NORMAL		Note 2			
EF2-07-05S	Q1	NORMAL	GEL	H-3	<	3.86E+02	pCi/L
EF2-07-05S	Q2	NORMAL		Note 2			
EF2-07-05S	Q3	NORMAL	GEL	H-3	<	4.52E+02	pCi/L
EF2-07-05S	Q4	NORMAL		Note 2			

Table B-2 - Shallow and Intermediate Monitor Well Tritium Analysis Results for Year 2021 (Continued)

Monitor Well	Quarter	QA Type	Lab ID	Parameter	Prefix	Value	Units
EF2-07-07S	Q1	NORMAL	GEL	H-3	<	3.89E+02	pCi/L
EF2-07-07S	Q2	NORMAL		Note 2			
EF2-07-07S	Q3	NORMAL	GEL	H-3	<	4.46E+02	pCi/L
EF2-07-07S	Q4	NORMAL		Note 2			
EF2-07-08S	Q1	NORMAL	GEL	H-3	<	3.80E+02	pCi/L
EF2-07-08S	Q2	NORMAL		Note 2			
EF2-07-08S	Q3	NORMAL	GEL	H-3	<	4.46E+02	pCi/L
EF2-07-08S	Q4	NORMAL		Note 2			
EF2-07-12S	Q1	NORMAL	GEL	H-3	<	3.79E+02	pCi/L
EF2-07-12S	Q2	NORMAL		Note 2			
EF2-07-12S	Q3	NORMAL	GEL	H-3	<	4.47E+02	pCi/L
EF2-07-12S	Q4	NORMAL		Note 2			
EF2-07-13S	Q1	NORMAL		Note 2			
EF2-07-13S	Q2	NORMAL	GEL	H-3	<	3.82E+02	pCi/L
EF2-07-13S	Q3	NORMAL	GEL	H-3	<	4.51E+02	pCi/L
EF2-07-13S	Q4	NORMAL		Note 2			
EF2-07-14S	Q1	NORMAL	GEL	H-3	<	3.76E+02	pCi/L
EF2-07-14S	Q2	NORMAL		Note 2			
EF2-07-14S	Q3	NORMAL	GEL	H-3	<	4.52E+02	pCi/L
EF2-07-14S	Q4	NORMAL		Note 2			
EF2-07-15S	Q1	NORMAL	GEL	H-3	<	3.80E+02	pCi/L
EF2-07-15S	Q2	NORMAL		Note 2			
EF2-07-15S	Q3	NORMAL	GEL	H-3	<	4.50E+02	pCi/L
EF2-07-15S	Q4	NORMAL		Note 2			
EF2-07-16S	Q1	NORMAL	GEL	H-3	<	3.80E+02	pCi/L
EF2-07-16S	Q2	NORMAL	GEL	H-3	<	4.29E+02	pCi/L
EF2-07-16S	Q3	NORMAL	GEL	H-3	<	4.50E+02	pCi/L
EF2-07-16S	Q4	NORMAL	GEL	H-3	<	4.42E+02	pCi/L
EF2-07-17S	Q1	NORMAL	GEL	H-3	<	3.82 E+02	pCi/L
EF2-07-17S	Q2	NORMAL		Note 2			
EF2-07-17S	Q3	NORMAL	GEL	H-3	<	4.47 E+02	pCi/L
EF2-07-17S	Q4	NORMAL		Note 2			
EF2-07-18S	Q1	NORMAL	GEL	H-3	<	3.82 E+02	pCi/L
EF2-07-18S	Q2	NORMAL		Note 2			
EF2-07-18S	Q3	NORMAL	GEL	H-3	<	4.50 E+02	pCi/L
EF2-07-18S	Q4	NORMAL		Note 2			
EF2-07-19S	Q1	NORMAL	GEL	H-3	<	3.58 E+02	pCi/L
EF2-07-19S	Q2	NORMAL		Note 2			
EF2-07-19S	Q3	NORMAL	GEL	H-3	<	4.65 E+02	pCi/L
EF2-07-19S	Q4	NORMAL		Note 2			
EF2-07-20S	Q1	NORMAL	GEL	H-3	<	3.70 E+02	pCi/L
EF2-07-20S	Q2	NORMAL	GEL	H-3	<	4.27 E+02	pCi/L
EF2-07-20S	Q3	NORMAL	GEL	H-3	<	4.65 E+02	pCi/L
EF2-07-20S	Q4	NORMAL	GEL	H-3	<	4.43 E+02	pCi/L

Table B-2 - Shallow and Intermediate Monitor Well Tritium Analysis Results for 2021 (Continued)

Monitor Well	Quarter	QA Type	Lab ID	Parameter	Prefix	Value	Units
EF2-07-21S	Q1	NORMAL	GEL	H-3	<	3.71E+02	pCi/L
EF2-07-21S	Q2	NORMAL		Note 2			pCi/L
EF2-07-21S	Q3	NORMAL	GEL	H-3	<	4.75E+02	pCi/L
EF2-07-21S	Q4	NORMAL		Note 2			pCi/L
EF2-07-22S	Q1	NORMAL		Note 2			
EF2-07-22S	Q2	NORMAL		Note 2			
EF2-07-22S	Q3	NORMAL		Note 2			
EF2-07-22S	Q4	NORMAL		Note 2			
EF2-07-23S	Q1	NORMAL	GEL	H-3	<	3.67E+02	pCi/L
EF2-07-23S	Q2	NORMAL		Note 2			
EF2-07-23S	Q3	NORMAL	GEL	H-3	<	4.69E+02	pCi/L
EF2-07-23S	Q4	NORMAL		Note 2			
EF2-07-24S	Q1	NORMAL	GEL	H-3	<	3.74E+02	pCi/L
EF2-07-24S	Q2	NORMAL		Note 2			
EF2-07-24S	Q3	NORMAL	GEL	H-3	<	4.67E+02	pCi/L
EF2-07-24S	Q4	NORMAL		Note 2			
EF2-07-25S	Q1	NORMAL	GEL	H-3	<	3.71E+02	pCi/L
EF2-07-25S	Q2	NORMAL		Note 2			
EF2-07-25S	Q3	NORMAL		Note 2			
EF2-07-25S	Q4	NORMAL		Note 2			
EF2-07-26S	Q1	NORMAL	GEL	H-3	<	3.75E+02	pCi/L
EF2-07-26S	Q2	NORMAL		Note 2			
EF2-07-26S	Q3	NORMAL	GEL	H-3	<	4.67E+02	pCi/L
EF2-07-26S	Q4	NORMAL		Note 2			
EF2-07-27S	Q1	NORMAL	GEL	H-3	<	3.57E+02	pCi/L
EF2-07-27S	Q2	NORMAL		Note 2			
EF2-07-27S	Q3	NORMAL	GEL	H-3	<	4.74E+02	PCi/L
EF2-07-27S	Q4	NORMAL		Note 2			
EF2-07-28S	Q1	NORMAL	GEL	H-3	<	3.43E+02	pCi/L
EF2-07-28S	Q2	NORMAL		Note 2			
EF2-07-28S	Q3	NORMAL	GEL	H-3	<	4.66E+02	pCi/L
EF2-07-28S	Q4	NORMAL	GEL	H-3	<	4.42E+02	pCi/L
EF2-07-29S	Q1	NORMAL	GEL	H-3	<	3.50E+02	pCi/L
EF2-07-29S	Q2	NORMAL		Note 2			
EF2-07-29S	Q3	NORMAL		Note 2			
EF2-07-29S	Q4	NORMAL		Note 2			
EF2-07-31S	Q1	NORMAL	GEL	H-3	<	3.72E+02	pCi/L
EF2-07-31S	Q2	NORMAL		Note 2			
EF2-07-31S	Q3	NORMAL	GEL	H-3	<	4.70E+02	pCi/L
EF2-07-31S	Q4	NORMAL		Note 2			
MW-09	Q1	NORMAL	GEL	H-3	<	3.70E+02	pCi/L
MW-09	Q2	NORMAL		Note 2			
MW-09	Q3	NORMAL		Note 2			
MW-09	Q4	NORMAL		Note 2			

Table B-2 - Shallow and Intermediate Monitor Well Tritium Analysis Results for 2021 (Continued)

Monitor Well	Quarter	QA Type	Lab ID	Parameter	Prefix	Value	Units
MW-10	Q1	NORMAL		Note 2			
MW-10	Q2	NORMAL		Note 2			
MW-10	Q3	NORMAL		Note 2			
MW-10	Q4	NORMAL		Note 2			
MW-11	Q1	NORMAL	GEL	H-3	<	3.71E+02	pCi/L
MW-11	Q2	NORMAL		Note 2			
MW-11	Q3	NORMAL		Note 2			
MW-11	Q4	NORMAL		Note 2			
MW-18	Q1	NORMAL	GEL	H-3	<	3.52E+02	pCi/L
MW-18	Q2	NORMAL		Note 2			
MW-18	Q3	NORMAL		Note 2			
MW-18	Q4	NORMAL		Note 2			
MW-21	Q1	NORMAL	GEL	H-3	<	3.97E+02	pCi/L
MW-21	Q2	NORMAL		Note 2			
MW-21	Q3	NORMAL	GEL	H-3	<	4.56E+02	pCi/L
MW-21	Q4	NORMAL		Note 2			
EFT-1S	Q2	NORMAL	GEL	H-3	<	4.15E+02	pCi/L
EFT-1S	Q4	NORMAL	GEL	H-3	<	4.31E+02	pCi/L
EFT-2S	Q2	NORMAL		Note 2			
EFT-2S	Q4	NORMAL	GEL	H-3	<	4.00E+02	pCi/L
EFT-4S	Q2	NORMAL	GEL	H-3	<	4.00E+02	pCi/L
EFT-4S	Q4	NORMAL	GEL	H-3	<	4.04E+02	pCi/L
EFT-5S	Q2	NORMAL	GEL	H-3	<	4.00E+02	pCi/L
EFT-5S	Q4	NORMAL	GEL	H-3	<	4.03E+02	pCi/L
EFT-6S	Q2	NORMAL	GEL	H-3	<	3.94E+02	pCi/L
EFT-6S	Q4	NORMAL	GEL	H-3	<	4.04E+02	pCi/L
EFT-7S	Q2	NORMAL	GEL	H-3	<	4.01E+02	pCi/L
EFT-7S	Q4	NORMAL	GEL	H-3	<	4.05E+02	pCi/L
EFT-8S	Q2	NORMAL	GEL	H-3	<	4.05E+02	pCi/L
EFT-8S	Q4	NORMAL	GEL	H-3	<	4.05E+02	pCi/L
EFT-8SR	Q2	NORMAL	GEL	H-3	<	3.76E+02	pCi/L
EFT-8SR	Q4	NORMAL	GEL	H-3	<	4.07E+02	pCi/L
EFT-9S	Q2	NORMAL	GEL	H-3	<	3.98E+02	pCi/L
EFT-9S	Q4	NORMAL	GEL	H-3	<	4.03E+02	pCi/L
EFT-10S	Q2	NORMAL		Note 2			
EFT-10S	Q4	NORMAL		Note			
P-392S	Q1	NORMAL	GEL	H-3	<	3.77E+02	pCi/L
P-392S	Q2	NORMAL	GEL	H-3	<	4.27E+02	pCi/L
P-392S	Q3	NORMAL	GEL	H-3	<	4.47E+02	pCi/L
P-392S	Q4	NORMAL	GEL	H-3	<	4.39E+02	pCi/L

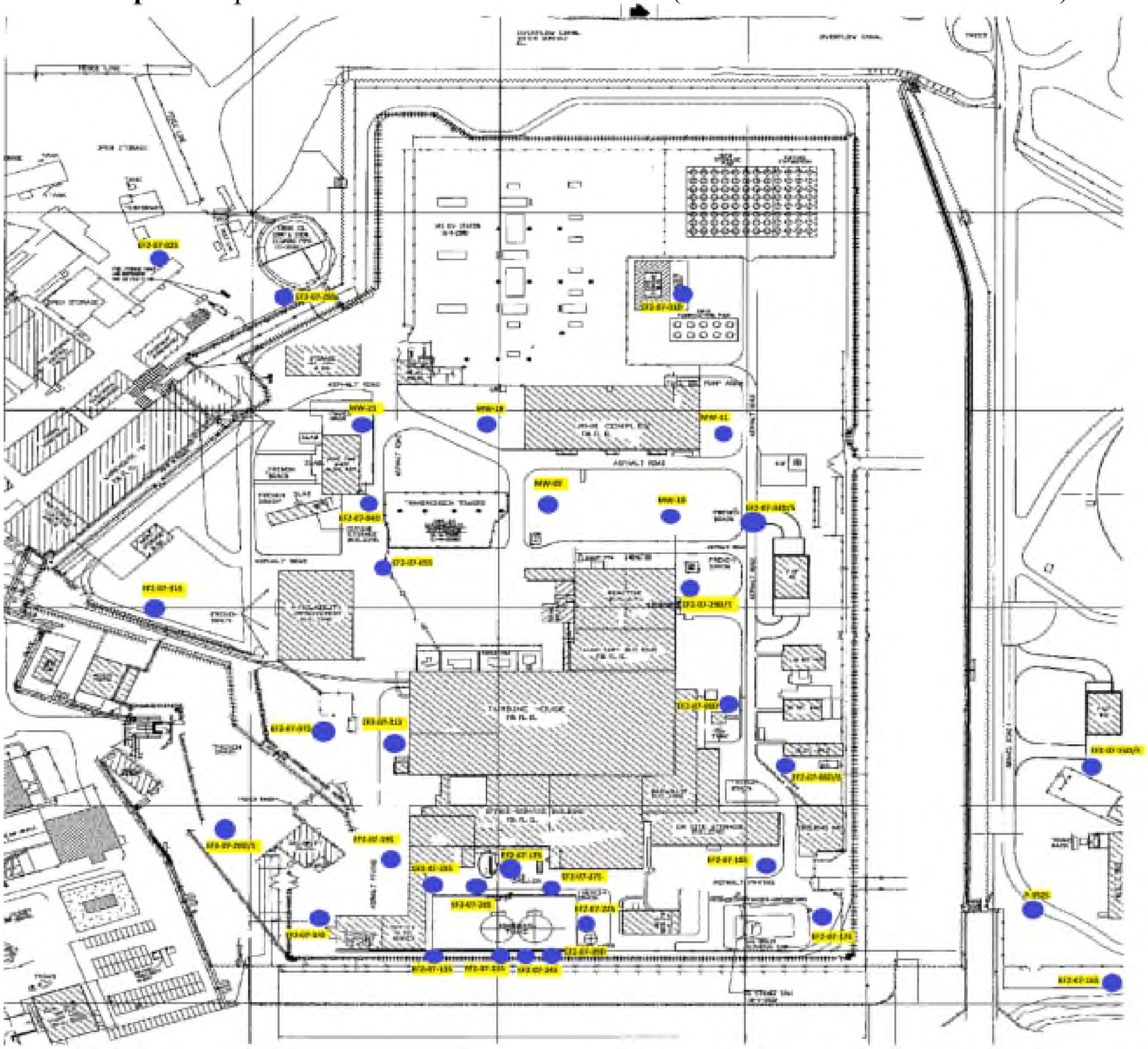
Table B-2 - Shallow and Intermediate Monitor Well Tritium Analysis Results for 2021 (Continued)

Monitor Well	Quarter	QA Type	Lab ID	Parameter	Prefix	Value	Units
EFT-1I	Q2	NORMAL	GEL	H-3	<	4.19E+02	pCi/L
EFT-1I	Q4	NORMAL	GEL	H-3	<	4.44E+02	pCi/L
EFT-11I	Q2	NORMAL	GEL	H-3	<	4.04E+02	pCi/L
EFT-11I	Q4	NORMAL	GEL	H-3	<	3.98E+02	pCi/L
EFT-12I	Q2	NORMAL	GEL	H-3	<	4.01E+02	pCi/L
EFT-12I	Q4	NORMAL	GEL	H-3	<	3.99E+02	pCi/L
EFT-13I	Q2	NORMAL	GEL	H-3	<	3.91E+02	PCi/L
EFT-13I	Q4	NORMAL	GEL	H-3	<	4.04E+02	pCi/L

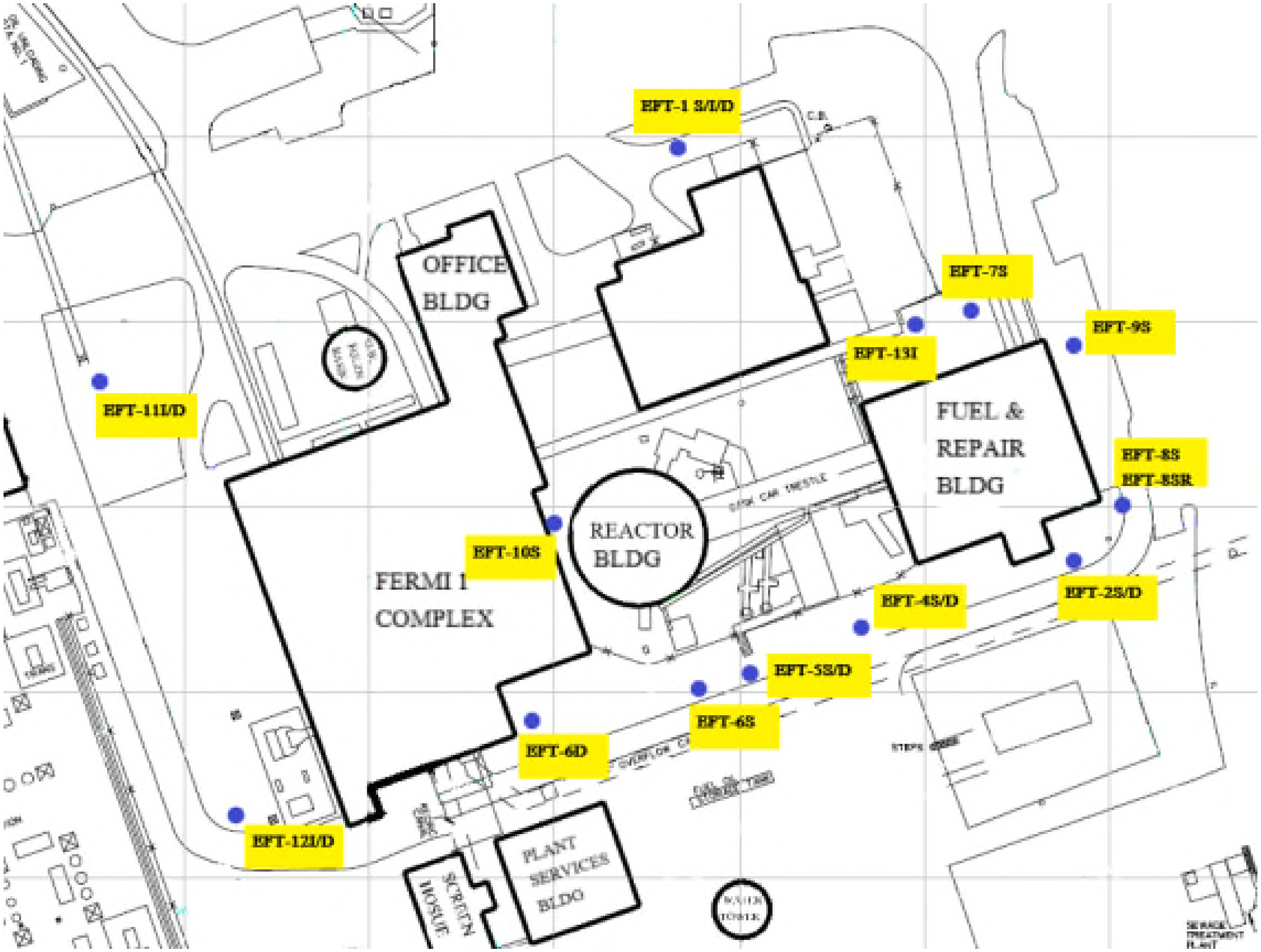
Note 1: Monitor well inaccessible – for example in construction area.
Note 2: Monitor well could not be sampled – for example covered by snow, ice, water, gravel, or dried out.
Note 3: Monitor well could not be sampled – under obstruction during construction periods and alternate well in immediate area sampled.
Note 4: Monitor well could not be sampled – in a restricted area and alternate well in immediate area sampled.

Maps

Map 1 - Map of Current Monitor Well Locations (EF2 and Owner Controlled Area)



Map 2 - Map of Current Monitor Well Locations (Fermi 1)



Appendix C

Rainwater Data and Analysis

Fermi 2 has documented the phenomenon of rainwater washout, also known as recapture, of gaseous effluents, in which tritium concentrations above background levels are routinely detected in rainwater samples collected at the site. These positive samples are most often observed in sectors which are downwind from the plant during the rain event. Table C-1 below shows that tritium was detected in 3 of 17 rainwater and storm water samples analyzed in 2021. These positive samples were downwind of the plant. The Nuclear Regulatory Commission has also recognized this phenomenon of recaptured gaseous effluents in NRC Regulatory Issue Summary 2008-03.

Fermi 2 continues to monitor this phenomenon through the collection of rainwater samples and storm water outfall samples at least once annually. These samples are normally analyzed for tritium to a Lower Limit of Detection (LLD) of 500 pCi/L or less. The table and map in this appendix show tritium results and collection locations for 2021 rainwater samples. The following general points may be made about recent years' data:

1) Higher rainwater tritium levels were detected most frequently and in sectors which are downwind from the plant vents, especially east and southeast from the plant. This is to be expected based on the prevailing wind direction and the location of the turbine building vent, which is the site's largest tritium release point, the reactor building vent, the second largest, and the condensate storage tank and condensate return tank vents which have the lowest elevation of the site's tritium release points. It is also consistent with the occasional detection of tritium in shallow groundwater wells in previous years, as mentioned in Appendix B. In 2021, however, rainwater was sampled during an event in which the wind direction started as south-southeast and shifted to east-northeast. The locations of the positive rainwater samples are consistent with this.

2) The amount and location of rainwater washout can vary considerably between rain events. For example, in 2021, tritium was detected in 3 samples in a second quarter rain event, at concentrations of 457, 564 and 743 pCi/liter, but in no other 2021 samples.

3) Detection of tritium in rainwater samples is more frequent and at slightly higher levels than in shallow groundwater wells: in 2018 the average detected tritium level in positive rainwater and outfall samples was 541 pCi/L versus 447 pCi/L for positive shallow groundwater samples. This is consistent with the dilution of rainwater tritium prior to its detection in groundwater wells. In 2021, the average detected tritium level in rainwater was 588 pCi/L, but no tritium was detected in groundwater wells in 2021.

4) In addition to releases from the plant ventilation release points, tritium levels in rainwater near the CST can also result from periodic venting of tritiated water vapor from the CST and CRT (minor release points for tritium).

5) All rainwater and storm-water tritium concentrations were less than one twentieth of the EPA drinking water limit (20,000 pCi/L). Thus, all tritium levels commonly detected in Fermi rainwater would be safe for drinking.

Table C-1 presents 2021 rainwater and storm water tritium analyses. The designation "<" indicates that tritium in the sample was less than the minimum detectable activity (MDA) for that sample. This level is similar to the minimum detectable concentration (MDC) level reported by General Engineering Laboratory (GEL) for groundwater samples (see Appendix B). These MDA and MDC values are in the same range: approximately 250-500 pCi/L. GEL is requested to count these samples to an MDA of 500 pCi/L or less and all MDA levels reported were less than 500 pCi/L. The MDA for each sample is presented in the table. The attached map shows the sample locations for the results reported in Table C-1.

Table C-1 - Precipitation and Storm Water Tritium Analysis Results for Year 2021

Sample Location	Quarter	Sample Date	Lab	Result (pCi/L or <MDA)	MDA (pCi/L)
H3-PR-01	Q1	*	*	*	*
H3-PR-04	Q1	*	*	*	*
H3-PR-05	Q1	*	*	*	*
H3-PR-06	Q1	*	*	*	*
H3-PR-07	Q1	*	*	*	*
H3-PR-08	Q1	*	*	*	*
H3-PR-14	Q1	*	*	*	*
H3-PR-23	Q1	*	*	*	*
H3-PR-24	Q1	*	*	*	*
OUTFALL 002	Q1	31-Mar-21	GEL	<	2.72E+02
OUTFALL 014	Q1	31-Mar-21	GEL	<	2.89E+02

Sample Location	Quarter	Sample Date	Lab	Result (pCi/L or <MDA)	MDA (pCi/L)
H3-PR-01	Q2	03-May-21	GEL	5.64E+02	2.69E+02
H3-PR-04	Q2	03-May-21	GEL	<	2.95E+02
H3-PR-05	Q2	03-May-21	GEL	<	2.77E+02
H3-PR-06	Q2	03-May-21	GEL	7.43E+02	2.66E+02
H3-PR-07	Q2	03-May-21	GEL	4.57E+02	2.70E+02
H3-PR-08	Q2	03-May-21	GEL	<	2.88E+02
H3-PR-14	Q2	03-May-21	GEL	<	2.91E+02
H3-PR-23	Q2	03-May-21	GEL	<	2.68E+02
H3-PR-24	Q2	03-May-21	GEL	<	4.87E+02
OUTFALL 002	Q2	03-May-21	GEL	<	2.94E+02
OUTFALL 014	Q2	03-May-21	GEL	<	2.94E+02

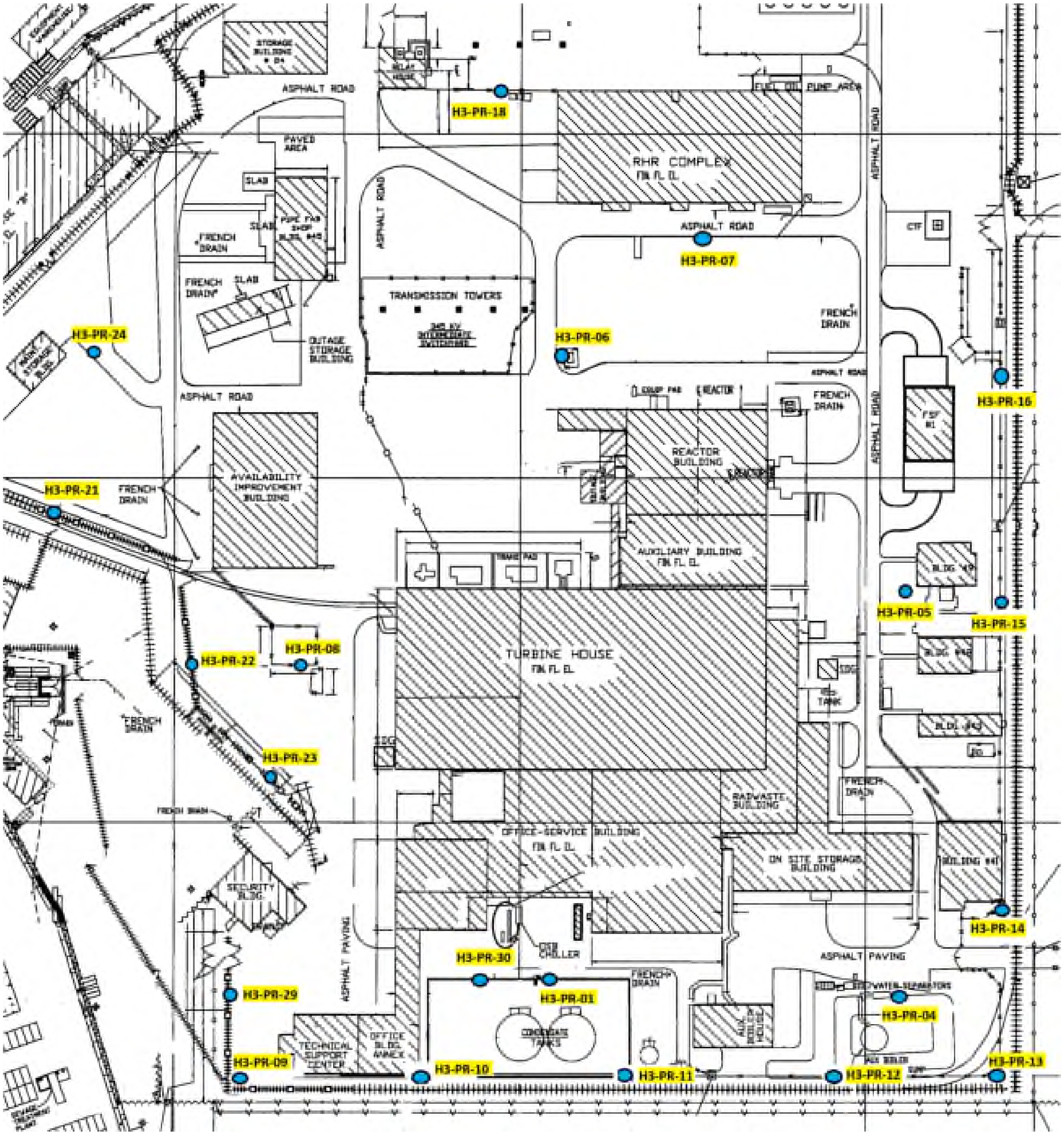
Table C-1 - Precipitation and Storm Water Tritium Analysis Results for Year 2021 (Continued)

Sample Location	Quarter	Sample Date	Lab	Result (pCi/L or <MDA)	MDA (pCi/L)
H3-PR-01	Q3	*	*	*	*
H3-PR-04	Q3	*	*	*	*
H3-PR-05	Q3	*	*	*	*
H3-PR-06	Q3	*	*	*	*
H3-PR-07	Q3	*	*	*	*
H3-PR-08	Q3	*	*	*	*
H3-PR-14	Q3	*	*	*	*
H3-PR-23	Q3	*	*	*	*
H3-PR-24	Q3	*	*	*	*
OUTFALL 002	Q3	12-Jul-21	GEL	<	4.31E+02
OUTFALL 014	Q3	12-Jul-21	GEL	<	4.34E+02

Sample Location	Quarter	Sample Date	Lab	Result (pCi/L or <MDA)	MDA (pCi/L)
H3-PR-01	Q4	*	*	*	*
H3-PR-04	Q4	*	*	*	*
H3-PR-05	Q4	*	*	*	*
H3-PR-06	Q4	*	*	*	*
H3-PR-07	Q4	*	*	*	*
H3-PR-08	Q4	*	*	*	*
H3-PR-14	Q4	*	*	*	*
H3-PR-15	Q4	*	*	*	*
H3-PR-23	Q4	*	*	*	*
H3-PR-24	Q4	*	*	*	*
OUTFALL 002	Q4	21-Oct-21	GEL	<	3.92E+02
OUTFALL 014	Q4	21-Oct-21	GEL	<	3.92E+02

*Rainwater samples are collected at least once annually and were not collected in quarters 1, 3, and 4.

Map 3 Map of Precipitation Collection Locations (EF2 and Owner Controlled Area)



Appendix D

2021 Meteorological Joint Frequency Distributions

Fermi 2 Nuclear Station
Site Identifier: 20
Data Period Examined: 1/1/2021 -12/31/202
Output of Table, wind-speed in m/s
Stability Class Based On: Delta T Between 60.0 and 10.0 Meters
Wind Measured At: 10.0 Meters
Wind Threshold At: 0.50 MPH
Joint Frequency Distribution of Wind Speed and Direction in Hours at 10.0 Meters

Table D-1: Joint Frequency Distribution - Class A

Wind Speed (m/s)	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**	**Total**
< 0.23 Calm																	0
0.23 - 0.34	1	1	0	0	0	1	0	1	1	2	0	1	0	0	0	0	8
0.35 - 1.12	5	1	0	1	4	3	3	3	0	2	1	0	0	0	5	1	29
1.13 - 2.01	14	3	14	5	8	15	17	14	14	17	14	8	13	10	8	3	177
2.02 - 2.91	14	10	12	16	28	63	58	46	43	45	30	20	21	36	26	20	488
2.92 - 3.80	22	9	10	17	21	44	63	70	31	38	36	16	28	25	24	23	477
3.81 - 5.14	26	5	5	11	13	24	22	43	23	41	35	8	25	39	28	25	373
5.15 - 6.48	10	3	4	6	8	13	5	8	8	25	18	5	5	12	17	11	158
6.49 - 8.27	5	4	0	0	6	3	0	1	1	5	9	1	5	6	4	7	57
> 8.27	0	0	0	0	1	0	0	0	0	2	0	0	0	1	2	1	7
Total	97	36	45	56	89	166	168	186	121	177	143	59	97	129	114	91	1774

Table D-2: Joint Frequency Distribution - Class B

Wind Speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
< 0.23 Calm																	
0.23 - 0.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
0.35 - 1.12	1	0	1	0	0	0	1	2	1	1	0	0	0	1	1	1	10
1.13 - 2.01	2	1	5	0	1	2	3	0	2	3	3	1	1	4	3	4	35
2.02 - 2.91	5	2	5	3	2	4	2	3	6	4	9	9	3	12	8	5	82
2.92 - 3.80	1	1	1	1	2	3	4	4	3	2	11	4	4	7	5	0	53
3.81 - 5.14	4	2	0	2	1	1	2	2	3	10	8	7	8	2	5	4	61
5.15 - 6.48	0	1	0	1	1	3	1	0	1	6	5	6	2	1	6	1	35
6.49 - 8.27	2	1	0	0	1	0	0	0	0	0	3	0	1	2	0	0	10
> 8.27	0	0	0	0	0	1	0	0	0	0	0	2	2	0	0	0	5
Total	15	8	12	7	8	14	13	11	16	26	39	29	21	29	29	16	293

Table D-3: Joint Frequency Distribution - Class C

Wind Speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
< 0.23 Calm																	
0.23 - 0.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.35 - 1.12	0	0	1	1	0	0	0	0	1	0	0	2	1	0	1	0	7
1.13 - 2.01	3	1	0	0	1	2	1	1	0	1	2	2	7	8	5	1	35
2.02 - 2.91	3	2	5	1	2	1	2	2	4	9	8	13	12	18	12	4	98
2.92 - 3.80	3	3	1	0	3	2	5	2	5	6	10	9	9	10	2	4	74
3.81 - 5.14	4	2	2	3	2	4	3	3	3	6	7	13	8	3	6	2	71
5.15 - 6.48	3	1	0	2	2	3	1	1	1	5	8	0	4	1	3	2	37
6.49 - 8.27	1	0	0	0	1	1	0	1	0	2	0	4	4	0	0	1	15
> 8.27	0	0	0	1	3	0	0	0	0	0	0	0	0	1	0	0	5
Total	17	9	9	8	14	13	12	10	14	29	35	43	45	41	29	14	343

Table D-4: Joint Frequency Distribution - Class D

Wind Speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
< 0.23 Calm																	0
0.23 - 0.34	0	1	0	0	0	0	1	0	1	1	1	0	2	1	2	0	10
0.35 - 1.12	9	4	3	9	8	4	5	4	2	7	7	5	13	12	6	5	103
1.13 - 2.01	24	24	22	2	11	16	9	11	25	31	35	57	59	48	47	23	444
2.02 - 2.91	26	27	32	36	31	28	25	22	50	59	64	64	82	41	55	48	690
2.92 - 3.80	34	10	49	60	36	23	18	27	34	58	61	49	47	50	41	40	637
3.81 - 5.14	38	24	45	58	30	21	13	33	32	72	80	52	27	29	38	38	630
5.15 - 6.48	33	21	21	34	15	13	9	10	15	33	44	15	18	12	12	14	319
6.49 - 8.27	15	16	9	13	16	8	3	4	2	18	22	8	7	9	8	9	167
> 8.27	4	10	2	2	3	3	0	0	0	1	5	4	5	0	4	2	45
Total	183	137	183	214	150	116	83	111	161	280	319	254	260	202	213	179	3045

Table D-5: Joint Frequency Distribution - Class E

Wind Speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
< 0.23 Calm																	10
0.23 - 0.34	1	2	0	1	1	0	2	2	1	2	1	0	1	2	1	3	20
0.35 - 1.12	14	6	7	5	4	5	5	11	15	24	13	19	17	26	12	8	191
1.13 - 2.01	19	13	14	11	20	15	11	26	45	56	51	52	70	82	61	30	576
2.02 - 2.91	24	9	21	15	31	23	24	25	53	83	38	42	51	53	60	36	588
2.92 - 3.80	15	6	3	5	11	24	19	19	28	47	18	7	9	13	19	6	249
3.81 - 5.14	2	1	5	3	9	20	19	15	14	35	12	1	2	7	8	5	158
5.15 - 6.48	0	1	0	2	4	2	1	6	5	20	14	0	0	2	2	1	60
6.49 - 8.27	0	1	0	0	0	0	1	1	1	11	2	0	0	0	0	0	17
> 8.27	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	3
Total	75	39	50	42	80	89	83	105	163	279	149	121	150	185	163	89	1872

Table D-6: Joint Frequency Distribution - Class F

Wind Speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
< 0.23 Calm																	15
0.23 - 0.34	0	0	0	0	0	0	0	0	1	0	1	3	2	4	3	0	14
0.35 - 1.12	5	2	3	2	1	4	5	7	16	8	10	13	20	19	16	5	136
1.13 - 2.01	10	0	0	2	3	9	6	14	11	25	23	27	23	66	36	17	272
2.02 - 2.91	6	3	1	2	9	12	12	6	6	15	11	5	9	15	13	10	135
2.92 - 3.80	2	0	0	0	7	11	7	3	10	9	0	0	1	0	2	5	57
3.81 - 5.14	0	0	0	0	5	7	5	4	4	13	1	0	0	0	0	0	39
5.15 - 6.48	0	0	0	1	1	1	1	2	0	4	1	0	0	0	0	0	11
6.49 - 8.27	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
> 8.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	23	5	4	7	26	44	36	36	49	75	47	48	55	104	70	37	681

Table D-7: Joint Frequency Distribution - Class G

Wind Speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
< 0.23 Calm																	8
0.23 - 0.34	0	0	0	0	0	2	1	0	2	2	0	0	2	1	1	0	11
0.35 - 1.12	4	1	2	1	2	1	1	5	5	3	4	3	24	31	19	6	112
1.13 - 2.01	12	1	3	1	1	5	7	2	4	7	8	5	30	46	15	8	155
2.02 - 2.91	0	0	0	0	3	11	3	5	3	3	0	2	5	10	2	1	48
2.92 - 3.80	0	0	0	0	1	5	2	1	4	1	0	0	0	0	1	0	15
3.81 - 5.14	0	1	0	0	7	8	3	3	3	2	0	0	0	0	0	0	27
5.15 - 6.48	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	3
6.49 - 8.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 8.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	16	3	5	2	15	33	17	16	22	18	12	10	61	88	38	15	379

Table D-8: Joint Frequency Distribution - All Classes

Wind Speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
< 0.23 Calm																	34
0.23 - 0.34	2	4	0	1	1	3	4	3	6	7	3	4	7	8	8	4	65
0.35 - 1.12	38	14	17	19	19	17	20	32	40	45	35	42	75	89	60	26	588
1.13 - 2.01	84	43	58	21	45	64	54	68	101	140	136	152	203	264	175	86	1694
2.02 - 2.91	78	53	76	73	106	142	126	109	165	218	160	155	183	185	176	124	2129
2.92 - 3.80	77	29	64	83	81	112	118	126	115	161	136	85	98	105	94	78	1562
3.81 - 5.14	74	35	57	77	67	85	67	103	82	179	143	81	70	80	85	74	1359
5.15 - 6.48	46	27	25	46	32	36	18	27	31	93	90	26	29	28	40	29	623
6.49 - 8.27	23	22	9	13	24	12	4	7	5	37	36	13	17	17	12	17	268
> 8.27	4	10	2	3	7	4	1	0	1	4	5	6	7	2	6	3	65
Total	426	237	308	336	382	475	412	475	546	884	744	564	689	778	656	441	8387

Table D-9: Percent of Occurrence of Stability Class

A	B	C	D	E	F	G
21.15	3.49	4.09	36.31	22.32	8.12	4.52

Table D-10: Distribution of Wind Direction vs Stability Class

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
A	97	36	45	56	89	166	168	186	121	177	143	59	97	129	114	91	0
B	15	8	12	7	8	14	13	11	16	26	39	29	21	29	29	16	0
C	17	9	9	8	14	13	12	10	14	29	35	43	45	41	29	14	1
D	183	137	183	214	150	116	83	111	161	280	319	254	260	202	213	179	0
E	75	39	50	42	80	89	83	105	163	279	149	121	150	185	163	89	10
F	23	5	4	7	26	44	36	36	49	75	47	48	55	104	70	37	15
G	16	3	5	2	15	33	17	16	22	18	12	10	61	88	38	15	8
TOTAL	426	237	308	336	382	475	412	475	546	884	744	564	689	778	656	441	34

Appendix E

ODCM Revision 24

OFFSITE DOSE CALCULATION MANUAL

Revision Summary

1. Change calibration frequency definition “R” from “18 Months (550 days)” to “24 Months (732 days)” to support transition to 24-month fuel cycle (Reference Table 2.1).

Implementation Plan

This revision goes into effect upon approval.

Discard all pages of current TRM Volume II (ODCM Revision 23) and replace with this document (ODCM Revision 24)

Information and Procedures

DTC	DSN	Revision	Date Issued	Change#	File #	IP	ISFSI	Recipient
TMTRM	TRM VOL II	24	3/9/2021	20-035-ODM	1754	I	N	

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

Page Section

PART II - CALCULATIONAL METHODS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLES

TABLE OF CONTENTS (continued)

TABLES (continued)

FIGURES

END OF SECTION 0.0

PART 1 – RADIOLOGICAL EFFLUENT CONTROLS

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

Part I of the Fermi 2 Offsite Dose Calculation Manual (ODCM), which includes Sections 2.0 through 5.0, contains the controls and surveillance requirements for radioactive effluents and radiological environmental monitoring. It also contains requirements for the Annual Radiological Environmental Operating Report and the Annual Radioactive Effluent Release Report.

This satisfies the requirements for Technical Specification 5.5.1, the Offsite Dose Calculation Manual (ODCM), and Technical Specification 5.5.4, Radioactive Effluent Controls Program.

Part II of the ODCM describes the methodology and parameters used in calculating radioactive liquid and gaseous effluent monitoring instrumentation alarm/trip setpoints, and in calculating liquid and gaseous effluent dose rates and cumulative doses.

The methodology provided in Part II of this manual is acceptable for use in demonstrating compliance with the dose limits for members of the public of 10 CFR 20, the cumulative dose criteria of 10 CFR 50, Appendix I and 40 CFR 190, and the controls in Part I of this manual.

Part II, Section 6.0 of the ODCM describes equipment for monitoring and controlling liquid effluents, sampling requirements, and dose evaluation methods. Section 7.0 provides similar information on gaseous effluent controls, sampling, and dose evaluation. Section 8.0 describes special dose analyses required for compliance with Fermi 2 Offsite Dose Calculation Manual and 40 CFR 190. Section 9.0 describes the role of the annual land use census in identifying the controlling pathways and locations of exposure for assessing potential off-site doses. Section 10.0 describes the Radiological Environmental Monitoring Program.

The ODCM will be maintained at Fermi 2 for use as a listing of radiological effluent controls and surveillance requirements, as well as a reference guide and training document for accepted methodologies and calculations. Changes to the ODCM calculational methodologies and parameters will be made as necessary to ensure reasonable conservatism in keeping with the principles of 10 CFR 50.36a and Appendix I for demonstrating that radioactive effluents are "As Low As Reasonably Achievable."

NOTE: Throughout this document words appearing all capitalized denote either definitions specified in the Fermi 2 Controls or common acronyms.

END OF SECTION 1.0

SECTION 2.0

DEFINITIONS

2.0 DEFINITIONS

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. A CHANNEL CALIBRATION shall encompass the entire channel including the required sensor, alarm, display, and trip functions, and shall include a CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detectors (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. A CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.
CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify FUNCTIONAL CAPABILITY, including required alarm, interlock, display, and trip functions, and channel failure trips. A CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

Term	Definition
FREQUENCY NOTATION	The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 2.1.
FUNCTIONALLY CAPABLE	A system, subsystem, division, component, or device shall be FUNCTIONALLY CAPABLE or have FUNCTIONAL CAPABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
MEMBER(S) OF THE PUBLIC	MEMBER(S) OF THE PUBLIC means any individual except when that individual is receiving an occupational dose.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 2.2 with fuel in the reactor vessel.
MPC	(Maximum Permissible Concentration in water) For individual nuclides, 10 times the concentration values in 10 CFR Part 20.1001-20.2402, Appendix B, Table 2, Column 2, except for noble gases which are limited to 2E-4 uCi/ml total activity concentration. For nuclide mixtures, concentrations for which the sum of individual nuclide concentrations divided by their corresponding individual MPC values equals 1.
OCCUPATIONAL DOSE	OCCUPATIONAL DOSE means the dose received by an individual in the course of employment in which the individual’s assigned duties involve exposure to radiation and/or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the general public.

Term	Definition
OFF-GAS TREATMENT SYSTEM	An OFF-GAS TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting reactor coolant system offgases from the reactor coolant and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.
OFFSITE DOSE CALCULATIONAL MANUAL	The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluent, in the calculation of gaseous and liquid effluent monitoring alarm/trip setpoints, and in the conduct of the radiological environmental monitoring program. The ODCM shall also contain (1) the Radiological Effluent Controls and Radiological Environmental Monitoring Program Controls, and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Reports required by Controls 5.9.1.7 and 5.9.1.8.
PUBLIC DOSE	PUBLIC DOSE means the dose received by a member of the public from exposure to radiation and/or radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. It does not include occupational dose or doses received from background radiation, as a patient from medical practices, or from voluntary participation in medical research programs.
PURGE - PURGING	PURGE or PURGING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3486 MWt.
REPORTABLE EVENT	A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

Term	Definition
SITE BOUNDARY	The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled, by the licensee.
SOURCE CHECK	A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
UNRESTRICTED AREA	The Fermi 2 Energy Center UNRESTRICTED AREA includes all areas outside the site boundary.
VENTILATION EXHAUST TREATMENT SYSTEM	A VENTILATION EXHAUST TREATMENT SYSTEM shall be any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment. Such a system is not considered to have any effect on noble gas effluents. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.
VENTING	VENTING shall be the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is not provided or required during VENTING. Vent, used in system names, does not imply a VENTING process.

TABLE 2.1

SURVEILLANCE FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 184 days.
A	At least once per 366 days.
R	At least once per 24 months (732 days).
S/U	Prior to each reactor startup.
P	Prior to each radioactive release.
N.A.	Not applicable.

TABLE 2.2

MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	Run	NA
2	Startup	Refuel[(a)] or Startup/Hot Standby	NA
3	Hot Shutdown[(a)]	Shutdown	> 200
4	Cold Shutdown[(a)]	Shutdown	≤ 200
5	Refueling[(b)]	Shutdown or Refuel	NA

(a) All reactor vessel head closure bolts fully tensioned.

(b) One or more reactor vessel head closure bolts less than fully tensioned.

END OF SECTION 2.0

SECTION 3.0

CONTROLS

AND

SURVEILLANCE REQUIREMENTS

3/4 CONTROLS AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

CONTROLS

3.0.1 Controls shall be met during the MODES or other specified conditions in the Applicability, except as provided in Control 3.0.2.

3.0.2 Upon discovery of a failure to meet a Control, the Actions shall be met, except as provided in Control 3.0.5.

If the Control is met or is no longer applicable prior to expiration of the specified completion time(s), completion of the Action(s) is not required, unless otherwise stated.

3.0.3 When a Control is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the Control is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

1. Mode 2 within 7 hours;
2. Mode 3 within 13 hours; and
3. Mode 4 within 37 hours.

Exceptions to this Control are stated in the individual Controls.

Where corrective measures are completed that permit operation in accordance with the Control or ACTIONS, completion of the actions required by Control 3.0.3 is not required.

Control 3.0.3 is only applicable in MODES 1, 2, and 3.

3.0.4 When a Control is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Exceptions to this Control are stated in the individual Controls. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.

Control 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

3.0.5 Equipment removed from service or declared not FUNCTIONALLY CAPABLE to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its FUNCTIONAL CAPABILITY or the FUNCTIONAL CAPABILITY of other equipment. This is an exception to Control 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate FUNCTIONAL CAPABILITY.

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Controls, unless otherwise stated in the Surveillance Requirements. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Control. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the Control except as provided in Surveillance Requirement 4.0.3. Surveillances do not have to be performed on equipment which is not FUNCTIONALLY CAPABLE or variables outside specified limits.

4.0.2 The specified Frequency is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per …" basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Control are stated in the individual Controls.

4.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the Control not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

If the Surveillance is not performed within the delay period, the Control must immediately be declared not met, and the applicable ACTIONS must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the Control must immediately be declared not met, and the applicable ACTIONS must be entered.

4.0.4 Entry into a MODE or other specified condition in the Applicability of a Control shall not be made unless the Control's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

4.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

3/4.3.7.11 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

3.3.7.11 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3.7.11-1 shall be FUNCTIONALLY CAPABLE with their alarm/trip setpoints set to ensure that the limits of Control 3.11.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATIONAL MANUAL (ODCM).

APPLICABILITY: At all times.

ACTION:

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above control, immediately suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel not FUNCTIONALLY CAPABLE, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels FUNCTIONALLY CAPABLE, take the ACTION shown in Table 3.3.7.11-1. Restore the instrumentation which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status within 30 days and, if unsuccessful, explain why this condition was not corrected in a timely manner in the next Annual Radioactive Effluent Release Report.

c. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.11 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated FUNCTIONALLY CAPABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3.7.11-1.

TABLE 3.3.7.11-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Instrument	***Minimum Channels Functionally Capable***	***Action***
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE		
a. Liquid Radwaste Effluent Line D11-N007	1	110
2. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE		
a. Circulating Water Reservoir Decant Line D11-N402	1	111
3. FLOW RATE MEASUREMENT DEVICES *		
a. Liquid Radwaste Effluent Line G11-R703	1	112

TABLE NOTATION

* The circulating water reservoir decant line flow rate monitor has been removed. The flow rate in this decant line is now measured using certified pump performance curves for the circulating water reservoir decant pumps, together with readings from pump discharge pressure gauges and reservoir level indication. The circulating water reservoir decant line flow rate device was deleted from this table; the Liquid Radwaste Effluent Line flow rate device refers to a monitor on the radwaste blowdown line from the Waste Sample Tanks, upstream of the circulating water decant line.

TABLE 3.3.7.11-1 (Continued)

TABLE NOTATIONS

ACTION 110 - With the number of channels FUNCTIONALLY CAPABLE less than that required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases from this pathway may continue provided that prior to initiating a release:

a. At least two independent samples are analyzed in accordance with Surveillance Requirement 4.11.1.1.1, and

b. At least two technically qualified individuals independently verify the release rate calculations and discharge line valving (one technically qualified individual can be the preparer of the calculation, the other independently reviews the release rate calculations to verify accuracy);

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 111 - With the number of channels FUNCTIONALLY CAPABLE less than the Minimum Channels FUNCTIONALLY CAPABLE requirement, radioactive effluent releases via this pathway may continue provided that grab samples are collected and analyzed at least once per 12 hours for gross radioactivity (beta or gamma) at a lower limit of detection of at least 1×10^{-7} microcurie/ml, for Cs-137. Otherwise, suspend release of radioactive effluents via this pathway. If radioactive effluent releases are not in progress, i.e., if no Waste Sample Tank (or other tank containing radioactive liquid) is being released and the circulating water is not contaminated as shown by the most recent circulating water sample(s), this sampling requirement does not apply.

ACTION 112 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, radioactive effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours during actual releases. Otherwise, suspend release of radioactive effluents via this pathway. If radioactive effluent releases are not in progress, i.e., if no Waste Sample Tank (or other tank containing radioactive liquid) is being released, this requirement does not apply.

TABLE 4.3.7.11-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	*Channel Check*	*Source Check*	*Channel Calibration*	*Channel Functional Test*
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE				
a. Liquid Radwaste Effluent Line	P	P	R(3)	Q(1) (2)
2. GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE				
a. Circulating Water Reservoir Decant Line D11-N402	D	M	R(3)	Q(5)
3. FLOW RATE MEASUREMENT DEVICES (4)				
a. Liquid Radwaste Effluent Line	D(4)	N.A.	R	Q

TABLE 4.3.7.11-1 (Continued)

TABLE NOTATIONS

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

(3) The initial CHANNEL CALIBRATION shall be performed using National Institute of Standards and Technology traceable sources. These standards shall permit calibrating the system over the range of energy and measurement expected during normal operation and anticipated operational occurrences. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration or are National Institute of Standards and Technology traceable shall be used.

(4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made.

(5) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.

3/4.3.7.12 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

3.3.7.12 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3.7.12-1 shall be FUNCTIONALLY CAPABLE with their alarm/trip setpoints set to ensure that the limits of Control 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels, with the exception of the offgas monitoring system, shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY: Actions a and b: As shown in Table 3.3.7.12-1
Actions c and d: At all times

ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Control, immediately suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel not FUNCTIONALLY CAPABLE, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels FUNCTIONALLY CAPABLE, take the ACTION shown in Table 3.3.7.12-1.

c. Restore radioactive gaseous effluent monitoring instrumentation which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status within 30 days and, if unsuccessful, explain why this condition was not corrected in a timely manner in the next Annual Radioactive Effluent Release Report.

d. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.12 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated FUNCTIONALLY CAPABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3.7.12-1.

TABLE 3.3.7.12-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Instrument	*Minimum Channels Functionally Capable*	*Applicability*	*Action*
1. REACTOR BUILDING EXHAUST PLENUM EFFLUENT MONITORING SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123
2. OFFGAS MONITORING SYSTEM (At the 2.2 minute delay piping)			
a. Noble Gas Activity Monitor - Providing Alarm	1	**	126
3. STANDBY GAS TREATMENT SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm	1	#	125
b. Iodine Sampler	1	#	122
c. Particulate Sampler	1	#	122
d, Sampler Flow Rate Monitor	1	#	123
4. TURBINE BLDG. VENTILATION MONITORING SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123

TABLE NOTATIONS

*	At all times.
**	During operation of the main condenser air ejector.
#	During operation of the standby gas treatment system.

TABLE 3.3.7.12-1 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Instrument	*Minimum Channels Functionally Capable*	*Applicability*	*Action*
5. RADWASTE BUILDING VENTILATION MONITORING SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123
6. ONSITE STORAGE BUILDING VENTILATION EXHAUST RADIATION MONITOR			
a. Low Range Noble Gas Activity Monitor - Providing Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123

TABLE NOTATIONS

* At all times.

TABLE 3.3.7.12-1 (Continued)

ACTION STATEMENTS

ACTION 121 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 9 hours and these samples are analyzed for gross activity within 24 hours, or, if valid monitor indication of noble gas concentration is available, that noble gas concentration readings are recorded at least once per 9 hours. Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 122 - With the number of channels FUNCTIONALLY CAPABLE one less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided that within 8 hours samples are continuously collected with auxiliary sampling equipment as required in Table 4.11.2.1.2-1.

ACTION 123 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 9 hours. Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 124 - Not used.

ACTION 125 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 9 hours and these samples are analyzed for gross activity within 24 hours, or, if valid monitor indication of noble gas concentration is available, that noble gas concentration readings are recorded at least once per 9 hours. Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 126 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, releases via this pathway to the environment may continue provided that:

a. The offgas system is not bypassed,
b. The reactor building exhaust plenum noble gas effluent (downstream) monitor is FUNCTIONALLY CABAPLE, and
c. Grab samples are taken at least once per 24 hours and these samples are analyzed for principal emitters within 24 hours with calculation of offgas radioactivity rate.

Otherwise, be in at least HOT STANDBY within 12 hours.

TABLE 4.3.7.12-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	***Channel Check***	***Source Check***	***Channel Calibration***	***Channel Functional Test***	***Modes in Which Surveillance Required***
1. REACTOR BUILDING EXHAUST PLENUM					
a. Low Range Noble Gas Activity Monitor - Providing Alarm	D	M	R(2)	Q(1)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A.	R	Q	*
2. OFFGAS MONITORING SYSTEM (At the 2.2 minute delay piping)					
a. Noble Gas Activity Monitor	D	M	R(2)	Q(1)	**
3. STANDBY GAS TREATMENT MONITORING SYSTEM					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(1)	#
b. Iodine Sampler	W	N.A.	N.A.	N.A.	#
c. Particulate Sampler	W	N.A.	N.A.	N.A.	#
d. Sampler Flow Rate Monitor	D	N.A.	R	Q	#
4. TURBINE BLDG. VENTILATION MONITORING SYSTEM					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(4)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A.	R	Q	*

TABLE 4.3.7.12-1 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	*Channel Check*	*Source Check*	*Channel Calibration*	*Channel Functional Test*	*Modes in Which Surveillance Required*
5. RADWASTE BUILDING VENTILATION MONITORING SYSTEM					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(4)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A.	R	Q	*
6. ONSITE STORAGE BUILDING VENTILATION EXHAUST RADIATION MONITOR					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(1)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A.	R	Q	*

TABLE 4.3.7.12-1 (Continued)

TABLE NOTATIONS

* At all times.

** During operation of the main condenser air ejector.

\# During operation of the standby gas treatment system.

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode (alarm or type).

(2) The initial CHANNEL CALIBRATION shall be performed using National Institute of Standards and Technology traceable sources. These standards shall permit calibrating the system over the range of energy and measurement expected during normal operation and anticipated operational occurrences. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration or are National Institute of Standards and Technology traceable shall be used.

(3) Not used.

(4) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation occurs on high level and that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoints.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in the operate mode (alarm or type).

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

CONCENTRATION

CONTROLS

3.11.1.1 The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (see Figure 3.0-1) shall be limited to ten times the concentration values specified in 10 CFR Part 20, 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 2×10^{-4} microcuries/ml total activity.

APPLICABILITY: At all times.

ACTION:

With the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS exceeding the above limits, immediately restore the concentration to within the above limits.

SURVEILLANCE REQUIREMENTS

4.11.1.1.1 Radioactive liquid wastes shall be sampled and analyzed according to the sampling and analysis program of Table 4.11.1.1.1-1.

4.11.1.1.2 The results of the radioactivity analyses shall be used in accordance with the methodology and parameters in the ODCM to assure that the concentrations at the point of release are maintained within the limits of Control 3.11.1.1.

TABLE 4.11.1.1.1-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	***Sampling Frequency***	***Minimum Analysis Frequency***	***Type of Activity Analysis***	***Lower Limit of Detection (LLD)[a] (uCi/ml)***
A. Batch Release[b]: Waste Sample Tanks (3)	P Each Batch	P Each Batch	Principal Gamma Emitters[c]	5×10^{-7}
			I-131	1×10^{-6}
			Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
	P Each Batch	M Composite[d]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	P Each Batch	Q Composite[d]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
B. Continuous Releases[e] Circulating Water System (if contaminated)	W[f] Grab Sample	M[f] Composite[d]	Principal Gamma Emitters[c]	5×10^{-7}
			I-131	1×10^{-6}
			Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
			H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	NA	Q Composite[d]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}

TABLE 4.11.1.1.1-1 (Continued)

TABLE NOTATION

[a]The LLD is defined, for purposes of these controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$\mathrm{LLD} = \frac{4.66 \bullet s_b}{E \bullet V \bullet 2.22 \text{ x } 10^6 \bullet Y \bullet \exp\left(-\lambda t\right)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

$2.22 \text{ x } 10^6$ is the number of disintegrations per minute per microcurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

t for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and t should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

[b]A batch release is the discharge of liquid wastes of a discrete volume.
Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed by a method described in the ODCM to assure representative sampling. Batch liquid discharge may be made from only one tank at a time.

TABLE 4.11.1.1.1-1 (Continued)

TABLE NOTATION

[c] The principal gamma emitters for which the LLD specification applies exclusively are: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, and Ce-141. Ce-144 shall also be measured, but with an LLD of 5 x 10^{-6}. This does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report pursuant to Control 5.9.1.8.

[d] This type of composite sample is a sample composed of aliquots of pre-release samples or grab samples taken during releases, or of aliquots of composite samples so prepared, so as to represent releases taking place over a longer period of time. The volumes of these aliquots should be proportional to the volumes of the releases which they represent.

[e] A continuous release is the discharge of liquid wastes of a nondiscrete volume; e.g., from a volume of a system that has an input flow during the continuous release.

[f] When the circulating water system is first discovered to be contaminated, grab samples may be taken more frequently, and may be analyzed immediately. After the source of the contamination is discovered and isolated, and contamination levels are not increasing, this grab sampling and analysis frequency may be reduced to the schedule specified in the table.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

DOSE

CONTROLS

3.11.1.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each reactor unit, to UNRESTRICTED AREAS (see Figure 3.0-1) shall be limited:

a. During any calendar quarter to less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ, and

b. During any calendar year to less than or equal to 3 mrems to the total body and to less than or equal to 10 mrems to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioactive materials in liquid effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. This Special Report shall also include (1) the results of radiological analyses of the drinking water source and (2) the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR Part 141, Safe Drinking Water Act.*

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.2 Cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days, if radioactive liquid effluent releases have occurred during the period being evaluated.

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*Applicable only if drinking water supply is taken from the receiving water body within 3 miles of the plant discharge.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

LIQUID WASTE TREATMENT

CONTROLS

3.11.1.3 The liquid radwaste treatment system shall be FUNCTIONALLY CAPABLE and appropriate portions of the system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected doses due to the liquid effluent, from each reactor unit, to UNRESTRICTED AREAS (see Figure 3.0-1) would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in any 31-day period.

APPLICABILITY: At all times.

ACTION:

a. With radioactive liquid waste being discharged and in excess of the above limits and any portion of the liquid radwaste treatment system not in operation, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that includes the following information:

   1. Explanation of why liquid radwaste was being discharged without complete treatment, identification of any equipment or subsystems which are not FUNCTIONALLY CAPABLE, and the reason for the not FUNCTIONALLY CAPABLE status.

   2. Action(s) taken to restore the equipment which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status, and

   3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.3.1 Doses due to liquid releases from each reactor unit to UNRESTRICTED AREAS shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM, if radioactive liquid effluent releases have occurred during the period being evaluated.

4.11.1.3.2 The installed liquid radwaste treatment system shall be demonstrated FUNCTIONALLY CAPABLE by meeting Controls 3.11.1.1 and 3.11.1.2.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE RATE

CONTROLS

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 (see Figure 3.0-1) shall be limited to the following:

a. For noble gases: Less than or equal to 500 mrems/yr to the total body and less than or equal to 3000 mrems/yr to the skin, and

b. For iodine-131, iodine-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to 1500 mrems/yr to any organ.

APPLICABILITY: At all times.

ACTION:

With the dose rate(s) exceeding the above limits, immediately restore the release rate to within the above limit(s).

SURVEILLANCE REQUIREMENTS

4.11.2.1.1 The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM.

4.11.2.1.2 The dose rate due to iodine-131, iodine-133, tritium, and all other radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.11.2.1.2-1.

TABLE 4.11.2.1.2-1

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	***Sampling Frequency***	***Minimum Analysis Frequency***	***Type of Activity Analysis***	***Lower Limit of Detection (LLD)[a] (uCi/ml)***
A. Containment PURGE (Pre Treatment)	P[i], S[j] Each PURGE Grab Sample	P[i], S[j] Each PURGE P[i]	Principal Gamma Emitters[b] H-3	1×10^{-4} 1×10^{-6}
B. Reactor Building Exhaust Plenum Standby Gas Treatment System[h]	M[c,e] Grab Sample	M[c] M[c]	Principal Gamma Emitters[b] H-3	1×10^{-4} 1×10^{-6}
C. Radwaste Building Turbine Building On-Site Storage Facility	M Grab Sample	M M	Principal Gamma Emitters[b] H-3	1×10^{-4} 1×10^{-6}
D. All Release Types as listed in B and C above.	Continuous[f]	W[g] Absorbent Sample	I-131 I-133	1×10^{-12} 1×10^{-10}
	Continuous[f]	W[g] Particulate Sample	Principal Gamma Emitters[b] (I-131, others) Gross Alpha	1×10^{-11}
	Continuous[f]	Q Composite Particulate Sample	Sr-89, Sr-90, Fe-55	1×10^{-11}
	Continuous[f]	Noble Gas Monitor	Noble Gas Gross Beta or Gamma	1×10^{-6}
E. Offgas Vent Pipe	N.A.[k] Grab Sample	N.A.[k]	Principal Gamma Emitters[b]	1×10^{-4}

TABLE 4.11.2.1.2-1 (Continued)

TABLE NOTATION

[a]The LLD is defined, for purposes of these controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$\text{LLD} = \frac{4.66 \bullet s_b}{E \bullet V \bullet 2.22 \text{ x } 10^6 \bullet Y \bullet \exp(-\lambda t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

$2.22 \text{ x } 10^6$ is the number of disintegrations per minute per microcurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

t for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and t should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

[b]The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-138, Ar-41, Kr-85m, and Xe-135m in noble gas releases and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137, Ce-141, and Ce-144 in iodine and particulate releases. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report pursuant to Control 5.9.1.8.

TABLE 4.11.2.1.2-1 (Continued)

TABLE NOTATION

[c] Sampling and analysis shall also be performed following shutdown, startup, or a THERMAL POWER change exceeding 15% of RATED THERMAL POWER within a 1-hour period. This requirement does not apply if the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

[d] Not used.

[e] Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.

[f] The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Controls 3.11.2.1, 3.11.2.2, and 3.11.2.3.

[g] Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 3 days following each shutdown, startup or THERMAL POWER change exceeding 15% of RATED THERMAL POWER in 1 hour, and analyses shall be completed within 48 hours of changing, at any release point at which the noble gas monitor shows that effluent activity has increased more than a factor of 3.

When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10. When samples collected for periods between 24 hours and 7 days are analyzed, the corresponding LLDs may be increased by a factor equal to the normal weekly sample volume divided by the volume of the sample in question.

[h] Required when the SGTS is in operation.

[i] In MODES 1, 2, 3, and 4, the applicable portion of primary containment shall be sampled and analyzed within 8 hours prior to the start of any PURGING.

[j] In MODES 1, 2, 3, and 4, when the primary containment atmosphere radiation monitoring system is declared not FUNCTIONALLY CAPABLE or is in alarm condition, the applicable portion of primary containment shall be sampled and analyzed within 8 hours prior to the start of any VENTING or PURGING and at least once per 12 hours during VENTING or PURGING through other than SGTS.

[k] Offgas Vent Pipe sampling is performed as directed by Radiation Protection to supplement Reactor Building Exhaust Plenum monthly grab sampling. The Offgas Vent Pipe sample point is upstream of the Reactor Building Exhaust Plenum.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE - NOBLE GASES

CONTROLS

3.11.2.2 The air dose due to noble gases released in gaseous effluents, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 3.0-1) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation and,

b. During any calendar year: Less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

APPLICABILITY: At all times.

ACTION:

With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.2 Cumulative dose contributions for the current calendar quarter and current calendar year for noble gases shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

CONTROLS

3.11.2.3 The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 3.0-1) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 7.5 mrems to any organ and,

b. During any calendar year: Less than or equal to 15 mrems to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the cause(s) for exceeding the limit and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.3 Cumulative dose contributions for the current calendar quarter and current calendar year for iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

OFF-GAS TREATMENT SYSTEM

CONTROLS

3.11.2.4 The OFF-GAS TREATMENT SYSTEM shall be FUNCTIONALLY CAPABLE and shall be in operation.

APPLICABILITY: Whenever the main condenser steam jet air ejectors are in operation.

ACTION:

With the OFF-GAS TREATMENT SYSTEM not FUNCTIONALLY CAPABLE for more than 7 days, prepare and submit to the commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that includes the following information:

1. Identification of the equipment or subsystems which are not FUNCTIONALLY CAPABLE and the reason for the not FUNCTIONALLY CAPABLE status,
2. Action(s) taken to restore the equipment which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status, and
3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

c. The provisions of Control 4.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.4 The OFF-GAS TREATMENT SYSTEM shall be demonstrated FUNCTIONALLY CAPABLE by meeting Controls 3.11.2.1, 3.11.2.2, and 3.11.2.3.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

VENTILATION EXHAUST TREATMENT SYSTEM

CONTROLS

3.11.2.5 The VENTILATION EXHAUST TREATMENT SYSTEM as described in the ODCM shall be FUNCTIONALLY CAPABLE and appropriate portions of the system shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses due to gaseous effluent releases from the site to UNRESTRICTED AREAS (see Figure 3.0-1) would exceed 0.3 mrem to any organ in any 31-day period.

APPLICABILITY: At all times.

ACTION:

With radioactive gaseous waste being discharged in excess of the above limits and any portion of the VENTILATION EXHAUST TREATMENT SYSTEM not in operation, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that includes the following information:

1. Identification of any equipment or subsystems which are not FUNCTIONALLY CAPABLE and the reason for the not FUNCTIONALLY CAPABLE status.
2. Action(s) taken to restore the equipment which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status, and
3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.5.1 Doses due to gaseous releases from the site shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM, when any portion of the VENTILATION EXHAUST TREATMENT SYSTEM is not in use.

4.11.2.5.2 The VENTILATION EXHAUST TREATMENT SYSTEM shall be demonstrated FUNCTIONALLY CAPABLE by meeting Controls 3.11.2.1, 3.11.2.2, and 3.11.2.3.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

VENTING OR PURGING

CONTROLS

3.11.2.8 VENTING or PURGING of the primary containment shall be through the standby gas treatment system or the reactor building ventilation system.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTION:

a. With the requirements of the above control not satisfied, suspend all VENTING or PURGING of the primary containment.

b. The provision of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.8.1 The applicable portion of primary containment shall be sampled and analyzed per Table 4.11.2.1.2-1 of Control 3.11.2.1 within 8 hours prior to the start of any PURGING.

4.11.2.8.2 If the primary containment radiation monitoring system is not FUNCTIONALLY CAPABLE or is in alarm condition, the applicable portion of primary containment shall be sampled and analyzed per Table 4.11.2.1.2-1 of Control 3.11.2.1 within 8 hours prior to the start of and at least once per 12 hours during VENTING or PURGING of primary containment through other than the standby gas treatment system.

4.11.2.8.3 The primary containment shall be determined to be aligned for VENTING or PURGING through the standby gas treatment system or the reactor building ventilation system within 4 hours prior to start of and at least once per 12 hours during VENTING or PURGING of the containment.

4.11.2.8.4 Prior to use of the vent/purge system through the standby gas treatment system assure that:

a. Both standby gas treatment system trains are FUNCTIONALLY CAPABLE whenever the vent/purge system is in use, and

b. Whenever the vent/purge system is in use during MODE 1 or 2 or 3, only one of the standby gas treatment system trains may be used.

4.11.2.8.5 Prior to VENTING or PURGING, assure that at least one of the following monitors is FUNCTIONALLY CAPABLE: the primary containment atmosphere radiation monitor, the reactor building ventilation exhaust radiation monitor (at least one division), or the SPING monitor corresponding to the release path (the reactor building exhaust plenum radiation monitor or the standby gas treatment system radiation monitor, Division 1 or 2).

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.4 TOTAL DOSE

CONTROLS

3.11.4 The annual (calendar year) dose or dose commitment to any member of the public (as defined in 40 CFR Part 190) due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

APPLICABILITY: At all times.
ACTION:

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Controls 3.11.1.2a., 3.11.1.2b., 3.11.2.2a., 3.11.2.2b., 3.11.2.3a., or 3.11.2.3b., calculations should be made including direct radiation contributions from the reactor units and from outside storage tanks to determine whether the above limits of Control 3.11.4 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR 20.2203, shall include an analysis that estimates the radiation exposure (dose) to a member of the public from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Controls 4.11.1.2, 4.11.2.2, and 4.11.2.3, and in accordance with the methodology and parameters in the ODCM.

4.11.4.2 Cumulative dose contributions from direct radiation from the reactor units and from outside storage tanks shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in Control 3.11.4, ACTION a.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.1 MONITORING PROGRAM

CONTROLS

3.12.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.12.1-1.

APPLICABILITY: At all times.

ACTION:

a. With the radiological environmental monitoring program not being conducted as specified in Table 3.12.1-1, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report required by Control 5.9.1.7, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

With the level of radioactivity as the result of plant effluents in an environmental sampling medium at a specified location exceeding the reporting levels of Table 3.12.1-2 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose* to A MEMBER OF THE PUBLIC is less than the calendar year limits of Controls 3.11.1.2, 3.11.2.2, and 3.11.2.3. When more than one of the radionuclides in Table 3.12.1-2 are detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \ldots \geq 1.0$$

b. When radionuclides other than those in Table 3.12.1-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose* to A MEMBER OF THE PUBLIC from all radionuclides is equal to or greater than the calendar year limits of Controls 3.11.1.2, 3.11.2.2, and 3.11.2.3. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

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*The methodology used to estimate the potential annual dose to a MEMBER OF THE PUBLIC shall be indicated in this report.

CONTROLS (Continued)

c. With milk or fresh leafy vegetable samples unavailable from one or more of the sample locations required by Table 3.12.1-1, identify specific locations for obtaining replacement samples and add them to the radiological environmental monitoring program within 30 days. The specific locations from which samples were unavailable may then be deleted from the monitoring program. Pursuant to Control 5.9.1.8, identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report pursuant to Control 5.9.1.8 and also include in the report a revised table for the ODCM reflecting the new location(s).

d. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.1 The radiological environmental monitoring samples shall be collected pursuant to Table 3.12.1-1 from the specific locations given in the table in the ODCM, and shall be analyzed pursuant to the requirements of Table 3.12.1-1 and the detection capabilities required by Table 4.12.1-1.

TABLE 3.12.1-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	***Number of Representative Samples and Sample Locations***[a]	***Sampling and Collection Frequency***	***Type and Frequency of Analysis***
1. DIRECT RADIATION[b]	71 routine monitoring stations, with two or more dosimeters placed as follows: 1) an inner ring of stations in the general area of the SITE BOUNDARY and additional rings at approximately 2, 5, and 10 miles, with a station in at least every other meteorological sector for each ring with the exception of those sectors over Lake Erie. The balance of the stations, 8, should be placed in special interest areas such as population centers, nearby residences, schools, and in 2 or 3 areas to serve as control stations.	Quarterly	Gamma dose quarterly.
2. AIRBORNE Radioiodine and Particulates	Samples from 5 locations. a. 3 samples from close to the 3 SITE BOUNDARY locations, in different sectors, of the highest calculated 5-year average D/Q. b. 1 sample from the vicinity of a community having the highest calculated 5-year averages D/Q. c. 1 sample from a control location, as for example 15-30 km distant and in the least prevalent wind direction[c].	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading.	Radioiodine Canister: I-131 analysis weekly. Particulate Sampler: Gross beta radioactivity analysis following filter change:[d] Gamma isotopic analysis[e] of composite (by location) quarterly.

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	*Number of Representative Samples and Sample Locations*[a]	*Sampling and Collection Frequency*	*Type and Frequency of Analysis*
3. WATERBORNE			
a. Surface[f]	a. 1 sample upstream. b. 1 sample downstream.	Composite sample over 1-month period[g]	Gamma isotopic analysis[e] monthly. Composite for tritium analysis quarterly.
b. Ground	Samples from 1 or 2 sources only if likely to be affected[h].	Quarterly	Gamma isotopic[e] and tritium analysis quarterly.
c. Drinking	a. 1 sample of each of 1 to 3 of the nearest water supplies that could be affected by its discharge. b. 1 sample from a control location.	Composite sample over 2-week period[g] when I-131 analysis is performed, monthly composite otherwise.	I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year.[i] Composite for gross beta and gamma isotopic analyses[e] monthly. Composite for tritium analysis quarterly.
d. Sediment from shoreline	1 sample from downstream area with existing or potential recreational value.	Semiannually	Gamma isotopic analysis[e] semiannually.

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	***Number of Representative Samples and Sample Locations[a]***	***Sampling and Collection Frequency***	***Type and Frequency of Analysis***
4. INGESTION a. Milk	a. Samples from milking animals in 3 locations within 5 km distance having the highest dose potential. If there are none, then, 1 sample from milking animals in each of 3 areas between 5 to 8 km distant where doses are calculated to be greater than 1 mrem per yr[i].	Semimonthly when animals are on pasture, monthly at other times.	Gamma isotopic[e] and I-131 analysis semimonthly when animals are on pasture; monthly at other times.
	b. 1 sample from milking animals at a control location 15-30 km distant and in the least prevalent wind direction.		
b. Fish and Invertebrates	a. 1 sample of each commercially and recreationally important species in vicinity of plant discharge area.	Sample in season, or semiannually if they are not seasonal.	Gamma isotopic analysis[e] on edible portions.
	b. 1 sample of same species in areas not influenced by plant discharge.		
c. Food Products	a. 1 sample of each principal class of food products from any area that is irrigated by water in which liquid plant wastes have been discharged.	At time of harvest[j].	Gamma isotopic analyses[e] on edible portions.
	b. Samples of 3 different kinds of broad leaf vegetation grown nearest each of two different offsite locations of highest predicted 5-year averages level D/Q if locations are available and milk sampling is not performed.	Monthly when available.	Gamma isotopic[e] and I-131 analysis.
	c. 1 sample of each of the similar broad leaf vegetation grown 15-30 km distant in the least prevalent wind direction if milk sampling is not performed.	Monthly when available.	Gamma isotopic[e] and I-131 analysis.

TABLE 3.12.1-1 (Continued)

TABLE NOTATIONS

[a] Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 3.12.1-1 in a table in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable specific alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. Pursuant to Control 5.9.1.8, identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report and also include in the report a revised table for the ODCM reflecting the new location(s).

[b] One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purpose of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The frequency of analysis or readout for TLD systems will depend upon the characteristics of the specific system used and should be selected to obtain optimum dose information with minimal fading.

[c] The purpose of this sample is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites that have valid background data may be substituted.

[d] Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than 10 times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

[e] Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

TABLE 3.12.1-1 (Continued)

TABLE NOTATION

[f] The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in an area beyond but near the mixing zone. "Upstream" samples in an estuary must be taken far enough upstream to be beyond the plant influence.

[g] Composite samples should be collected with equipment (or equivalent) which is capable of collecting an aliquot at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly).

[h] Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

[i] The dose shall be calculated for the maximum organ and age group, using the methodology and parameters in the ODCM.

[j] If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attention shall be paid to including samples of tuberous and root food products.

TABLE 3.12.1-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Reporting Levels

Analysis	***Water (pCi/l)***	***Airborne Particulate or Gases (pCi/m^3)***	***Fish (pCi/kg, wet)***	***Milk (pCi/l)***	***Food Products (pCi/kg, wet)***
H-3	20,000*	---	---	---	---
Mn-54	1,000	---	30,000	---	---
Fe-59	400	---	10,000	---	---
Co-58	1,000	---	30,000	---	---
Co-60	300	---	10,000	---	---
Zn-65	300	---	20,000	---	---
Zr-Nb-95	400	---	---	---	---
I-131	2	0.9	---	3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200	---	---	300	---

* For drinking water samples. This is 40 CFR Part 141 value.

TABLE 4.12.1-1

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS [a]

LOWER LIMIT OF DETECTION (LLD)[b,c]

Analysis	*Water (pCi/l)*	*Airborne Particulate or Gases (pCi/m^3)*	*Fish (pCi/kg, wet)*	*Milk (pCi/l)*	*Food Products (pCi/kg, wet)*	*Sediment (pCi/kg, dry)*
gross beta	4	0.01	---	---	---	---
H-3	2000	---	---	---	---	---
Mn-54	15	---	130	---	---	---
Fe-59	30	---	260	---	---	---
Co-58,60	15	---	130	---	---	---
Zn-65	30	----	260	---	---	---
Zr-Nb-95	15	---	---	---	---	---
I-131	1[d]	0.07	---	1	60	---
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-La-140	15	---	---	15	---	---

TABLE 4.12.1-1 (Continued)

TABLE NOTATIONS

[a] This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

[b] Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13.

[c] The LLD is defined, for purposes of these Controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$\mathrm{LLD} = \frac{4.66 \bullet s_b}{E \bullet V \bullet 2.22 \ \bullet Y \bullet \exp\left(-\lambda t\right)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as picocuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22 is the number of disintegrations per minute per picocurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

t for environmental samples is the elapsed time between sample collection, or end of the sample collection period, and time of counting

Typical values of E, V, Y, and t should be used in the calculation.

TABLE 4.12.1-1 (Continued)

TABLE NOTATIONS

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

[d] LLD for drinking water samples.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.2 LAND USE CENSUS

CONTROLS

3.12.2 A land use census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest meat animal, the nearest residence and the nearest garden* of greater than 50 m^2 (500 ft^2) producing broad leaf vegetation.

APPLICABILITY: At all times.

ACTION:

a. With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Surveillance Requirement 4.11.2.3, identify the new location(s) in the next Annual Radioactive Effluent Release Report, pursuant to Control 5.9.1.8.

b. With a land use census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20% greater than at a location from which samples are currently being obtained in accordance with Control 3.12.1, add the new location(s) to the radiological environmental monitoring program within 30 days. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after October 31 of the year in which this land use census was conducted. Pursuant to Control 5.9.1.8, identify the new location(s) in the next Annual Radioactive Effluent Release Report and also include in the report a revised table for the ODCM reflecting the new location(s).

c. The provisions of Control 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.2 The land use census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, visual survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

*Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the SITE BOUNDARY in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census. Controls for broad leaf vegetation sampling in Table 3.12.1-1, Part 4.c, shall be followed, including analysis of control samples.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

CONTROLS

3.12.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which is audited periodically by Fermi 2 Quality Assurance.

APPLICABILITY: At all times.

ACTION:

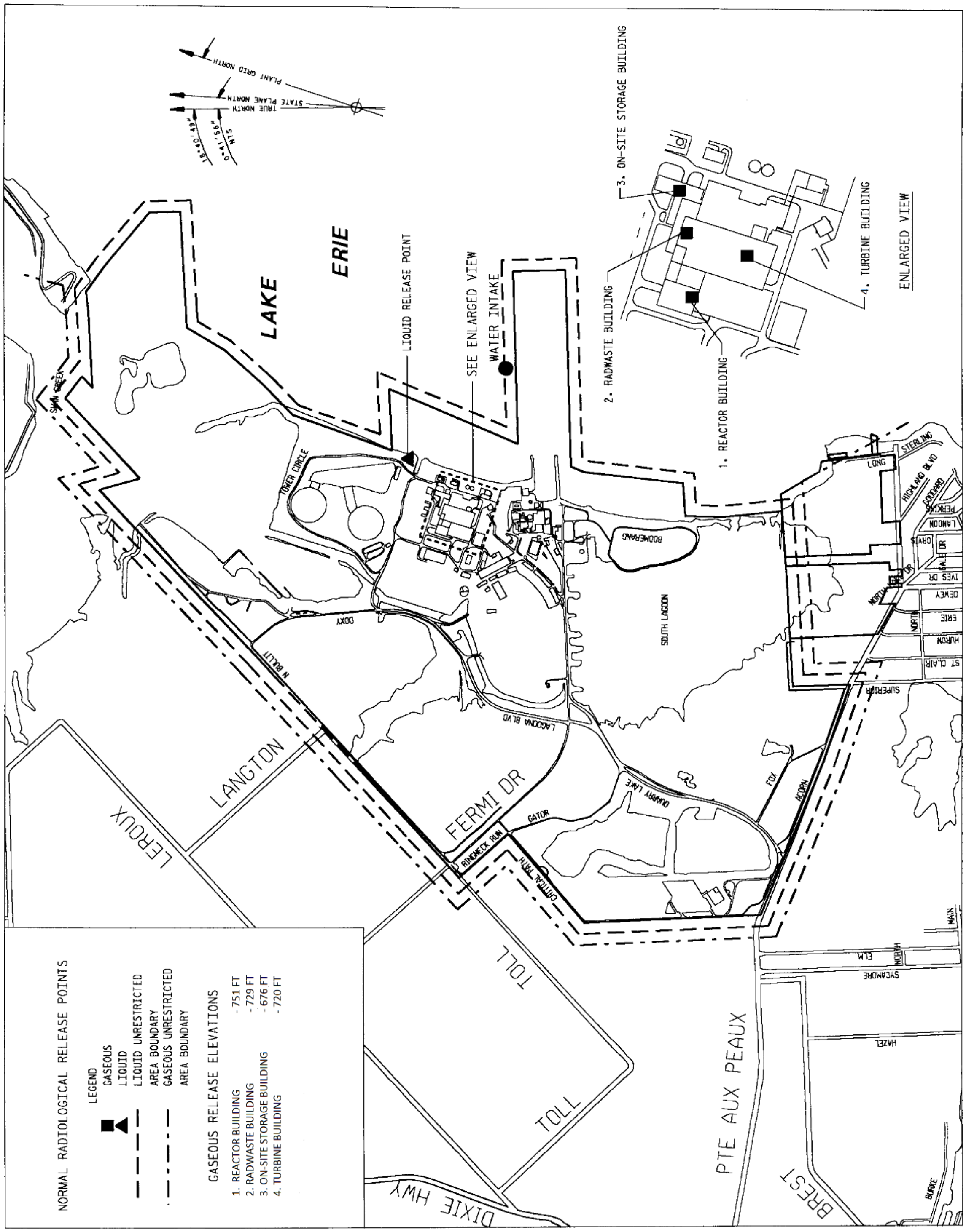
a. With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.3 The Interlaboratory Comparison Program shall be described in the ODCM. A summary of the results obtained as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

Figure 3.0-1
MAP DEFINING UNRESTRICTED AREA AND SITE BOUNDARY FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS



END OF SECTION 3.0

SECTION 4.0

BASES

3/4.3.7.11 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

The radioactive liquid effluent monitoring instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The FUNCTIONAL CAPABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

3/4.3.7.12 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

The radioactive gaseous effluent monitoring instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM utilizing the system design flow rates as specified in the ODCM. This conservative method is used because the Fermi 2 design does not include flow rate measurement devices. This will ensure the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The FUNCTIONAL CAPABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

3/4.11.1 LIQUID EFFLUENTS

3/4.11.1.1 CONCENTRATION

This control is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than ten times the concentration levels specified in 10 CFR Part 20, Appendix B, Table 2, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to a MEMBER OF THE PUBLIC and (2) the limits of 10 CFR Part 20.1301 to a MEMBER OF THE PUBLIC. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its MPC in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission on Radiological Protection (ICRP) Publication 2.

The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in HASL Procedure Manual, HASL-300 (revised annually), Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

3/4.11.1.2 DOSE

This control is provided to implement the requirements of Sections II.A, III.A, and IV.A of Appendix I, 10 CFR Part 50. The control implements the guides set forth in Section II.A of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents to UNRESTRICTED AREAS will be kept "as low as is reasonably achievable." Also, for fresh water sites with drinking water supplies that can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR Part 141. The dose calculation methodology and parameters in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data, such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents are consistent with the methodology provided in NUREG-0133, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977.

3/4.11.1.3 LIQUID RADWASTE TREATMENT SYSTEM

The FUNCTIONAL CAPABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment prior to their release to the environment. The requirement that the appropriate portions of this system be used, when specified, provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonably achievable". This specification implements the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50 and the design objective given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

3/4.11.2 GASEOUS EFFLUENTS

3/4.11.2.1 DOSE RATE

This control is provided to provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in exposure of a MEMBER OF THE PUBLIC in excess of the design objectives of Appendix I to 10 CFR part 50.

3/4.11.2.1 DOSE RATE (Continued)

Although this control applies to the SITE BOUNDARY, the occupancy and exposure pathways applicable to a MEMBER OF THE PUBLIC who may at times be within the SITE BOUNDARY will usually be such that such an individual will not receive significantly greater dose due to gaseous effluents than a MEMBER OF THE PUBLIC who remains outside the SITE BOUNDARY. Examples of calculations for such MEMBERS OF THE PUBLIC, with the appropriate occupancy factors, shall be given in the ODCM. The specified dose rate limits restrict, at all times, the dose rates above background to a MEMBER OF THE PUBLIC at or beyond the SITE BOUNDARY to less than or equal to 500 mrems/year to the total body or to less than or equal to 3000 mrems/year to the skin. These dose rate limits also restrict, at all times, the thyroid dose rates above background to a child via the inhalation pathway to less than or equal to 1500 mrems/year.

The required detection capabilities for radioactive materials in gaseous waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in HASL Procedures Manual, HASL-300 (revised annually), Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

3/4.11.2.2 DOSE - NOBLE GASES

This control is provided to implement the requirements of Sections II.B, III.A, and IV.A of Appendix I, 10 CFR Part 50. The control implements the guides set forth in Section II.B of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents to UNRESTRICTED AREAS will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The dose calculation methodology and parameters established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. The ODCM equations provided for determining the air doses at and beyond the SITE BOUNDARY are based upon the historical 5-year averages atmospheric conditions.

3/4.11.2.3 DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

This control is provided to implement the requirements of Sections II.C, III.A, and IV.A of Appendix I, 10 CFR Part 50. The controls are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents to UNRESTRICTED AREAS will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data, such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methodology and parameters for calculating the doses due to the actual release rates of the subject materials are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical 5-year average atmospheric conditions. The release rate controls for iodine-131, iodine-133, tritium, and radionuclides in particulate form with half lives greater than 8 days are dependent upon the existing radionuclide pathways to man, in the areas at and beyond the SITE BOUNDARY. The pathways that were examined in the development of these calculations were: (1) individual inhalation of airborne radionuclides, (2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, (3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and (4) deposition on the ground with subsequent exposure of man.

3/4.11.2.4 OFF-GAS TREATMENT SYSTEM

The FUNCTIONAL CAPABILITY of the OFF-GAS TREATMENT SYSTEM ensures that the system will be available for use whenever gaseous effluents require treatment prior to release to the environment. The requirement that the appropriate portions of these systems be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." This control implements the requirements of General Design Criteria 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3/4.11.2.5 VENTILATION EXHAUST TREATMENT SYSTEM

The requirement that the appropriate portions of this system be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3/4.11.2.8 VENTING OR PURGING

This control provides reasonable assurance that releases from primary containment purging operations will not exceed the annual dose limits of 10 CFR Part 20 for UNRESTRICTED AREAS.

3/4.11.4 TOTAL DOSE

This control is provided to meet the dose limitations of 40 CFR Part 190 that have been incorporated into 10 CFR Part 20 by 46 FR 18525. The control requires the preparation and submittal of a Special Report whenever the calculated doses from plant generated radioactive effluents and direct radiation exceed 25 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems. For sites containing up to 4 reactors, it is highly unlikely that the resultant dose to a member of the public will exceed the dose limits of 40 CFR Part 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the reactor units and outside storage tanks are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a member of the public to within the 40 CFR Part 190 limits. For the purpose of the Special Report, it may be assumed that the dose commitment to the member of the public from other than uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 8 km must be considered. If the dose to any member of the public is estimated to exceed the requirements of 40 CFR Part 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR Part 190 have not already been corrected), in accordance with the provisions of 40 CFR Part 190.11 and 10 CFR Part 20.2203, is considered to be a timely request and fulfills the requirements of 40 CFR Part 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR Part 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR Part 20, as addressed in Controls 3.11.1.1 and 3.11.2.1. An individual is not considered a member of the public during any period in which he/she is engaged in carrying out any operation that is part of the nuclear fuel cycle.

3/4.12.1 MONITORING PROGRAM

The radiological environmental monitoring program required by this control provides representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of MEMBERS OF THE PUBLIC resulting from the station operation. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR Part 50 and thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Guidance for this monitoring program is provided by the Radiological Assessment Branch Technical Position on Environmental Monitoring. The initially specified monitoring program will be effective for at least the first 3 years of commercial operation. Following this period, program changes may be initiated based on operational experience.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 4.12.1-1 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in HASL Procedure Manual, HASL-300 (revised annually), Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

3/4.12.2 LAND USE CENSUS

This control is provided to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the radiological environmental monitoring program are made if required by the results of this census. The best information from the door-to-door survey, from aerial survey, from visual survey or from consulting with local agricultural authorities shall be used. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 50 m^2 provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were made: (1) 20% of the garden was used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and (2) a vegetation yield of 2 kg/m^2.

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

The requirement for participation in an Interlaboratory Comparison Program which is audited periodically is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR Part 50.

END OF SECTION 4.0

SECTION 5.0

ADMINISTRATIVE CONTROLS

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

5.9.1.7 Routine Annual Radiological Environmental Operating Reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year. The initial report shall be submitted prior to May 1 of the year following initial criticality.

The Annual Radiological Environmental Operating Reports shall include summaries, interpretations, and an analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison as appropriate, with preoperational studies, with operational controls, and with previous environmental surveillance reports, and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of land use censuses required by Control 3.12.2. The Annual Radiological Environmental Operating Reports shall include the results of analysis of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in Table 10.0-1 in the ODCM, as well as summarized and tabulated results of these analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. If possible, the missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program; one or more tables covering all sampling locations; the results of licensee participation in the Interlaboratory Comparison Program, required by Control 3.12.3; discussion of all deviations from the sampling schedule of Table 3.12.1-1; and discussion of all analyses in which the LLD required by Table 4.12.1-1 was not achievable.

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT*

5.9.1.8 Routine Annual Radioactive Effluent Release Reports covering the operation of the unit during the previous year of operation shall be submitted prior to May 1 of each year. The period of the first report shall begin with the date of initial criticality.

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*A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Continued)

The Annual Radioactive Effluent Release Report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

The Annual Radioactive Effluent Release Report shall include an annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing on an electronic medium of wind speed, wind direction, atmospheric stability, and precipitation (if measured), or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability.*** This same report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year. This same report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY (Figure 3.0-1) during the report period. All assumptions used in making these assessments, i.e., specific activity, exposure time and location, shall be included in these reports. The assessment of radiation doses shall be performed in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

The Annual Radioactive Effluent Release Report shall also include an assessment of radiation doses to the likely most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operation. The assessment of radiation doses shall be performed in accordance with methodology and parameters in the ODCM.

The Annual Radioactive Effluent Release Reports shall include the following information for each class of solid waste (as defined by 10 CFR Part 61) shipped offsite during the report period:

a. Total volume in all containers,

b. Total curie quantity (specify whether determined by measurement or estimate),

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***In lieu of submission with the Annual Radioactive Effluent Release Report, the licensee has the option of retaining this summary of required meteorological data on site in a file that shall be provided to the NRC upon request.

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Continued)

c. Principal radionuclides (specify whether determined by measurement or estimate),

d. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),

e. Type of container (e.g.,Type A, Type B, General Design Packages), and

f. Solidification agent or absorbent (e.g., cement, urea formaldehyde).

The Annual Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site to UNRESTRICTED AREAS of radioactive materials in gaseous and liquid effluents made during the reporting period.

The Annual Radioactive Effluent Release Reports shall include any changes made during the reporting period to the OFFSITE DOSE CALCULATION MANUAL (ODCM) as described in Technical Specification 5.5.1.3, as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census pursuant to Control 3.12.2.

The Annual Radioactive Effluent Release Reports shall also include the following: an explanation as to why the not FUNCTIONALLY CAPABLE status of liquid or gaseous effluent monitoring instrumentation was not corrected within the time specified in Control 3.3.7.11 or 3.3.7.12, respectively; and description of the events leading to liquid holdup tanks exceeding the limits of Technical Specification 5.5.8.6.

The Annual Radioactive Effluent Release Reports shall include the results of analysis of all onsite groundwater and rainwater sampling and a description of any detected onsite radioactive leaks or spills into groundwater. Any groundwater related events, or groundwater sample results exceeding ODCM REMP reporting thresholds, voluntarily communicated per NEI 07-07, Objective 2.2 shall also be described in these reports (NEI 07-07 Acceptance Criterion 2.4.c).

5.15 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS*

5.15.1 Licensee-initiated major changes to the radioactive waste systems (liquid, gaseous, and solid):

a. Shall be reported to the Commission in the Annual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the OSRO. The discussion of each change shall contain:

    1. A summary of the evaluation that led to the determination that the change could be made in accordance with 10 CFR 50.59.

    2. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information;

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*Licensees may choose to submit the information called for in this Control as part of the UFSAR revision in accordance with 10 CFR 50.71(e).

3. A detailed description of the equipment, components, and processes involved and the interfaces with other plant systems;

4. An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto;

5. An evaluation of the change, which shows the expected maximum exposures to a MEMBER OF THE PUBLIC in the UNRESTRICTED AREA and to the general population that differ from those previously estimated in the license application and amendments thereto;

6. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made;

7. An estimate of the exposure to plant operating personnel as a result of the change; and

8. Documentation of the fact that the change was reviewed and found acceptable by the OSRO.

b. Shall become effective upon review and acceptance by the OSRO.

END OF SECTION 5.0

PART II - CALCULATIONAL METHODS

SECTION 6.0

LIQUID EFFLUENTS

6.0 LIQUID EFFLUENTS

This section summarizes information on the liquid effluent radiation monitoring instrumentation and controls. More detailed information is provided in the Fermi 2 UFSAR and Fermi 2 design drawings from which this summary was derived. This section also describes the sampling and analysis required by the Offsite Dose Calculation Manual. Methods for calculating alarm setpoints for the liquid effluent monitors are presented. Also, methods for evaluating doses from liquid effluents are provided.

6.1 Radiation Monitoring Instrumentation and Controls

This section summarizes the instrumentation and controls monitoring liquid effluents. This discussion focuses on the role of this equipment in assuring compliance with the Offsite Dose Calculation Manual.

6.1.1 Offsite Dose Calculation Manual (ODCM) 3.3.7.11 Requirement

Fermi 2 ODCM 3.3.7.11 prescribes the monitoring required during liquid releases and the backup sampling required when monitors are not FUNCTIONALLY CAPABLE.

The liquid effluent monitoring instrumentation for controlling and monitoring radioactive effluents in accordance with the Fermi 2 ODCM 3.3.7.11 is summarized below:

1. **Radiation Alarm - Automatic Release Termination**

   a. Liquid Radwaste Effluent Line - The D11-N007 Radiation Monitor on the liquid radwaste effluent line provides the alarm and automatic termination of liquid radioactive material releases prior to exceeding 1 Maximum Permissible Concentration (MPC) at the discharge to Lake Erie, as required by ODCM 3.3.7.11. The monitor is located upstream of the Isolation Valve (G11-F733) on the liquid radwaste discharge line and monitors the concentration of liquid effluent before dilution by the circulating water reservoir (CWR) decant flow.

2. **Radiation Alarm (only)**

   a. Circulating Water Reservoir (CWR) Decant Line - The CWR Decant Line Radiation Monitor (D11-N402) provides indication of the concentration of radioactive material in the diluted radioactive liquid releases just before discharge to Lake Erie. As required by ODCM 3.3.7.11, the alarm setpoint is established to alarm (only) prior to exceeding one MPC.

3. Flow Rate Measuring Devices

a. Liquid Radwaste Effluent Line - In accordance with ODCM 3.3.7.11, the release rate of liquid radwaste discharges is monitored by G11-R703. This flow rate instrumentation is located on the radwaste discharge line prior to the junction with the CWR decant line.

b. Circulating Water Reservoir Decant Line - The flow rate measuring device for the CWR decant line has been removed. The flow rate of the CWR decant line is now measured using certified pump performance curves for the CWR decant pumps, together with readings from pump discharge pressure gauges and reservoir level indication.

6.1.2 Non-ODCM Required Monitor

An additional monitor not required by Fermi 2 ODCM is provided by DTE Energy to reduce the likelihood of an unmonitored release of radioactive liquids.

1. General Service Water - The General Service Water (GSW) Radiation Monitor (D11-N008) provides additional control of potential radioactive effluents. D11-N008 monitors the GSW System prior to discharge into the Main Condenser circulating water discharge line to the Circulating Water Reservoir. Although not an ODCM required monitor, D11-N008 monitors a primary liquid stream in the plant that also discharges to the environment (Lake Erie via the Circulating Water Reservoir). Indication of radioactive material contamination in the GSW System would also indicate potential CWR contamination and the need to control all discharges from the CWR as radioactive effluents.

6.2 Sampling and Analysis of Liquid Effluents

The program for sampling and analysis of liquid waste is prescribed in the Fermi 2 Offsite Dose Calculation Manual Table 4.11.1.1.1-1. This table distinguishes two types of liquid releases: a) BATCH releases, defined as discrete volumes, from the Waste Sample Tanks (normally after processing through the radwaste system), and b) CONTINUOUS releases, from the Circulating Water Reservoir (CWR) System, if it becomes contaminated.

Continuous releases from the CWR System are via the CWR decant line to Lake Erie. The CWR System is not expected to become contaminated. Therefore, continuous radioactive material releases are not expected. However, the General Service Water (GSW) and the CWR systems interface with radioactive systems in the plant. Also, the GSW intake is within a few hundred feet of the CWR decant line discharge to Lake Erie. For these reasons, it is prudent to consider the GSW and the CWR a potential source of radioactive effluents and to sample them regularly.

6.2.1 BATCH Releases

Fermi 2 ODCM Table 4.11.1.1.1-1 requires that a sample representative of the tank contents be obtained before it is released. The table specifies the following program:

- Prior to sampling, the tank is isolated. The tank level is determined and this value is converted to tank volume. A pump with a known recirculation flow rate is then activated to recirculate tank contents. The pump is allowed to run for at least the time required to recirculate the tank volume twice.

- Prior to each batch release, analysis for principal gamma emitters and dissolved and entrained gases (including all peaks identified by gamma spectroscopy)

- Once per month, analysis of a composite sample of all releases that month for tritium (H-3) and gross alpha activity. (The composite sample is required to be representative of the liquids released and sample quantities of the composite are to be proportional to the quantities of liquid discharged).

- Once per quarter, analysis of a composite sample of all releases that quarter for Strontium (Sr)-89, Sr-90, and Iron (Fe)-55.

6.2.2 CONTINUOUS Releases

Fermi 2 ODCM Table 4.11.1.1.1-1 requires that composite samples be collected from the CWR System, if contaminated. The table specifies the following sample analysis:

- Once per month, analysis of a composite sample for principal gamma emitters and for I-131.
- Once per month, analysis of a composite sample for H-3 and gross alpha.
- Once per month, analysis of weekly grab samples (composited) for dissolved and entrained gases (gamma emitters).
- Once per quarter, analysis for Sr-89, Sr-90 and Fe-55.

6.3 Liquid Effluent Monitor Setpoints

Offsite Dose Calculation Manual 3.11.1.1 requires that the concentration of liquid radioactive effluents not exceed the unrestricted area MPC at the discharge point to Lake Erie. Dissolved or entrained noble gases in liquid effluents are limited to a concentration of 2 E-04 µCi/ml, total noble gas activity. ODCM 3.3.7.11 requires that radiation monitor setpoints be established to alarm prior to exceeding the limits of ODCM 3.11.1.1.

To meet this specification, the alarm setpoints for liquid effluent monitors are determined in accordance with the following equation:

$$SP \leq \frac{CL(DF + RR)}{RR} \tag{6-1}$$

where:

SP = the setpoint, in µCi/ml, of the monitor measuring the radioactivity concentration in the effluent line prior to dilution. The setpoint represents a value which, if exceeded, would result in concentrations exceeding the MPC in the unrestricted area

CL = the effluent concentration limit (ODCM 3.11.1.1) corresponding to ten times the limits of 10 CFR Part 20.1302.b.2.i at the discharge point in µCi/ml, defined in Equation (6-4)

RR = the liquid effluent release rate as measured at the radiation monitor location, in volume per unit time, but in the same units as DF, below

DF = the dilution water flow as measured prior to the release point (Lake Erie) in volume per unit time

At Fermi 2 the available Dilution Water Flow (DF) is essentially constant for a given release, and the waste tank Release Rate (RR) and monitor Setpoint (SP) are set to meet the condition of Equation (6-1) for a given effluent Concentration Limit, CL.

NOTE: If no dilution is provided, SP $\leq$ CL. Also, when DF is large compared to RR, then (DF + RR)$\simeq$DF, and DF may be used instead of (DF + RR) as a simplification, as in Equation (6-5).

6.3.1 Liquid Radwaste Effluent Line Monitor

The Liquid Radwaste Effluent Line Monitor D11-N007 provides alarm and automatic termination of releases prior to exceeding MPC. As required by ODCM Table 4.11.1.1.1-1 and as discussed in ODCM Section 6.2.1, a sample of the liquid radwaste to be discharged is collected and analyzed by gamma spectroscopy to identify principal gamma emitting radionuclides. From the measured individual radionuclide concentrations, the allowable release rate is determined.

The allowable release rate is inversely proportional to the ratio of the radionuclide concentrations to the MPC values. The ratio of the measured concentration to MPC values is referred to as the "MPC fraction" and is calculated by the equation:

$$MPCF = \sum \frac{C_i}{MPC_i} \tag{6-2}$$

where:

MPCF = fraction of the unrestricted area MPC for a mixture of gamma emitting radionuclides

C_i = concentration of each gamma emitting radionuclide i measured in each tank prior to release (µCi/ml)

MPC_i = unrestricted area most restrictive MPC for each radionuclide i: ten times the value from 10 CFR Part 20, Appendix B, Table 2, Column 2. For dissolved and entrained noble gases an MPC value of 2E-04 µCi/ml may be used, but noble gases need not be included in this calculation.

Including noble gases in Equation (6-2) eliminates the need for a separate evaluation of compliance with the noble gas concentration limit of ODCM 3.11.1.1.

Based on the MPCF, the maximum allowable release rate can be calculated by the following equation:

$$MAX\,RR \leq \frac{DF}{\left(MPCF * \left(1 + BF\right)\right) + H3MPCF} * SF \tag{6-3}$$

where:

MAX RR = maximum acceptable waste tank discharge rate (gal/min) (Monitor #G11-R703)

DF = dilution flow rate from the CWR decant line, measured as described in ODCM section 6.1.1.3.b.

SF = administrative safety factor to account for variations in monitor response and flow rates. A SF value of 0.5 is suggested because it provides for 100% variation caused by statistical fluctuation and/or errors in measurements.

BF = conservative estimate of the ratio of the MPC fraction of pure beta emitters other than tritium to the gamma MPC fraction (MPCF) (The value 0.10 may be used for BF.)

MPCF = As previously defined by equation (6-2)

H3MPCF = conservative estimate of MPC fraction due to tritium (The value 0.13 may be used for H3MPCF.)

NOTE: Equation (6-3) is valid only for MPCF >1; if the MPCF $\leq$1, the waste tank concentration meets the limits of 10 CFR Part 20 without dilution, and the tank may be discharged at the maximum rate

If MAX RR as calculated above is greater than the maximum discharge pump capacity, the pump capacity should be used in establishing the actual Release Rate RR for the radwaste discharge. For a Waste Sample Tank, the maximum discharge rate is 50 gallons per minute. This Release Rate RR is monitored in the Radwaste Control Room by G11-R703.

The Concentration Limit (CL) of a liquid radwaste discharge is the same as the effective MPC for the radionuclide mixture of the discharge. Simply, the CL (or effective MPC) represents the equivalent MPC value for a mixture of radionuclides evaluated collectively. The equation for determining CL is:

$$CL = \frac{\sum C_i}{MPCF} \tag{6-4}$$

Based on the Release Rate RR and Dilution Flow DF and by substituting Equation (6-4) for CL in Equation (6-1) and introducing sensitivity factors and factors to account for the presence of pure beta emitters, the alarm setpoint is calculated by the equation:

$$SP \le \frac{\sum \left(C_i * SEN_i\right) * DF * H3F * SF}{MPCF * \left(1 + BF\right) * RR} + Bkg \tag{6-5}$$

where:

SP = setpoint of the radiation monitor counts per second (cps) or counts per minute (cpm)

C_i = concentration of radionuclide i as measured by gamma spectroscopy (µCi/ml)

SEN_i = monitor sensitivity for radionuclide i based on calibration curve (cps/(µCi/ml) or cpm/(µCi/ml)) or single conservative value for all radionuclides (see below)

RR = actual release rate of the liquid radwaste discharge (gal/min)

BF = pure beta factor as defined for Equation (6-3)

MPCF = MPC fraction as determined by Equation (6-2)

H3F = correction factor to account for estimated tritium concentration at the discharge point (The value 0.99 may be used.)

Bkg = background reading of monitor (cps)

DF = dilution flow rate from the CWR decant line, measured as described in ODCM section 6.1.1.3.b. Also see note preceding Section 6.3.1.

SF = 1.0 when a single conservative sensitivity value is used; 0.5 when individual nuclide sensitivity factors are used

The sensitivity of Cr-51 determined from the primary calibration sensitivity curves may be used as a single conservative value for SEN_i above. The Cr-51 sensitivity has been determined to be conservative based on the nuclide mixes which have been seen in actual liquid discharges from Fermi 2. For the D11-N007 monitor, a monitor sensitivity value of 1.0 E6 cps/(µCi/ml) may be used as the single conservative value of SEN_i.

If no radionuclides are measured by gamma spectroscopy, the alarm setpoint can be established at one half the setpoint of the most recent discharge for which radionuclides were detected by gamma spectroscopy.

Prior to conducting any batch liquid radwaste release, Equation (6-3) is used to determine the allowable release rate in accordance with ODCM 3.11.1.1. Equation (6-5) is used to determine the alarm setpoint in accordance with ODCM 3.3.7.11.

6.3.2 Circulating Water Reservoir Decant Line Radiation Monitor (D11-N402)

ODCM 3.3.7.11 requires that the setpoint for the CWR Decant Line Radiation Monitor D11-N402 be established to ensure the radioactive material concentration in the decant line prior to discharge to Lake Erie does not exceed MPC, unrestricted area (ten times 10 CFR 20, Appendix B, Table 2, Column 2 values). The approach for determining the alarm setpoint for the CWR Decant Line Radiation Monitor is the same as presented in Section 6.3.1. However, the CWR Decant Line Radiation Monitor setpoint need not be changed prior to each release. Equation (6-1) remains valid, except that, for the CWR Decant Line Monitor, the dilution flow previously assumed for diluting the BATCH liquid radwaste effluents is now the release rate. There is no additional dilution prior to discharge to Lake Erie. Thus, Equation (6-1) simplifies to:

$$SP \leq CL \qquad (6\text{-}6)$$

Substituting Equation (6-4) for CL and introducing a safety factor, sensitivity factors, and monitor background, the D11-N402 alarm setpoint can be calculated by the equation:

$$SP \leq \frac{\sum (C_i * SEN_i) * SF}{MPCF} + Bkg \qquad (6\text{-}7)$$

where:

SP = setpoint in counts per minute (cpm)

C_i = concentration of each radionuclide i in the CWR decant line effluent (µCi/ml)

SEN_i = monitor sensitivity for nuclide i based on calibration curve (cpm/(µCi/ml))

MPCF = MPC fraction as determined by Equation (6-2) with C_i defined as for Equation (6-7)

SF = 0.5, administrative safety factor

Bkg = background reading of monitor (cpm)

Normally, only during periods of batch liquid radwaste discharges will there exist any plant-related radioactive material in the CWR decant line.

6.3.3 Generic, Conservative Alarm Setpoint for D11-N402

The D11-N402 setpoint could be adjusted for each BATCH release as is done for the liquid radwaste effluent line monitor. Based on the measured levels of radioactive material in a BATCH liquid release, the alarm setpoint for D11-N402 could be calculated using Equation (6-7). However, during these planned releases, the concentrations will almost always be so low (due to dilution) that the D11-N402 Monitor will not indicate measurable levels. The CWR decant line design flow is 10,000 gpm; and the maximum liquid radwaste release rate is 50 gpm, providing a 200:1 dilution. The radioactive material concentration of BATCH liquid releases is typically in the range of 1×10^{-7} to 1×10^{-4} µCi/ml. With a nominal 200:1 dilution (actual dilution has been greater since in actual releases the decant line flow rate has been about 18,000 gpm), the CWR decant line monitor would monitor diluted activity in the range of 5×10^{-10} to 5×10^{-7} µCi/ml. D11-N402 Monitor response at these levels would be 0.1 to 100 cpm, depending on the particular radionuclide mixture and corresponding instrument response. These response levels are less than the monitor background levels.

In lieu of routinely adjusting the D11-N402 setpoints, generic, conservative setpoints have been established based on an analysis of nuclides seen in actual liquid discharges and on the primary calibration sensitivity curve.

6.3.4 Alarm Setpoint for GSW and RHR System Radiation Monitors

Levels of radioactive material detectable above background at Radiation Monitor D11-N008 would be one of the first indicators of contamination of the General Service Water (GSW) System and the CWR. Likewise, for the Residual Heat Removal (RHR) System, the D11-N401 A and B Monitors would be one of the first indicators of contamination and subsequent contamination of the CWR. Therefore, to provide early indication and assure prompt attention, the alarm setpoints for these monitors should be established as close to background as possible without incurring a spurious alarm due to background fluctuations. This level is typically around three times background.

If the GSW System or RHR System becomes contaminated, it may become necessary to raise the radiation monitor setpoints. The alarm setpoints should be re-evaluated to provide the CR operator a timely indication of further increasing activity levels in the GSW or RHR System without spurious alarms. The method for this re-evaluation is the same as described above - the alarm setpoint established at three times its current reading. No regulatory limits apply for establishing a maximum value for these alarm setpoints since these monitors are located on plant systems and do not monitor final release points to the environment. However, as a practical matter, upper limits on the alarm setpoints can be evaluated using the methods of ODCM Section 6.3.1 based on the actual system flows, dilution and release paths in effect at the time.

6.3.5 Alarm Response - Evaluating Actual Release Conditions

Normally, liquid release rates are controlled and alarm setpoints are established to ensure that the release does not exceed the concentration limits of ODCM 3.11.1.1 at the discharge to Lake Erie. However, if either Monitor D11-N007 or D11-N402 alarms during a liquid release, it becomes necessary to re-evaluate the release conditions to determine compliance with ODCM 3.11.1.1. Following an alarm, the actual release conditions should be determined. Radioactive material concentrations should be evaluated by sampling the effluent stream or resampling the waste tank. Discharge flow and dilution water flow should be redetermined.

To perform this evaluation, the following equation may be used for all nuclides, or dissolved and entrained noble gases may be evaluated separately from other nuclides using this equation:

$$\left[\sum\left(\frac{C_i}{MPC_i}\right)*\frac{RR}{DF+RR}*\frac{(1+BF)}{H3F}\right]\leq 1$$

(6-8)

where:

C_i = measured concentration of radionuclide i in the effluent stream (µCi/ml)

MPC_i = the MPC value for radionuclide i: ten times the 10 CFR 20, Appendix B, Table 2, Column 2 value (µCi/ml); 2 E-04 µCi/ml for dissolved or entrained noble gases

RR = actual release rate of the liquid effluent at the time of the alarm, gpm

DF = actual dilution circulating water flow at the time of the release alarm, gpm

H3F,BF = as previously defined

NOTE: For alarm on D11-N402 (CWR decant line), the Release Rate RR is the Dilution Water Flow DF and the DF term drops out of the equation.

6.3.6 Liquid Radwaste Monitor Setpoint Determination with Contaminated Circulating Water Reservoir

In the event the CWR is determined to contain radioactive material, the effective dilution capacity of the CWR is reduced as a function of the MPCF. To determine the available dilution flow capacity the MPCF for the CWR is determined using equation (6-2). The MPCF of the CWR (CWRMPCF in equation 6-9) is used to determine the available dilution flow as follows:

$$\text{CWR Dilution Flow} = \text{CWR Decant Flow Rate (GPM)} * (1-\text{CWRMPCF}) \qquad (6\text{-}9)$$

The resulting dilution flow rate is substituted in equation (6-3) to determine the maximum allowable release rate for discharges from the radwaste system. Substituting the available CWR dilution flow from equation (6-9), the Liquid Radwaste Monitor maximum release rate can be determined using equation (6-3).

Once the available dilution flow and maximum allowable release rate have been determined the radwaste monitor setpoint can be determined using equation (6-5).

6.4 Contaminated GSW or RHR System - Quantifying and Controlling Releases

The GSW Radiation Monitor (D11-N008) provides an indication of contamination of this system. The Monitors D11-N401 A and B perform this function for the RHR System. Also, the CWR Decant Line Radiation Monitor monitors all liquid releases from the plant and would record any release to Lake Erie from either of these systems if contaminated. As discussed in ODCM Section 6.2.2, sampling and analysis of the CWR System is required only if this system is contaminated, as would be indicated by D11-N402 or D11-N008. Nonetheless, periodic samples are collected from the CWR System to verify absence of contamination. Although not required by the ODCM, periodic sampling and analysis of the RHR System is also performed since it also is a potential source of contamination of the CWR and subsequent releases to Lake Erie. If contamination is found, further releases from the applicable system (GSW or RHR) via the CWR decant line must be evaluated and controlled to ensure that releases are maintained ALARA. The following actions will be considered for controlling releases.

- Sampling frequency of the applicable source (GSW or RHR System) and the CWR will be increased until the source of the contamination is found and controlled. This frequency may be relaxed after the source of contamination has been identified and isolated.

- Gamma spectral analysis will be performed on each sample.

- The measured radionuclide concentrations from the gamma spectral analysis will be compared with MPC (Equation 6-2) to ensure releases are within the limits of ODCM 3.11.1.1.

- Based on the measured concentrations, the setpoint for the CWR Decant Line Radiation Monitor (D11-N402) will be determined as specified in Section 6.3.2. If the calculated setpoint based on the measured distribution is greater than the current setpoint (see ODCM Section 6.3.3) no adjustment to the setpoint is required.

- Samples will be composited in accordance with ODCM Table 4.11.1.1.1-1 for monthly analysis for H-3 and gross alpha and for quarterly analysis for Sr-89, Sr-90 and Fe-55.

- Each sample will be considered representative of the releases that have occurred since the previous sample. For each sample (and corresponding release period), the volume of liquid released to the lake will be determined based on the measured CWR decant line cumulative flow.

- From the sample analysis and the calculated volume released, the total radioactive material released will be determined and considered representative of the release period. Cumulative doses will be determined in accordance with ODCM Section 6.5.

6.5 Liquid Effluent Dose Calculation - 10 CFR 50

The parameters of the liquid release (or estimated parameters, for a pre-release calculation) may be used to calculate the potential dose to the public from the release (or planned release). The dose calculation provides a conservative method for estimating the impact of radioactive effluents released by Fermi 2 and for comparing that impact against limits set by the NRC in the Fermi 2 ODCM. The limits in the Fermi 2 ODCM are specified as quarterly and calendar year limits. This assures that the average over the year is kept as low as reasonably achievable.

6.5.1 MEMBER OF THE PUBLIC Dose - Liquid Effluents

ODCM 3.11.1.2 limits the dose or dose commitment to MEMBERS OF THE PUBLIC from radioactive materials in liquid effluents from Fermi 2 to:

- during any calendar quarter;
  $\leq$ 1.5 mrem to total body
  $\leq$ 5.0 mrem to any organ

- during any calendar year;
  $\leq$ 3.0 mrem to total body
  $\leq$ 10.0 mrem to any organ

ODCM 4.11.1.2 requires that quarterly and annual cumulative dose due to liquid effluents be determined at least once per 31 days. The calculation of the potential doses to MEMBERS OF THE PUBLIC is a function of the radioactive material releases to the lake, the subsequent transport and dilution in the exposure pathways, and the resultant individual uptake. At Fermi 2, pre-operational evaluation of radiation exposure pathways indicated that doses from consumption of fish from Lake Erie provided the most conservative estimate of doses from releases of radioactive liquids. However, with the proximity of the water intakes for the City of Monroe and Frenchtown Township, it must be assumed that individuals will consume drinking water as well as fish that might contain radioactivity from discharges into Lake Erie.

Study of the currents in Lake Erie indicates that the current in the Lagoona Beach embayment carries liquid effluents from Fermi 2 north along the coast part of the time and south along the coast part of the time. When the current flows north, liquid effluents are carried away from the drinking water Intakes, so only the fish consumption exposure pathway must be considered. When the current flows south, toward the drinking water Intakes, both fish consumption and drinking water consumption exposure pathways must be considered. To ensure conservatism in the dose modeling, the combined fish and drinking water pathway is used for evaluating the maximum hypothetical dose to a MEMBER OF THE PUBLIC from liquid radioactive effluents. The following calculational methods may be used for determining the dose or dose commitment due to the liquid radioactive effluents from Fermi 2:

$$D_o = \frac{1.67 \ E-02 * VOL}{DF * Z} * \sum \left(C_i * A_{io} \right)$$

(6-10)

where:

D_O = dose or dose commitment to organ o or total body (mrem) due to release of a single tank

A_{io} = site-specific ingestion dose commitment factor to the total body or any organ o for radionuclide i (mrem/hr per μCi/ml)

C_i = concentration of radionuclide i in undiluted liquid effluent representative of the volume VOL (μCi/ml)

VOL = total volume of liquid effluent released (gal)

DF = average dilution water flow (CWR decant line) during tank release (gal/min)

Z = 5, near field dilution factor (Derived from Regulatory Guide 1.109, Rev 0)

1.67 E-02 = 1 hr/60 min

The site-specific ingestion dose/dose commitment factors (A_{io}) represents a composite dose factor for the fish and drinking water pathway. The site-specific dose factor is based on the NRC's generic maximum individual consumption rates. Values of A_{io} are presented in Table 6.0-1. They were derived in accordance with guidance of NUREG-0133 from the following equation:

$$A_{io} = 1.14 \ E+05 \ \left[\left(U_W \ / \ D_W \right) + \left(U_F * BF_i \right) \right] DF_i$$

(6-11)

where:

U_F = 21 kg/yr adult fish consumption

U_W = 730 liters/yr adult water consumption

D_W = 13.4, additional dilution from the near field to the water intake for Frenchtown Township (Net dilution factor of 67 from discharge point to a point documented in Fermi 2 UFSAR, Chapter 11, which is closer to the discharge point than this drinking water intake)

BF_i = Bioaccumulation factor for radionuclide i in fish from Table 6.0-2 (pCi/kg per pCi/liter)

DF_i = dose conversion factor for nuclide i for adults in organ o from Table E-11 of Regulatory Guide 1.109 (mrem/pCi)

$$1.14\text{ E } + \ 05 = \frac{10^6 (pCi / uCi) \ * 10^3 (ml / kg)}{8760 \ (hr / yr)}$$

The radionuclides included in the periodic dose assessment required by ODCM 3.11.1.2 are those identified by gamma spectral analysis of the liquid waste samples collected and analyzed per the requirements of ODCM Table 4.11.1.1.1-1. In keeping with the NUREG-0133 guidance, the adult age group represents the maximum exposed individual age group. Evaluation of doses for other age groups is not required for demonstrating compliance with the dose criteria of ODCM 3.11.1.2. The dose analysis for radionuclides requiring radiochemical analysis will be performed after receipt of results of the analysis of the composite samples. In keeping with the required analytical frequencies of ODCM Table 4.11.1.1.1-1, tritium dose analyses will be performed at least monthly; Sr-89, Sr-90 and Fe-55 dose analyses will be performed at least quarterly.

6.5.2 Contaminated CWR System - Dose Calculation

If the CWR System becomes contaminated, releases via the CWR System to Lake Erie must be included in the evaluation of the cumulative dose to a MEMBER OF THE PUBLIC as required by ODCM 3.11.1.2. ODCM Section 6.4 described the methods for quantifying and controlling releases from the CWR System.

For calculating the dose to a MEMBER OF THE PUBLIC, Equation (6-10) remains applicable for releases from the GSW System with the following assumptions:

- DF, Dilution Flow, is set equal to the average CWR decant line flow rate over the release period.
- C_i, Radionuclide Concentration, is determined as specified in ODCM Section 6.4.
- VOL, Volume Released, is set equal to the total volume of the discharges to Lake Erie via the CWR decant line as specified in Section 6.4.

6.6 Liquid Effluent Dose Projections

10 CFR 50.36a requires licensees to maintain and operate the Radwaste System to ensure releases are maintained ALARA. This requirement is implemented through ODCM 3.11.1.3. This section requires that the Liquid Radioactive Waste Processing System be used to reduce the radioactive material levels in the liquid waste prior to release when the projected dose in any 31 day period would exceed:

- 0.06 mrem to the total body, or

- 0.2 mrem to any organ

When the projected doses exceed either of the above limits, the waste must be processed by the Liquid Radwaste System prior to release. This dose criteria for processing is established at one forty eighth of the design objective rate (3 mrem/yr, total body or 10 mrem/yr any organ) in any 31 day period.

The applicable Liquid Waste Processing System for maintaining radioactive material releases ALARA is the Mixed Bed Demineralizers as delineated in Figure 6.0-1. Alternately, the Waste Evaporator (presented in the Fermi 2 UFSAR, Section 11.2) can be used to meet the NRC ALARA design requirements. It may be used in conjunction with or in lieu of the Mixed Bed Demineralizers to meet the waste processing requirements of ODCM 3.11.1.3.

Each BATCH release of liquid radwaste is evaluated to ensure that cumulative doses are maintained ALARA. In keeping with the requirements of ODCM 3.11.1.3, dose projections are made at least once per 31 days to evaluate the need for additional radwaste processing to ensure future releases are maintained ALARA.

The following equations may be used for the dose projection calculation:

$$D_{tbp} = D_{tb}(31 / d) \tag{6-14}$$

$$D_{\max p} = D_{\max}(31 / d) \tag{6-15}$$

where:

D_{tbp} = the total body dose projection for the next 31 day period (mrem)

NOTE: The reference calendar quarter is normally the current calendar quarter. If there have been liquid releases in the previous quarter but not in the current quarter, the previous quarter should be used as the reference calendar quarter.

D_{tb} = the cumulative total body dose for all releases to date in the reference calendar quarter (normally the current quarter) as determined by equation (6-10) (mrem)

D_{maxp} = the maximum organ dose projection for the next 31 day period (mrem)

D_{max} = the cumulative maximum organ dose for all releases to date in the reference calendar quarter as determined by Equation (6-10) (mrem)

d = the number of days from the beginning of the reference calendar quarter to the date of the dose projection evaluation.

31 = the number of days in projection

TABLE 6.0-1

Fermi 2 Site Specific Liquid Ingestion Dose Commitment Factors
A_{io} (mrem/hr per uCi/ml)

Nuclide	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI−LLI
H-3	−	8.78E-1	8.78E-1	8.78E-1	8.78E-1	8.78E-1	8.78E-1
C-14	3.13E+4	6.26E+3	6.26E+3	6.26E+3	6.26E+3	6.26E+3	6.26E+3
Na-24	4.18E+2	4.18E+2	4.18E+2	4.18E+2	4.18E+2	4.18E+2	4.18E+2
P-32	1.39E+6	8.63E+4	5.36E+4	−	−	−	1.56E+5
Cr-51	−	−	1.29E+0	7.70E-1	2.84E-1	1.71E+0	3.24E+2
Mn-54	−	4.40E+3	8.40E+2	−	1.31E+3	−	1.35E+4
Mn-56	−	1.11E+2	1.97E+1	−	1.41E+2	−	3.54E+3
Fe-55	6.75E+2	4.67E+2	1.09E+2	−	−	2.60E+2	2.68E+2
Fe-59	1.07E+3	2.51E+3	9.60E+2	−	−	7.00E+2	8.35E+3
Co-57	−	2.20E+1	3.66E+1	−	−	−	5.59E+2
Co-58	−	9.38E+1	2.10E+2	−	−	−	1.90E+3
Co-60	−	2.69E+2	5.94E+2	−	−	−	5.06E+3
Ni-63	3.19E+4	2.21E+3	1.07E+3	−	−	−	4.62E+2
Ni-65	1.30E+2	1.68E+1	7.69E+0	−	−	−	4.27E+2
Cu-64	−	1.05E+1	4.92E+0	−	2.64E+1	−	8.94E+2
Zn-65	2.32E+4	7.38E+4	3.34E+4	−	4.94E+4	−	4.65E+4
Zn-69	4.94E+1	9.44E+1	6.57E+0	−	6.14E+1	−	1.42E+1
Br-82	−	−	2.28E+3	−	−	−	2.62E+3
Br-83	−	−	4.07E+1	−	−	−	5.86E+1
Br-84	−	−	5.27E+1	−	−	−	4.14E-4
Br-85	−	−	2.17E+0	−	−	−	1.01E-15
Rb-86	−	1.01E+5	4.71E+4	−	−	−	1.99E+4
Rb-88	−	2.90E+2	1.54E+2	−	−	−	4.01E-9
Rb-89	−	1.92E+2	1.35E+2	−	−	−	1.12E-11
Sr-89	2.40E+4	−	6.90E+2	−	−	−	3.85E+3
Sr-90	5.91E+5	−	1.45E+5	−	−	−	1.71E+4
Sr-91	4.42E+2	−	1.79E+1	−	−	−	2.11E+3
Sr-92	1.68E+2	−	7.26E+0	−	−	−	3.32E+3
Y-90	6.36E-1	−	1.70E-2	−	−	−	6.74E+3
Y-91m	6.00E-3	−	2.33E-4	−	−	−	1.76E-2
Y-91	9.31E+0	−	2.49E-1	−	−	−	5.13E+3
Y-92	5.58E-2	−	1.63E-3	−	−	−	9.78E+2
Y-93	1.77E-1	−	4.89E-3	−	−	−	5.62E+3
Zr-95	4.29E-1	1.38E-1	9.31E-2	−	2.16E-1	−	5.50E+2
Zr-97	2.37E-2	4.78E-3	2.19E-3	−	7.22E-3	−	1.48E+3
Nb-95	4.47E+2	2.49E+2	1.34E+2	−	2.46E+2	−	1.51E+6
Nb-97	3.75E+0	9.48E-1	3.46E-1	−	1.11E+0	−	3.50E+3
Mo-99	−	1.30E+2	2.47E+1	−	2.94E+2	−	3.01E+2
Tc-99m	1.04E-2	2.94E-2	3.74E-1	−	4.46E-1	1.44E-2	1.74E+1
Tc-101	1.07E-2	1.54E-2	1.51E-1	−	2.78E-1	7.88E-3	4.63E-14

TABLE 6.0-1

Fermi 2 Site Specific Liquid Ingestion Dose Commitment Factors
A_{io} (mrem/hr per uCi/ml)

Nuclide	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI−LLI
Ru-103	5.58E+00	-	2.40E+00	-	2.13E+01	-	6.51E+02
Ru-105	4.64E-01	-	1.83E-01	-	6.00E+00	-	2.84E+02
Ru-106	8.29E+01	-	1.05E+01	-	1.60E+02	-	5.37E+03
Rh-103m	-	-	-	-	-	-	-
Rh-106	-	-	-	-	-	-	-
Ag-110m	1.87E+00	1.73E+00	1.03E+00	-	3.41E+00	-	7.08E+02
Sb-124	2.41E+01	4.56E-01	9.56E+00	5.84E-02	-	1.88E+01	6.84E+02
Sb-125	1.54E+01	1.72E-01	3.66E+00	1.57E-02	-	1.19E+01	1.70E+02
Te-125m	2.58E+03	9.36E+02	3.46E+02	7.77E+02	1.05E+04	-	1.03E+04
Te-127m	6.52E+03	2.33E+03	7.95E+02	1.67E+03	2.65E+04	-	2.19E+04
Te-127	1.06E+02	3.81E+01	2.29E+01	7.86E+01	4.32E+02	-	8.37E+03
Te-129m	1.11E+04	4.13E+03	1.75E+03	3.81E+03	4.63E+04	-	5.58E+04
Te-129	3.03E+01	1.14E+01	7.37E+00	2.32E+01	1.27E+02	-	2.28E+01
Te-131m	1.67E+03	8.15E+02	6.79E+02	1.29E+03	8.26E+03	-	8.10E+04
Te-131	1.90E+01	7.93E+00	5.99E+00	1.56E+01	8.32E+01	-	2.69E+00
Te-132	2.43E+03	1.57E+03	1.47E+03	1.73E+03	1.51E+04	-	7.43E+04
I-130	3.18E+01	9.39E+01	3.71E+01	7.96E+03	1.47E+02	-	8.09E+01
I-131	1.75E+02	2.51E+02	1.44E+02	8.21E+04	4.30E+02	-	6.61E+01
I-132	8.55E+00	2.29E+01	8.00E+00	8.00E+02	3.64E+01	-	4.30E+00
I-133	5.98E+01	1.04E+02	3.17E+01	1.53E+04	1.82E+02	-	9.35E+01
I-134	4.46E+00	1.21E+01	4.34E+00	2.10E+02	1.93E+01	-	1.06E-02
I-135	1.87E+01	4.89E+01	1.81E+01	3.22E+03	7.83E+01	-	5.52E+01
Cs-134	2.98E+05	7.10E+05	5.80E+05	-	2.30E+05	7.62E+04	1.24E+04
Cs-136	3.12E+04	1.23E+05	8.87E+04	-	6.86E+04	9.40E+03	1.40E+04
Cs-137	3.82E+05	5.23E+05	3.42E+05	-	1.77E+05	5.90E+04	1.01E+04
Cs-138	2.65E+02	5.23E+02	2.59E+02	-	3.84E+02	3.79E+01	2.23E-03
Ba-139	1.53E+00	1.09E-03	4.48E-02	-	1.02E-03	6.19E-04	2.72E+00
Ba-140	3.20E+02	4.03E-01	2.10E+01	-	1.37E-01	2.30E-01	6.60E+02
Ba-141	7.44E-01	5.62E-04	2.51E-02	-	5.23E-04	3.19E-04	3.50E-10
Ba-142	3.36E-01	3.46E-04	2.12E-02	-	2.92E-04	1.96E-04	4.74E-19
La-140	1.65E-01	8.32E-02	2.23E-02	-	-	-	6.11E+03
La-142	8.46E-03	3.84E-03	9.58E-04	-	-	-	2.81E+01
Ce-141	8.05E-02	5.45E-02	6.18E-03	-	2.53E-02	-	2.08E+02
Ce-143	1.42E-02	1.05E+01	1.16E-03	-	4.62E-03	-	3.92E+02
Ce-144	4.20E+00	1.76E+00	2.25E-01	-	1.04E+00	-	1.42E+03
Pr-143	6.08E-01	2.44E-01	3.01E-02	-	1.41E-01	-	2.66E+03
Pr-144	1.99E-03	8.26E-04	1.01E-04	-	4.66E-04	-	2.86E-10
Nd-147	4.16E-01	4.80E-01	2.87E-02	-	2.81E-01	-	2.31E+03
W-187	2.97E+02	2.48E+02	8.67E+01	-	-	-	8.12E+04
Np-239	3.59E-02	3.53E-03	1.94E-03	-	1.10E-02	-	7.24E+02

TABLE 6.0-2

Bioaccumulation Factors (BF_i)
(pCi/kg per pCi/liter)*

Element	Freshwater Fish
H	9.00E-01
C	4.60E+03
Na	1.00E+02
P	3.00E+03
Cr	2.00E+02
Mn	4.00E+02
Fe	1.00E+02
Co	5.00E+01
Ni	1.00E+02
Cu	5.00E+01
Zn	2.00E+03
Br	4.20E+02
Rb	2.00E+03
Sr	3.00E+01
Y	2.50E+01
Zr	3.30E+00
Nb	3.00E+04
Mo	1.00E+01
Tc	1.50E+01
Ru	1.00E+01
Rh	1.00E+01
Ag	2.30E+00
Sb	1.00E+00
Te	4.00E+02
I	1.50E+01
Cs	2.00E+03
Ba	4.00E+00
La	2.50E+01
Ce	1.00E+00
Pr	2.50E+01
Nd	2.50E+01
W	1.20E+03
Np	1.00E+01

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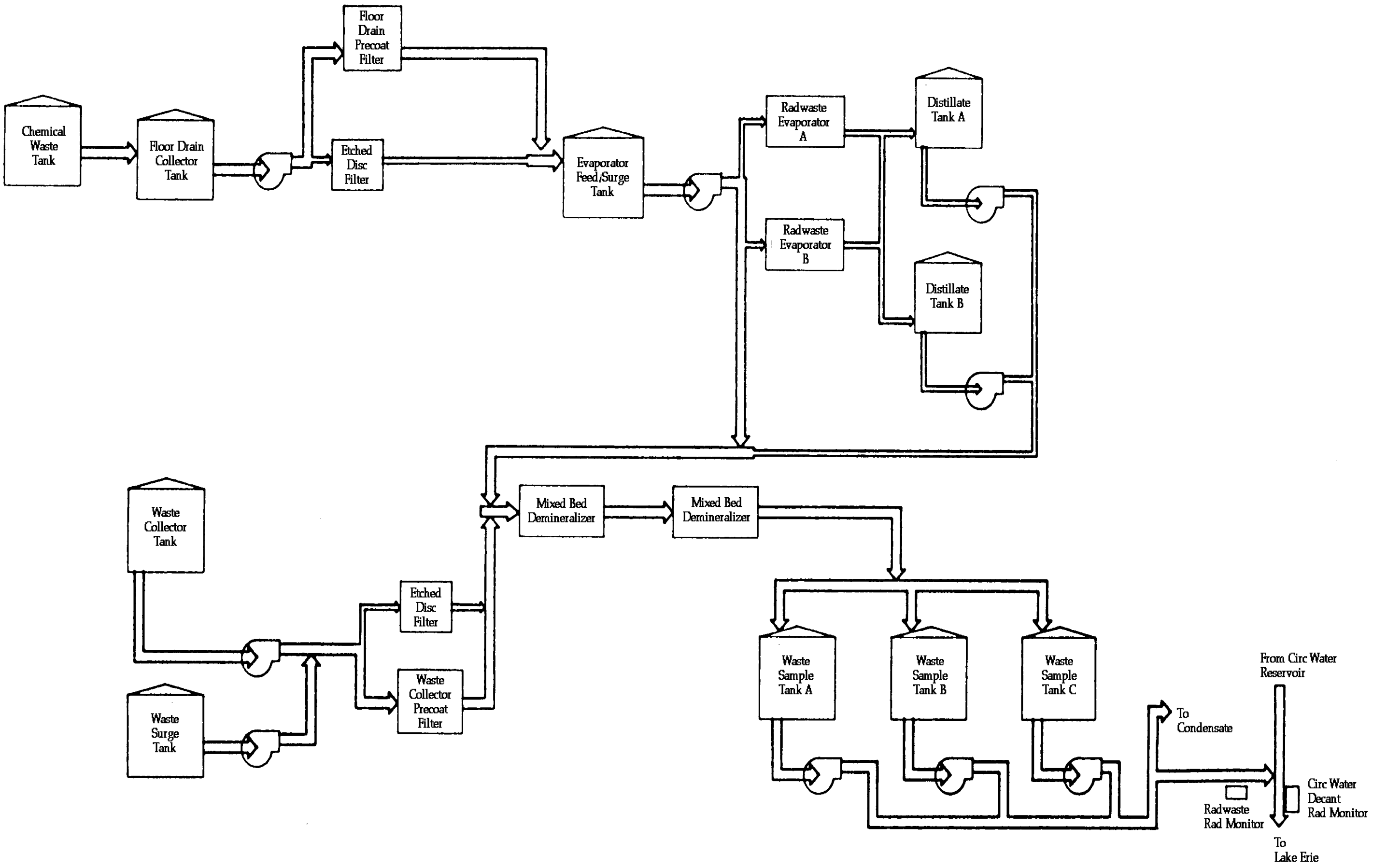
* Values in this table are taken from Regulatory Guide 1.109 except for phosphorus, which is adapted from NUREG/CR-1336, and silver and antimony, which are taken from UCRL 50564, Rev 1, October 1972.

FIGURE 6.0-1

Liquid Radioactive Effluent Monitoring and Processing Diagram



END OF SECTION 6.0

SECTION 7.0

GASEOUS EFFLUENTS

7.0 GASEOUS EFFLUENTS

7.1 Radiation Monitoring Instrumentation and Controls

7.1.1 Effluent Monitoring - Ventilation System Releases

The gaseous effluent monitoring instrumentation required at Fermi 2 for controlling and monitoring radioactive effluents are specified in ODCM 3.3.7.12. The monitoring of each identified gaseous effluent release point must include the following:

- Noble Gas Activity Monitor
- Iodine Sampler (sample cartridge containing charcoal or silver zeolite)
- Particulate Sampler (filter paper)
- Sampler Flow Rate Monitor

Meeting these requirements, a total of six Eberline SPING Monitoring Systems are installed on the five gaseous release points (Onsite Storage Facility, Radwaste Building, Turbine Building, Reactor Building Exhaust Plenum, and Standby Gas Treatment System Division 1 and Division 2). The SPING Monitor outputs are recorded electronically in the SS-1 Control Terminal in the Main Control Room.

In general, a reading exceeding the High alarm setpoint of the SPING Monitors causes an alarm in the Control Room. Fermi 2 ODCM Table 3.3.7.12-1 identifies these alarm functions.

7.1.2 Main Condenser Offgas Monitoring

ODCM Table 3.3.7.12-1 and Technical Requirements Manual Volume 1, section TR 3.3.12, specify monitoring requirements for the Offgas System at the 2.2 minute delay line. The following monitors are required:

- Hydrogen Monitor - used to ensure the hydrogen concentration in the Offgas Treatment System is maintained less than or equal to 4% by volume as required by Technical Requirements Manual Volume 1, section TRLCO 3.3.12.
- Noble Gas Activity Monitor - used to ensure the gross activity release rate is maintained within 340 millicuries per second after 30 minute decay as required by Technical Specification 3.7.5.

  These two monitors perform safety functions. The Hydrogen Monitor monitors the potential explosive mixtures in the Offgas System. The Noble Gas Monitor monitors the release rate from the main condenser ensuring doses at the exclusion area boundary will not exceed a small fraction of the limits of 10 CFR 100 in the event this effluent is inadvertently discharged directly to the environment bypassing the Offgas Treatment System.

7.1.3 Reactor Building Ventilation Monitors

The radiation monitors (D11-N408 and N410) on the Reactor Building Ventilation System provide on high radiation levels (above alarm setpoint) initiation of SGTS, isolation of drywell vent/purge, isolation of the RB and Control Center Ventilation Systems and initiation of Control Center recirculation mode ventilation. These monitors and functions are not required by Fermi 2 ODCM but are important in controlling containment venting/purging.

7.2 Sampling and Analysis of Gaseous Effluents

The program for sampling and analysis of gaseous waste is prescribed in Fermi 2 ODCM Table 4.11.2.1.2-1. This table distinguishes two types of gaseous releases: (1) containment PURGE, treated as BATCH releases, and (2) discharges from the Reactor Building Exhaust Plenum (including Standby Gas Treatment System (SGTS) when operating), and other building ventilation exhausts, treated as CONTINUOUS releases.

7.2.1 Containment PURGE

ODCM Table 4.11.2.1.2-1 requires that samples be collected and analyzed before each primary containment PURGE. Sampling and analysis is required within eight hours before starting a PURGE. ODCM Table 4.11.2.1.2-1 Footnote j and ODCM 4.11.2.8.2 also require that if the purging or venting is through the Reactor Building ventilation, rather than through SGTS, and if the primary containment radiation monitoring system is not FUNCTIONALLY CAPABLE or in alarm condition, sampling and analysis is required within 8 hours prior to and at least once per 12 hours during venting or purging of the primary containment. The required analyses must include principal gamma emitters and, if a pre-vent or pre-purge sample, tritium.

For a planned containment PURGE, the results of the samples and analyses may be used to establish the acceptable release rate and radiation monitor alarm setpoint in accordance with ODCM Sections 7.3 and 7.4. This evaluation may be necessary to ensure compliance with the dose rate limits of ODCM 3.11.2.1. In practice, release flow rates are fairly constant and these calculations are necessary only if a threshold value of nuclide concentration in the primary containment atmosphere is reached. The alarm setpoints of the primary containment atmosphere monitor, the Reactor Building ventilation exhaust monitors, and the Reactor Building and SGTS SPING monitors are set to ensure that release routes are continuously monitored and controlled in accordance with 10 CFR 20 or limits specified in the ODCM.

7.2.2 Ventilation System Releases

ODCM Table 4.11.2.1.2-1 requires continuous samples of releases from the RB Exhaust Plenum, Standby Gas Treatment System, Radwaste Building, Turbine Building, and Onsite Storage Facility. The table specifies the following program:

- Once per week, analysis of an adsorbent sample of I-131 and I-133, plus analysis of a particulate sample for principal gamma emitters.
- Once per month, analysis of a composite particulate sample of all releases (by release point) that month for gross alpha activity.
- Once per quarter, analysis of a composite particulate sample of all releases that quarter for Sr-89 and Sr-90.
- Once per month, analysis of a grab sample for principal gamma emitters (noble gases and tritium).
- Analysis of a grab sample for principal gamma emitters (noble gases) from the Offgas Vent Pipe sample lines, as needed to supplement RB Exhaust Plenum sampling. Normally performed monthly in conjunction with RB Exhaust Plenum grab sampling.

ODCM Table 4.11.2.1.2-1 also requires continuous monitoring for noble gases. This requirement is met by the SPING Monitors on each of the plant gaseous release points.

The ODCM requires more frequent sampling and analysis following reactor startup, shutdown, or change in thermal power exceeding 15% within one hour. The ODCM allows an exception to this increased sampling schedule when the applicable SPING noble gas monitor has not increased more than a factor of three.

Grab samples of the Fuel Pool Ventilation Exhaust are required tritium analysis once per seven days whenever spent fuel is in the Spent Fuel Pool. Also, grab samples for tritium are required when either the reactor well or the dryer separator pool is filled. These samples are taken at the Reactor Building Exhaust Plenum and Standby Gas Treatment System (SGTS) when operating.

Gaseous releases of Carbon-14 may be determined by calculation, without the use of sampling. An acceptable calculational method is to determine monthly capacity factor data in units of GWth-month from Reactor Engineering data, then multiply by the ratio of days in the month to days in the year and by the value 5.1 Ci per GWth-year (given in EPRI report 1021106, December 2010) to obtain monthly C-14 releases. Other methods may be used if approved by Radiation Protection Management.

7.3 Gaseous Effluent Monitor Setpoint Determination

7.3.1 Ventilation System Monitors

Per the requirements of ODCM 3.3.7.12, alarm setpoints shall be established for the gaseous effluent monitoring instrumentation to ensure that the release rate of noble gases does not exceed the limits of ODCM 3.11.2.1. This section limits releases to a dose rate at the SITE BOUNDARY of 500 mrem/year to the total body or 3000 mrem/year to the skin. From a grab sample analysis of the applicable release (i.e., grab sample of the primary containment or Ventilation System release), the radiation monitoring alarm setpoints may be established by the following calculational method. The measured radionuclide concentrations and release rate are used to calculate the fraction of the allowable release rate, limited by ODCM 3.11.2.1, by the equation:

$$FRAC = \frac{1.67E+01 * \chi / Q * VF * \sum\left(C_i * K_i\right)}{500} \tag{7-1}$$

$$FRAC = \frac{1.67E+01 * \chi / Q * VF * \sum\left(C_i * \left[L_i + 1.1M_i\right]\right)}{3000} \tag{7-2}$$

Where:

FRAC = fraction of the allowable release rate based on the identified radionuclide concentrations and the release flow rate

χ/Q = atmospheric dispersion factor based on 5-year historical meteorological data to the controlling site boundary location from Table 7.0-3 (sec/m^3) or plant procedures

VF = Ventilation System flow rate for the applicable release point and monitor (liters/minute)

C_i = concentration of noble gas radionuclide i at release point as determined by gamma spectral analysis of grab sample (µCi/cc).

K_i = total body dose conversion factor for noble gas radionuclide i (mrem/yr per µCi/m^3, from Table 7.0-2)

L_i = beta skin dose conversion factor for noble gas radionuclide i (mrem/yr per µCi/m^3, from Table 7.0-2)

M_i = gamma air dose conversion factor for noble gas radionuclide i (mrad/yr per µCi/m^3, from Table 7.0-2)

1.1 = mrem skin dose per mrad gamma air dose (mrem/mrad)

500 = total body dose rate limit (mrem/yr)

3000 = skin dose rate limit (mrem/yr)

1.67 E + 01 = 1 E + 03 (cc/liter) * (1/60) (min/sec)

Based on the more limiting (i.e., higher) value of FRAC as determined above, the alarm setpoints for the applicable monitors may be calculated by the equation:

$$SP \leq \frac{\left(AF * \sum C_i\right)}{FRAC} + Bkg \tag{7-3}$$

Where:

SP = alarm setpoint corresponding to the maximum allowable release rate (µCi/cc)

Bkg = background of the monitor (µCi/cc)

AF = administrative allocation factor (Table 7.0-1) for the specific monitor and type release, which corresponds to the fraction of the total allowable release rate that is administratively allocated to the individual release points.

C_i = concentration of Noble Gas Radionuclide i as determined by gamma spectral analysis of grab sample (µCi/cc). Note: If the monitor channel in question was showing a response to the effluent at the time of the grab sample, this response minus background may be used in lieu of the summed grab sample concentrations.

The Allocation Factor (AF) is an administrative control imposed to ensure that combined releases from all release points at Fermi 2 will not exceed the regulatory limits on release rate from the site (i.e., the release rate limits of ODCM 3.11.2.1). From the Fermi 2 design evaluation of gaseous effluents presented in the UFSAR Section 11.3, representative values have been determined for AF. These values are presented in Table 7.0-1. These values may be changed in the future as warranted by operational experience, provided the site releases comply with ODCM 3.11.2.1. In addition to the allocation factor, safety factors which have the effect of lowering the calculated setpoints may be applied. When determining the Noble Gas Monitor calibration constant, the monitor sensitivity for Xe-133 may be used in lieu of the sensitivity values for the individual radionuclides. Because of its lower gamma energy and corresponding monitor response, the Xe-133 sensitivity provides a conservative value for alarm setpoint determination. Alternatively, if the monitor channel in question frequently shows a response to a mix of isotopes whose concentrations can be determined, the calibration constant may be determined from this type of data without reference to primary calibration data.

7.3.2 Setpoint Determination with No Nuclides Detected

When noble gas concentrations for a release point cannot be determined from grab samples, there are two options for setpoint determination. First, the setpoint may be set slightly above monitor background (e.g. 2 to 3 times background). This approach may be used when releases are not expected from a particular release point. Second, the equations of Section 7.3.1 may be used with noble gas concentration values based either on UFSAR tables or on values from a release point for which concentrations have been determined (e.g. reactor building exhaust plenum). When this method is used, a safety factor should be used in the setpoint calculation.

7.3.3 Gaseous Effluent Alarm Response - Evaluating Actual Release Conditions

The monitor alarm setpoint is used as the primary method for ensuring and demonstrating compliance with the release rate limits of ODCM 3.11.2.1. Not exceeding alarm setpoints constitutes a demonstration that release rates have been maintained within the ODCM limits. When an effluent Noble Gas Monitor exceeds the alarm setpoint, an evaluation of compliance with the release rate limits must be performed using actual release conditions. This evaluation requires collecting a sample of the effluent to establish actual radionuclide concentrations and permit evaluating the monitor response. The following equations may be used for evaluating compliance with the release rate limit of ODCM 3.11.2.1a:

$$D_{tb} = 1.67E+01 * \chi / Q * VF * \sum \left(K_i * C_i \right) \tag{7-4}$$

$$D_s = 1.67E+01 * \chi / Q * VF * \sum \left(\left[L_i + 1.1M_i \right] * C_i \right) \tag{7-5}$$

Where:

D_{tb} = total body dose rate (mrem/yr)

D_s = skin dose rate (mrem/yr)

χ / Q = atmospheric dispersion factor for the controlling SITE BOUNDARY location (sec/m^3)

VF = Ventilation System release rate (liters/min)

C_i = concentration of radionuclide i as measured in the grab sample or as correlated from the SPING Noble Gas Monitor reading (µCi/cc)

K_i = total body dose conversion factor for noble gas radionuclide i (mrem/yr per µCi/m^3, from Table 7.0-2)

L_i = beta skin dose conversion factor for noble gas radionuclide i (mrem/yr per µCi/m^3, from Table 7.0-2)

M_i = gamma air dose conversion factor for noble gas radionuclide i (mrad/yr per µCi/m^3, from Table 7.0-2)

1.1 = mrem skin dose per mrad gamma air dose (mrem/mrad)

1.67 E + 01 = 1 E + 03 (cc/liter) * (1/60) (min/sec)

The above equations may also be used to verify compliance with ODCM 3.11.2.1.a when noble gases are detected in periodic (e.g. monthly) effluent noble gas samples.

7.4 Primary Containment VENTING and PURGING

7.4.1 Release Rate Evaluation

For primary containment VENTING or PURGING, an evaluation of acceptable release rate may be performed prior to the release. Based on the measured noble gas concentration in the grab sample collected per the requirements of ODCM Table 4.11.2.1.2-1, the allowable release rate from primary containment can be calculated by the following equation:

$$RR_{tb} = \frac{500 * AF}{1.67 + 01 * \chi / Q * \sum \left(K_i * C_i\right)} \tag{7-6}$$

or

$$RR_s = \frac{3000 * AF}{1.67E + 01 * \chi / Q * \sum \left(\left[L_i + 1.1M_i\right] * C_i \right)} \tag{7-7}$$

Where:

RR_{tb} = allowable release rate so as not to exceed a dose rate of 500 mrem/yr, total body (liters/minute)

RR_S = allowable release rate so as not to exceed a dose rate of 3000 mrem/yr, skin (liters/minute)

AF = allocation factor for the applicable release point from Table 7.0-1 (default value is 0.5 for Reactor Building Exhaust Plenum)

500 = total body dose rate limit (mrem/yr)

3000 = skin dose rate limit (mrem/yr)

The lesser value (RR_{tb} or RR_S) as calculated above may be used for establishing the allowable release rate for primary containment PURGING or VENTING, taking into account the fraction of the allocated release limit already accounted for by continuous releases from the proposed release point. As discussed in section 7.2.1, this evaluation is rarely necessary.

7.4.2 Alarm Setpoint Evaluation

For a primary containment VENTING or PURGING, a re-evaluation of the alarm setpoint may be needed to ensure compliance with the requirements of ODCM 3.3.7.12. For the identified release path (RB Exhaust Plenum or SGTS) and associated effluent Radiation Monitor, the alarm setpoint should be calculated using Equations (7-1), (7-2) and (7-3). In Equations (7-1) and (7-2), the value of the Ventilation Flow VF should be established at the total release flow rate, including the contribution from the PURGE or VENT. If the calculated alarm setpoint is greater than the current setpoint, no adjustments are necessary. As discussed in section 7.2.1, this setpoint evaluation is rarely necessary.

7.5 Quantifying Releases - Noble Gases

The determination of doses in the environment from releases is dependent on the mixture of the radioactive material. Also, NRC Regulatory Guide 1.21 requires reporting of individual radionuclides released in gaseous effluents. Therefore, DTE Energy must determine the quantities of the individual radionuclides released. For noble gases, these quantities must be based on actual noble gas grab samples.

7.5.1 Sampling Protocol

As required by ODCM 3.11.2.1, a gas sample is collected at least monthly from each of the five gaseous release points (Reactor Building Exhaust Plenum, Standby Gas Treatment System, Radwaste Building, Turbine Building, and Onsite Storage Facility). As discussed in ODCM Section 7.2.2, this gas sample is analyzed by gamma spectroscopy to identify individual radionuclides (noble gases). Noble gases have been detected almost exclusively in the reactor building effluent.

As necessary to supplement grab sampling at the Reactor Building Exhaust Plenum, samples are taken from the Offgas Vent Pipe sample lines, normally on the same frequency as RB Exhaust Plenum samples. The Offgas Vent Pipe sample point is upstream of the RB Exhaust Plenum and noble gases are more concentrated at this point. Dilution factors are applied to Offgas Vent Pipe noble gas sample concentrations when the same nuclides are detected in both locations so that concentrations detected in RB Exhaust Plenum samples may be compared to concentrations based on Offgas Vent Pipe samples; the more conservative concentration values are used in release calculations.

For containment purges and containment ventings when monitoring is alarming or not FUNCTIONALLY CAPABLE, samples are collected prior to the initiation of the release and, for long releases, periodically throughout the release (see ODCM Section 7.2.1). When detected activity concentrations are above a pre-determined threshold, these samples are evaluated using Equations (7-4) and (7-5), using release rates applicable to the vent/purge condition and taking continuous releases into account, to ensure that the site boundary dose rate limits of ODCM 3.11.2.1 are not exceeded. If the primary containment atmosphere has equilibrated with the reactor building atmosphere, vent/purge sampling and analysis is not required. Such equilibrium with the drywell atmosphere may be considered to be established after at least one of the drywell equipment hatches has been open for 8 hours, and equilibrium with the torus atmosphere may be assumed after at least one torus hatch has been open for 8 hours.

As required by ODCM Table 4.11.2.1.2-1, special samples are required of the RB Exhaust Plenum and SGTS following shutdown, startup or a THERMAL POWER change exceeding 15% within a 1 hour period. Exceptions to this special sampling are allowed as noted previously in ODCM Section 7.2.2.

7.6 Calculation of Activity Released

The following equation may be used for determining the release quantities from any release point based on the sample analysis:

$$Q_i = 1.0E + 03 * VF * T * C_i \tag{7-8}$$

Where:

Q_i = total activity released of radionuclide i (μCi)

VF = Ventilation System release rate (liters/min) -- nominal values are shown in Table 7.0-1. If available, more accurate values, for example reflecting a reduced number of exhaust fans in service, may be used.

T = total time of release period (min)

1.0 E + 03 = milliliters per liter

C_i = concentration of radionuclide i as determined by analysis of the sample (μCi/cc). For noble gas grab samples, this value may be corrected for variations during the release period by multiplying by the ratio of the average noble gas monitor reading during the release period to the reading at the time the sample was taken. For iodine and particulate samples, this value should be corrected for decay during the sampling period, for sample line loss if adequate data are available, and for collection efficiency if a significant fraction of the material to be collected passes through the collection media. For all samples, this value should be corrected for decay between sample collection and counting and for decay during counting.

7.7 Site Boundary Dose Rate - Radioiodine and Particulates

ODCM 3.11.2.1.b limits the dose rate to ≤1500 mrem/yr to any organ for I-131, I-133, tritium and particulates with half lives greater than 8 days. To demonstrate compliance with this limit, an evaluation is performed at a frequency no greater than that corresponding to the sampling and analysis time period (nominally once per 7 days). The following equation may be used in the dose rate evaluation for I-131, I-133, and particulates with half lives greater than 8 days:

$$DR = \sum_r \left(\chi / Q_r * R_{I-131} * VF_r * 16.7 * \sum_i C_{ir} \right) \tag{7-9}$$

Where:

DR = total maximum organ dose rate for all release points (mrem/yr)

χ / Q_r = atmospheric dispersion factor for release point r to the controlling SITE BOUNDARY location (sec/m^3) from Table 7.0-3 or plant procedures

R_{I-131} = I-131 child thyroid inhalation pathway dose factor (mrem/yr per µCi/m^3) from Table 7.0-4

VF_r = Average ventilation flow for release point r during release period (liters/min)

C_{ir} = Concentration of radionuclide i (I-131, I-133, or particulate with half life greater than 8 days) released from release point r during the appropriate release period (µCi/cc)--usually determined by gamma spectral analysis of effluent sample and corrected as described in definition of C_i in section 7.6

16.7 = 1000 cc/liter * 0.0167 min/sec

Release periods used in Equation (7-9) are the most recent periods evaluated for the different release points, and these periods may not be identical.

Alternatively, the site boundary dose rate may be evaluated using the highest individual isotopic dose factors for all age groups to calculate inhalation and ground plane exposure at the highest dispersion factor location at or beyond the site boundary, as well as vegetation, milk, and meat exposure at the garden, milk, and meat locations with the highest deposition factors. Dose rate due to tritium is currently evaluated by this method, and when tritium has been detected in gaseous effluents during the most recent release period, the tritium dose rate must be added to the result from Equation (7-9) to evaluate compliance with ODCM 3.11.2.1.b.

The dose rate evaluation described above may have to be performed more frequently than once per week in order to meet the requirements of ODCM Table 4.11.2.1.2-1, footnote g: Daily sampling is required following startup, shutdown, or thermal power changes exceeding 15% in one hour if the applicable noble gas effluent monitor reading has increased by a factor of 3.

7.8 Noble Gas Effluent Dose Calculations - 10 CFR 50

7.8.1 UNRESTRICTED AREA Dose - Noble Gases

ODCM 4.11.2.2 requires that an assessment of releases of noble gases be performed at least once per 31 days to evaluate compliance with the quarterly dose limits of 5 mrad, gamma-air and 10 mrad, beta-air and the calendar year limits 10 mrad, gamma-air and 20 mrad, beta-air. The following equations may be used to calculate the gamma-air and beta-air doses. If noble gases are detected at multiple release points, these equations must be performed for each such release point, and the calculated air doses must be summed.

$$D_\gamma = 3.17E-08 * \chi/Q * \sum\left(M_i * Q_i\right) \tag{7-10}$$

and

$$D_\beta = 3.17E-08 * \chi/Q * \sum\left(N_i * Q_i\right) \tag{7-11}$$

Where:

D_γ = air dose due to gamma emissions for noble gas radionuclides (mrad)

D_β = air dose due to beta emissions for noble gas radionuclides (mrad)

χ / Q = atmospheric dispersion factor to the controlling SITE BOUNDARY location (sec/m^3)

Q_i = cumulative release of noble gas radionuclide i over the period of interest (µCi)

M_i = air dose factor due to gamma emissions from noble gas radionuclide i (mrad/yr per µCi/m^3, from Table 7.0-2)

N_i = air dose factor due to beta emissions from noble gas radionuclide i (mrad/yr per µCi/m^3, Table 7.0-2)

3.17 E - 08 = 1 / 3.15 E + 07 (year/sec)

7.9 Radioiodine and Particulate Dose Calculations - 10 CFR 50

7.9.1 UNRESTRICTED AREA Dose - Radioiodine, Particulates, and Tritium

In accordance with requirements of ODCM 4.11.2.3, a periodic assessment (at least once per 31 days) is required to evaluate compliance with the quarterly dose limit of 7.5 mrem and the calendar year limit of 15 mrem to any organ. The following equation may be used to evaluate the maximum organ dose due to releases of I-131, I-133, tritium, and particulates with half-lives greater than 8 days:

$$D_{ao} = \sum_{p}\sum_{r}\sum_{i}\left(W_r * SF_p * 3.17E-8 * R_{aipo} * Q_{ir}\right) \tag{7-14}$$

Where:

D_{ao} = dose or dose commitment to Organ o of age group a (normally identified in Table 7.0-3)

W_r = atmospheric dispersion parameter for release point r and the residence location of interest—normally identified in Table 7.0-3. Either:

a) χ/Q, atmospheric dispersion factor for inhalation pathway and H-3 and C-14 dose contribution via other pathways (sec/m^3), or

b) D/Q, atmospheric area deposition factor for vegetation, milk and ground plane exposure pathways (m^{-2})

R_{aipo} = dose factor (mrem/yr per µCi/m^3) or (m^2 - mrem/yr per µCi/sec) from Table 7.0-4 for radionuclide i, age group a, pathway p, and organ o, normally as identified in Table 7.0-3. Values for R_{aipo} were derived in accordance with the methods described in NUREG-0133. As noted in NUREG-0133 section 5.3.1.3, in the case that the milk animal is a goat, parameter values from Reg Guide 1.109 should be used. For I-131, for example, use of the goat feed/forage consumption rate given in Table E-3 and the stable element transfer factor given in Table E-2 of Reg Guide 1.109 results in grass-goat-milk dose factors which are equivalent to the grass-cow-milk dose factors in Table 7.0-4 multiplied by 1.2.

Q_{ir} = cumulative release from release point r over the period of interest (normally one month) for radionuclide i -- I-131, I-133, tritium or radioactive material in particulate form with half-life greater than 8 days (µCi).

SF_p = annual seasonal correction factor to account for the fraction of the year that the applicable exposure pathway does not exist:

1) For milk and vegetation exposure pathways:

= 0.5 (derived from Reg Guide 1.109, Rev 1. A six month fresh vegetation and grazing season (May through October) limits exposure through this pathway to half the year.

2) For inhalation and ground plane exposure pathways:

= 1.0 (derived from Reg Guide 1.109, Rev 1)

3.17 E-8 = 1 / 3.15 E+07 (year/sec)

This equation should be used to evaluate organ doses for the individual with the highest potential offsite dose. This calculation is performed monthly and is added to previous results for the quarter and year. The highest quarterly and annual cumulative organ dose totals for this individual should be compared with the limits of ODCM 3.11.2.3.

To determine regulatory compliance, the residence and the corresponding age group and exposure pathways listed in Table 7.0-3 are used. Some pathways listed for this residence, e.g. the vegetation pathway, may be hypothetical in a given year. Also, an individual in the age group indicated in Table 7.0-3 may not be living at this residence in a given year. These pathway and age group assumptions are designed to ensure conservative dose results, i.e. that no other offsite receptor will have a higher actual dose. If the Land Use Census indicates that there may be another individual who may have higher actual doses in a given year than the doses calculated using the parameters listed for the residence in Table 7.0-3, doses to this individual may also be reported in the Annual Radioactive Effluent Release Report and a revision of Table 7.0-3 should be considered.

7.10 Gaseous Effluent Dose Projection

As with liquid effluents, the Fermi 2 ODCM controls on gaseous effluents require "processing" of gaseous effluents if the projected dose exceeds specified limits. These controls implement the requirements of 10 CFR 50.36a on maintaining and using the appropriate radwaste processing equipment to keep releases ALARA.

ODCM 3.11.2.5 requires that the VENTILATION EXHAUST TREATMENT SYSTEM be used to reduce radioactive material levels prior to discharge when the projected dose exceeds 0.3 mrem to any organ in any 31 day period (i.e., one-quarter of the design objective rate). Figure 7.0-1 presents the gaseous effluent release points and the VENTILATION EXHAUST TREATMENT SYSTEMS applicable for reducing effluents prior to release.

Dose projection is performed at least once per 31 days using the following equation:

$$D_{\max p} = D_{\max} * (31 / d) \tag{7-16}$$

Where:

D_{maxp} = maximum organ dose projection for the next 31 day period (mrem)

NOTE: The reference calendar quarter is normally the current calendar quarter. If the dose projection is done in the first month of the quarter and is to be based on dose calculated for the previous quarter, the reference calendar quarter is the previous quarter.

D_{max} = the cumulative maximum organ dose from the beginning of the reference calendar quarter (normally the current quarter) to the end of the most recently evaluated release period as determined by Equation (7-14) (mrem)

d = number of days from the beginning of the reference calendar quarter to the end of the most recently evaluated release period.

31 = number of days in projection

TABLE 7.0-1

Values for Evaluating Gaseous Release Rates and Alarm Setpoints

Release Point	Flow Rate (liter/min)	Allocation Factor (AF)	Allocated Dose Rate Limit (mrem/year)
Reactor Building Exhaust Plenum D11-P280	2.89E6	0.50	T Body = 250 Skin = 1500 Organ = 750
Standby Gas Treatment System Div I D11-P275	1.07E5	0.10	T Body = 50 Skin = 300 Organ = 150
Standby Gas Treatment System Div II D11-P276	1.12E5	0.10	T Body = 50 Skin = 300 Organ = 150
Turbine Building Ventilation D11-P279	8.98E6	0.20	T Body = 100 Skin = 600 Organ = 300
Radwaste Building Ventilation D11-P281	1.01E6	0.02	T Body = 10 Skin = 60 Organ = 30
Onsite Storage Building Ventilation D11-P299	3.06E5	0.02	T Body = 10 Skin = 60 Organ = 30
Reactor Building Ventilation* Gulf Atomic Monitors D11-N408, N410	2.57E6	0.50	T Body = 125 Skin = 750 Organ = 375

* D11-N408 and N410 will start the SGTS, close the Drywell Purge/Vent Valves, isolate Rx Building Ventilation System, isolate Control Center, and initiate emergency recirculation mode.

TABLE 7.0-2

Dose Factors for Noble Gases*

Nuclide	Total Body Gamma Dose Factor K_i (mrem/yr per µCi/m^3)	Skin Beta Dose Factor L_i (mrem/yr per µCi/m^3)	Gamma Air Dose Factor M_i (mrad/yr per µCi/m^3)	Beta Air Dose Factor N_i (mrad/yr per µCi/m^3)
Kr-83m	7.56E-02	-----	1.93E+01	2.88E+02
Kr-85m	1.17E+03	1.46E+03	1.23E+03	1.97E+03
Kr-85	1.61E+01	1.34E+03	1.72E+01	1.95E+03
Kr-87	5.92E+03	9.73E+03	6.17E+03	1.03E+04
Kr-88	1.47E+04	2.37E+03	1.52E+04	2.93E+03
Kr-89	1.66E+04	1.01E+04	1.73E+04	1.06E+04
Kr-90	1.56E+04	7.29E+03	1.63E+04	7.83E+03
Xe-131m	9.15E+01	4.76E+02	1.56E+02	1.11E+03
Xe-133m	2.51E+02	9.94E+02	3.27E+02	1.48E+03
Xe-133	2.94E+02	3.06E+02	3.53E+02	1.05E+03
Xe-135m	3.12E+03	7.11E+02	3.36E+03	7.39E+02
Xe-135	1.81E+03	1.86E+03	1.92E+03	2.46E+03
Xe-137	1.42E+03	1.22E+04	1.51E+03	1.27E+04
Xe-138	8.83E+03	4.13E+03	9.21E+03	4.75E+03
Ar-41	8.84E+03	2.69E+03	9.30E+03	3.28E+03

NOTE:

* Dose factors taken from NRC Regulatory Guide 1.109

TABLE 7.0-3

Controlling Locations, Pathways, and Atmospheric Dispersion for Dose Calculations

ODCM Control	Location	Pathway(s)	Controlling Age Group	χ/Q (sec/m^3)	D/Q (1/m^2)
3.11.2.1a	site boundary (0.57 mi, NW)	noble gases direct exposure	N/A	RB: 7.9E-7 TB: 3.6E-6 RW: 1.1E-6 SGTS 7.3E-7	N/A
3.11.2.1b	site boundary (0.57 mi, NW)	inhalation	child	RB: 7.9E-7 TB: 3.6E-6 RW: 1.1E-6 SGTS 7.3E-7	N/A
3.11.2.2	site boundary (0.57 mi, NW)	gamma-air beta-air	N/A	RB: 7.9E-7 TB: 3.6E-6 RW: 1.1E-6 SGTS 7.3E-7	N/A
3.11.2.3	residence (0.71 mi, WNW)	vegetation inhalation, and ground plane	child	RB: 6.6E-7 TB: 2.8E-6 RW: 9.1E-7 SGTS 6.5E-7	1.4E-8 2.5E-8 1.5E-8 1.3E-8

NOTE (1): The identified controlling locations and pathways listed above are derived from Land Use Census data and dispersion and deposition factor data tables. The dispersion and deposition factor values listed are five year averages for the years 2009 - 2013.

NOTE (2): The controlling residence location listed above is the closest residence to the plant and has the highest χ/Q and D/Q factors of any residence. A child in residence and a vegetation pathway is assumed for the purposes of calculating a conservative offsite dose at this location. It has been determined that dose calculated for the assumed receptor and pathways at this location is conservative, i.e. that there is no other location at which a higher realistic dose will be calculated. However, if it is ever determined by the Land Use Census that there is another location at which higher doses are calculated, this table will be revised to use that location as the new controlling location.

Table 7.0−4
Gaseous Effluent Pathway Dose Commitment Factors
$R_{aipo,}$ Inhalation Pathway Dose Factors − ADULT

(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	–	1.26E+3	1.26E+3	1.26E+3	1.26E+3	1.26E+3	1.26E+3
C-14	1.82E+4	3.41E+3	3.41E+3	3.41E+3	3.41E+3	3.41E+3	3.41E+3
Na-24	1.02E+4	1.02E+4	1.02E+4	1.02E+4	1.02E+4	1.02E+4	1.02E+4
P-32	1.32E+6	7.71E+4	–	–	–	8.64E+4	5.01E+4
Cr-51	–	–	5.95E+1	2.28E+1	1.44E+4	3.32E+3	1.00E+2
Mn-54	–	3.96E+4	–	9.84E+3	1.40E+6	7.74E+4	6.30E+3
Mn-56	–	1.24E+0	–	1.30E+0	9.44E+3	2.02E+4	1.83E−1
Fe-55	2.46E+4	1.70E+4	–	–	7.21E+4	6.03E+3	3.94E+3
Fe-59	1.18E+4	2.78E+4	–	–	1.02E+6	1.88E+5	1.06E+4
Co-57	–	6.92E+2	–	–	3.70E+5	3.14E+4	6.71E+2
Co-58	–	1.58E+3	–	–	9.28E+5	1.06E+5	2.07E+3
Co-60	–	1.15E+4	–	–	5.97E+6	2.85E+5	1.48E+4
Ni-63	4.32E+5	3.14E+4	–	–	1.78E+5	1.34E+4	1.45E+4
Ni-65	1.54E+0	2.10E−1	–	–	5.60E+3	1.23E+4	9.12E−2
C-64	–	1.46E+0	–	4.62E+0	6.78E+3	4.90E+4	6.15E−1
Zn-65	3.24E+4	1.03E+5	–	6.90E+4	8.64E+5	5.34E+4	4.66E+4
Zn-69	3.38E−2	6.51E−2	–	4.22E−2	9.20E+2	1.63E+1	4.52E−3
Br-82	–	–	–	–	–	1.04E+4	1.35E+4
Br-83	–	–	–	–	–	2.32E+2	2.41E+2
Br-84	–	–	–	–	–	1.64E−3	3.13E+2
Br-85	–	–	–	–	–	–	1.28E+1
Rb-86	–	1.35E+5	–	–	–	1.66E+4	5.90E+4
Rb-88	–	3.87E+2	–	–	–	3.34E−9	1.93E+2
Rb-89	–	2.56E+2	–	–	–	–	1.70E+2
Sr-89	3.04E+5	–	–	–	1.40E+6	3.50E+5	8.72E+3
Sr-90	9.92E+7	–	–	–	9.60E+6	7.22E+5	6.10E+6
Sr-91	6.19E+1	–	–	–	3.65E+4	1.91E+5	2.50E+0
Sr-92	6.74E+0	–	–	–	1.65E+4	4.30E+4	2.91E−1
Y-90	2.09E+3	–	–	–	1.70E+5	5.06E+5	5.61E+1
Y-91m	2.61E−1	–	–	–	1.92E+3	1.33E+0	1.02E−2
Y-91	4.62E+5	–	–	–	1.70E+6	3.85E+5	1.24E+4
Y-92	1.03E+1	–	–	–	1.57E+4	7.35E+4	3.02E−1
Y-93	9.44E+1	–	–	–	4.85E+4	4.22E+5	2.61E+0
Zr-95	1.07E+5	3.44E+4	–	5.42E+4	1.77E+6	1.50E+5	2.33E+4
Zr-97	9.68E+1	1.96E+1	–	2.97E+1	7.87E+4	5.23E+5	9.04E+0
Nb-95	1.41E+4	7.82E+3	–	7.74E+3	5.05E+5	1.04E+5	4.21E+3
Nb-97	2.22E−1	5.62E−2	–	6.54E−2	2.40E+3	2.42E+2	2.05E−2
Mo-99	–	1.21E+2	–	2.91E+2	9.12E+4	2.48E+5	2.30E+1
Tc-99m	1.03E−3	2.91E−3	–	4.42E−2	7.64E+2	4.16E+3	3.70E−2
Tc-101	4.18E−5	6.02E−5	–	1.08E−3	3.99E+2	–	5.90E−4
Ru-103	1.53E+3	–	–	5.83E+3	5.05E+5	1.10E+5	6.58E+2
Ru-105	7.90E−1	–	–	1.02E+0	1.10E+4	4.82E+4	3.11E−1
Ru-106	6.91E+4	–	–	1.34E+5	9.36E+6	9.12E+5	8.72E+3
Rh-103m	–	–	–	–	–	–	–
Rh-106	–	–	–	–	–	–	–

Table 7.0−4
Gaseous Effluent Pathway Dose Commitment Factors
R_{aipo}, Inhalation Pathway Dose Factors − ADULT (cont.)

(mrem/yr per $\mu Ci/m^3$)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.08E+4	1.00E+4	−	1.97E+4	4.63E+6	3.02E+5	5.94E+3
Sb-124	3.12E+4	5.89E+2	7.55E+1	−	2.48E+6	4.06E+5	1.24E+4
Sb-125	5.34E+4	5.95E+2	5.40E+1	−	1.74E+6	1.01E+5	1.26E+4
Te-125m	3.42E+3	1.58E+3	1.05E+3	1.24E+4	3.14E+5	7.06E+4	4.67E+2
Te-127m	1.26E+4	5.77E+3	3.29E+3	4.58E+4	9.60E+5	1.50E+5	1.57E+3
Te-127	1.40E+0	6.42E−1	1.06E+0	5.10E+0	6.51E+3	5.74E+4	3.10E−1
Te-129m	9.76E+3	4.67E+3	3.44E+3	3.66E+4	1.16E+6	3.83E+5	1.58E+3
Te-129	4.98E−2	2.39E−2	3.90E−2	1.87E−1	1.94E+3	1.57E+2	1.24E−2
Te-131m	6.99E+1	4.36E+1	5.50E+1	3.09E+2	1.46E+5	5.56E+5	2.90E+1
Te-131	1.11E−2	5.95E−3	9.36E−3	4.37E−2	1.39E+3	1.84E+1	3.59E−3
Te-132	2.60E+2	2.15E+2	1.90E+2	1.46E+3	2.88E+5	5.10E+5	1.62E+2
I-130	4.58E+3	1.34E+4	1.14E+6	2.09E+4	−	7.69E+3	5.28E+3
I-131	2.52E+4	3.58E+4	1.19E+7	6.13E+4	−	6.28E+3	2.05E+4
I-132	1.16E+3	3.26E+3	1.14E+5	5.18E+3	−	4.06E+2	1.16E+3
I-133	8.64E+3	1.48E+4	2.15E+6	2.58E+4	−	8.88E+3	4.52E+3
I-134	6.44E+2	1.73E+3	2.98E+4	2.75E+3	−	1.01E+0	6.15E+2
I-135	2.68E+3	6.98E+3	4.48E+5	1.11E+4	−	5.25E+3	2.57E+3
Cs-134	3.73E+5	8.48E+5	−	2.87E+5	9.76E+4	1.04E+4	7.28E+5
Cs-136	3.90E+4	1.46E+5	−	8.56E+4	1.20E+4	1.17E+4	1.10E+5
Cs-137	4.78E+5	6.21E+5	−	2.22E+5	7.52E+4	8.40E+3	4.28E+5
Cs-138	3.31E+2	6.21E+2	−	4.80E+2	4.86E+1	1.86E−3	3.24E+2
Ba-139	9.36E−1	6.66E−4	−	6.22E−4	3.76E+3	8.96E+2	2.74E−2
Ba-140	3.90E+4	4.90E+1	−	1.67E+1	1.27E+6	2.18E+5	2.57E+3
Ba-141	1.00E−1	7.53E−5	−	7.00E−5	1.94E+3	1.16E−7	3.36E−3
Ba-142	2.63E−2	2.70E−5	−	2.29E−5	1.19E+3	−	1.66E−3
La-140	3.44E+2	1.74E+2	−	−	1.36E+5	4.58E+5	4.58E+1
La-142	6.83E−1	3.10E−1	−	−	6.33E+3	2.11E+3	7.72E−2
Ce-141	1.99E+4	1.35E+4	−	6.26E+3	3.62E+5	1.20E+5	1.53E+3
Ce-143	1.86E+2	1.38E+2	−	6.08E+1	7.98E+4	2.26E+5	1.53E+1
Ce-144	3.43E+6	1.43E+6	−	8.48E+5	7.78E+6	8.16E+5	1.84E+5
Pr-143	9.36E+3	3.75E+3	−	2.16E+3	2.81E+5	2.00E+5	4.64E+2
Pr-144	3.01E−2	1.25E−2	−	7.05E−3	1.02E+3	2.15E−8	1.53E−3
Nd-147	5.27E+3	6.10E+3	−	3.56E+3	2.21E+5	1.73E+5	3.65E+2
W-187	8.48E+0	7.08E+0	−	−	2.90E+4	1.55E+5	2.48E+0
Np-239	2.30E+2	2.26E+1	−	7.00E+1	3.76E+4	1.19E+5	1.24E+1

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − TEENAGER
(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.27E+3	1.27E+3	1.27E+3	1.27E+3	1.27E+3	1.27E+3
C-14	2.60E+4	4.87E+3	4.87E+3	4.87E+3	4.87E+3	4.87E+3	4.87E+3
Na-24	1.38E+4	1.38E+4	1.38E+4	1.38E+4	1.38E+4	1.38E+4	1.38E+4
P-32	1.89E+6	1.10E+5	−	−	−	9.28E+4	7.16E+4
Cr-51	−	−	7.50E+1	3.07E+1	2.10E+4	3.00E+3	1.35E+2
Mn-54	−	5.11E+4	−	1.27E+4	1.98E+6	6.68E+4	8.40E+3
Mn-56	−	1.70E+0	−	1.79E+0	1.52E+4	5.74E+4	2.52E−1
Fe-55	3.34E+4	2.38E+4	−	−	1.24E+5	6.39E+3	5.54E+3
Fe-59	1.59E+4	3.70E+4	−	−	1.53E+6	1.78E+5	1.43E+4
Co-57	−	6.92E+2	−	−	5.86E+5	3.14E+4	9.20E+2
Co-58	−	2.07E+3	−	−	1.34E+6	9.52E+4	2.78E+3
Co-60	−	1.51E+4	−	−	8.72E+6	2.59E+5	1.98E+4
Ni-63	5.80E+5	4.34E+4	−	−	3.07E+5	1.42E+4	1.98E+4
Ni-65	2.18E+0	2.93E−1	−	−	9.36E+3	3.67E+4	1.27E−1
Cu-64	−	2.03E+0	−	6.41E+0	1.11E+4	6.14E+4	8.48E−1
Zn-65	3.86E+4	1.34E+5	−	8.64E+4	1.24E+6	4.66E+4	6.24E+4
Zn-69	4.83E−2	9.20E−2	−	6.02E−2	1.58E+3	2.85E+2	6.46E−3
Br-82	−	−	−	−	−	−	1.82E+4
Br-83	−	−	−	−	−	−	3.44E+2
Br-84	−	−	−	−	−	−	4.33E+2
Br-85	−	−	−	−	−	−	1.83E+1
Rb-86	−	1.90E+5	−	−	−	1.77E+4	8.40E+4
Rb-88	−	5.46E+2	−	−	−	2.92E−5	2.72E+2
Rb-89	−	3.52E+2	−	−	−	3.38E−7	2.33E+2
Sr-89	4.34E+5	−	−	−	2.42E+6	3.71E+5	1.25E+4
Sr-90	1.08E+8	−	−	−	1.65E+7	7.65E+5	6.68E+6
Sr-91	8.80E+1	−	−	−	6.07E+4	2.59E+5	3.51E+0
Sr-92	9.52E+0	−	−	−	2.74E+4	1.19E+5	4.06E−1
Y-90	2.98E+3	−	−	−	2.93E+5	5.59E+5	8.00E+1
Y-91m	3.70E−1	−	−	−	3.20E+3	3.02E+1	1.42E−2
Y-91	6.61E+5	−	−	−	2.94E+6	4.09E+5	1.77E+4
Y-92	1.47E+1	−	−	−	2.68E+4	1.65E+5	4.29E−1
Y-93	1.35E+2	−	−	−	8.32E+4	5.79E+5	3.72E+0
Zr-95	1.46E+5	4.58E+4	−	6.74E+4	2.69E+6	1.49E+5	3.15E+4
Zr-97	1.38E+2	2.72E+1	−	4.12E+1	1.30E+5	6.30E+5	1.26E+1
Nb-95	1.86E+4	1.03E+4	−	1.00E+4	7.51E+5	9.68E+4	5.66E+3
Nb-97	3.14E−1	7.78E−2	−	9.12E−2	3.93E+3	2.17E+3	2.84E−2
Mo-99	−	1.69E+2	−	4.11E+2	1.54E+5	2.69E+5	3.22E+1
Tc-99m	1.38E−3	3.86E−3	−	5.76E−2	1.15E+3	6.13E+3	4.99E−2
Tc-101	5.92E−5	8.40E−5	−	1.52E−3	6.67E+2	8.72E−7	8.24E−4
Ru-103	2.10E+3	−	−	7.43E+3	7.83E+5	1.09E+5	8.96E+2
Ru-105	1.12E+0	−	−	1.41E+0	1.82E+4	9.04E+4	4.34E−1
Ru-106	9.84E+4	−	−	1.90E+5	1.61E+7	9.60E+5	1.24E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − TEENAGER (cont.)

(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.38E+4	1.31E+4	−	2.50E+4	6.75E+6	2.73E+5	7.99E+3
Sb-124	4.30E+4	7.94E+2	9.76E+1	−	3.85E+6	3.98E+5	1.68E+4
Sb-125	7.38E+4	8.08E+2	7.04E+1	−	2.74E+6	9.92E+4	1.72E+4
Te-125m	4.88E+3	2.24E+3	1.40E+3	−	5.36E+5	7.50E+4	6.67E+2
Te-127m	1.80E+4	8.16E+3	4.38E+3	6.54E+4	1.66E+6	1.59E+5	2.18E+3
Te-127	2.01E+0	9.12E−1	1.42E+0	7.28E+0	1.12E+4	8.08E+4	4.42E−1
Te-129m	1.39E+4	6.58E+3	4.58E+3	5.19E+4	1.98E+6	4.05E+5	2.25E+3
Te-129	7.10E−2	3.38E−2	5.18E−2	2.66E−1	3.30E+3	1.62E+3	1.76E−2
Te-131m	9.84E+1	6.01E+1	7.25E+1	4.39E+2	2.38E+5	6.21E+5	4.02E+1
Te-131	1.58E−2	8.32E−3	1.24E−2	6.18E−2	2.34E+3	1.51E+1	5.04E−3
Te-132	3.60E+2	2.90E+2	2.46E+2	1.95E+3	4.49E+5	4.63E+5	2.19E+2
I-130	6.24E+3	1.79E+4	1.49E+6	2.75E+4	−	9.12E+3	7.17E+3
I-131	3.54E+4	4.91E+4	1.46E+7	8.40E+4	−	6.49E+3	2.64E+4
I-132	1.59E+3	4.38E+3	1.51E+5	6.92E+3	−	1.27E+3	1.58E+3
I-133	1.22E+4	2.05E+4	2.92E+6	3.59E+4	−	1.03E+4	6.22E+3
I-134	8.88E+2	2.32E+3	3.95E+4	3.66E+3	−	2.04E+1	8.40E+2
I-135	3.70E+3	9.44E+3	6.21E+5	1.49E+4	−	6.95E+3	3.49E+3
Cs-134	5.02E+5	1.13E+6	−	3.75E+5	1.46E+5	9.76E+3	5.49E+5
Cs-136	5.15E+4	1.94E+5	−	1.10E+5	1.78E+4	1.09E+4	1.37E+5
Cs-137	6.70E+5	8.48E+5	−	3.04E+5	1.21E+5	8.48E+3	3.11E+5
Cs-138	4.66E+2	8.56E+2	−	6.62E+2	7.87E+1	2.70E−1	4.46E+2
Ba-139	1.34E+0	9.44E−4	−	8.88E−4	6.46E+3	6.45E+3	3.90E−2
Ba-140	5.47E+4	6.70E+1	−	2.28E+1	2.03E+6	2.29E+5	3.52E+3
Ba-141	1.42E−1	1.06E−4	−	9.84E−5	3.29E+3	7.46E−4	4.74E−3
Ba-142	3.70E−2	3.70E−5	−	3.14E−5	1.91E+3	−	2.27E−3
La-140	4.79E+2	2.36E+2	−	−	2.14E+5	4.87E+5	6.26E+1
La-142	9.60E−1	4.25E−1	−	−	1.02E+4	1.20E+4	1.06E−1
Ce-141	2.84E+4	1.90E+4	−	8.88E+3	6.14E+5	1.26E+5	2.17E+3
Ce-143	2.66E+2	1.94E+2	−	8.64E+1	1.30E+5	2.55E+5	2.16E+1
Ce-144	4.89E+6	2.02E+6	−	1.21E+6	1.34E+7	8.64E+5	2.62E+5
Pr-143	1.34E+4	5.31E+3	−	3.09E+3	4.83E+5	2.14E+5	6.62E+2
Pr-144	4.30E−2	1.76E−2	−	1.01E−2	1.75E+3	2.35E−4	2.18E−3
Nd-147	7.86E+3	8.56E+3	−	5.02E+3	3.72E+5	1.82E+5	5.13E+2
W-187	1.20E+1	9.76E+0	−	−	4.74E+4	1.77E+5	3.43E+0
Np-239	3.38E+2	3.19E+1	−	1.00E+2	6.49E+4	1.32E+5	1.77E+1

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.12E+3	1.12E+3	1.12E+3	1.12E+3	1.12E+3	1.12E+3
C-14	3.59E+4	6.73E+3	6.73E+3	6.73E+3	6.73E+3	6.73E+3	6.73E+3
Na-24	1.61E+4	1.61E+4	1.61E+4	1.61E+4	1.61E+4	1.61E+4	1.61E+4
P-32	2.60E+6	1.14E+5	−	−	−	4.22E+4	9.88E+4
Cr-51	−	−	8.55E+1	2.43E+1	1.70E+4	1.08E+3	1.54E+2
Mn-54	−	4.29E+4	−	1.00E+4	1.58E+6	2.29E+4	9.51E+3
Mn-56	−	1.66E+0	−	1.67E+0	1.31E+4	1.23E+5	3.12E−1
Fe-55	4.74E+4	2.52E+4	−	−	1.11E+5	2.87E+3	7.77E+3
Fe-59	2.07E+4	3.34E+4	−	−	1.27E+6	7.07E+4	1.67E+4
Co-57	−	9.03E+2	−	−	5.07E+5	1.32E+4	1.07E+3
Co-58	−	1.77E+3	−	−	1.11E+6	3.44E+4	3.16E+3
Co-60	−	1.31E+4	−	−	7.07E+6	9.62E+4	2.26E+4
Ni-63	8.21E+5	4.63E+4	−	−	2.75E+5	6.33E+3	2.80E+4
Ni-65	2.99E+0	2.96E−1	−	−	8.18E+3	8.40E+4	1.64E−1
Cu-64	−	1.99E+0	−	6.03E+0	9.58E+3	3.67E+4	1.07E+0
Zn-65	4.26E+4	1.13E+5	−	7.14E+4	9.95E+5	1.63E+4	7.03E+4
Zn-69	6.70E−2	9.66E−2	−	5.85E−2	1.42E+3	1.02E+4	8.92E−3
Br-82	−	−	−	−	−	−	2.09E+4
Br-83	−	−	−	−	−	−	4.74E+2
Br-84	−	−	−	−	−	−	5.48E+2
Br-85	−	−	−	−	−	−	2.53E+1
Rb-86	−	1.98E+5	−	−	−	7.99E+3	1.14E+5
Rb-88	−	5.62E+2	−	−	−	1.72E+1	3.66E+2
Rb-89	−	3.45E+2	−	−	−	1.89E+0	2.90E+2
Sr-89	5.99E+5	−	−	−	2.16E+6	1.67E+5	1.72E+4
Sr-90	1.01E+8	−	−	−	1.48E+7	3.43E+5	6.44E+6
Sr-91	1.21E+2	−	−	−	5.33E+4	1.74E+5	4.59E+0
Sr-92	1.31E+1	−	−	−	2.40E+4	2.42E+5	5.25E−1
Y-90	4.11E+3	−	−	−	2.62E+5	2.68E+5	1.11E+2
Y-91m	5.07E−1	−	−	−	2.81E+3	1.72E+3	1.84E−2
Y-91	9.14E+5	−	−	−	2.63E+6	1.84E+5	2.44E+4
Y-92	2.04E+1	−	−	−	2.39E+4	2.39E+5	5.81E−1
Y-93	1.86E+2	−	−	−	7.44E+4	3.89E+5	5.11E+0
Zr-95	1.90E+5	4.18E+4	−	5.96E+4	2.23E+6	6.11E+4	3.70E+4
Zr-97	1.88E+2	2.72E+1	−	3.89E+1	1.13E+5	3.51E+5	1.60E+1
Nb-95	2.35E+4	9.18E+3	−	8.62E+3	6.14E+5	3.70E+4	6.55E+3
Nb-97	4.29E−1	7.70E−2	−	8.55E−2	3.42E+3	2.78E+4	3.60E−2
Mo-99	−	1.72E+2	−	3.92E+2	1.35E+5	1.27E+5	4.26E+1
Tc-99m	1.78E−3	3.48E−3	−	5.07E−2	9.51E+2	4.81E+3	5.77E−2
Tc-101	8.10E−5	8.51E−5	−	1.45E−3	5.85E+2	1.63E+1	1.08E−3
Ru-103	2.79E+3	−	−	7.03E+3	6.62E+5	4.48E+4	1.07E+3
Ru-105	1.53E+0	−	−	1.34E+0	1.59E+4	9.95E+4	5.55E−1
Ru-106	1.36E+5	−	−	1.84E+5	1.43E+7	4.29E+5	1.69E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − CHILD (cont.)
(mrem/yr per μCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.69E+4	1.14E+4	−	2.12E+4	5.48E+6	1.00E+5	9.14E+3
Sb-124	5.74E+4	7.40E+2	1.26E+2	−	3.24E+6	1.64E+5	2.00E+4
Sb-125	9.84E+4	7.59E+2	9.10E+1	−	2.32E+6	4.03E+4	2.07E+4
Te-125m	6.73E+3	2.33E+3	1.92E+3	−	4.77E+5	3.38E+4	9.14E+2
Te-127m	2.49E+4	8.55E+3	6.07E+3	6.36E+4	1.48E+6	7.14E+4	3.02E+3
Te-127	2.77E+0	9.51E−1	1.96E+0	7.07E+0	1.00E+4	5.62E+4	6.11E−1
Te-129m	1.92E+4	6.85E+3	6.33E+3	5.03E+4	1.76E+6	1.82E+5	3.04E+3
Te-129	9.77E−2	3.50E−2	7.14E−2	2.57E−1	2.93E+3	2.55E+4	2.38E−2
Te-131m	1.34E+2	5.92E+1	9.77E+1	4.00E+2	2.06E+5	3.08E+5	5.07E+1
Te-131	2.17E−2	8.44E−3	1.70E−2	5.88E−2	2.05E+3	1.33E+3	6.59E−3
Te-132	4.81E+2	2.72E+2	3.17E+2	1.77E+3	3.77E+5	1.38E+5	2.63E+2
I-130	8.18E+3	1.64E+4	1.85E+6	2.45E+4	−	5.11E+3	8.44E+3
I-131	4.81E+4	4.81E+4	1.62E+7	7.88E+4	−	2.84E+3	2.73E+4
I-132	2.12E+3	4.07E+3	1.94E+5	6.25E+3	−	3.20E+3	1.88E+3
I-133	1.66E+4	2.03E+4	3.85E+6	3.38E+4	−	5.48E+3	7.70E+3
I-134	1.17E+3	2.16E+3	5.07E+4	3.30E+3	−	9.55E+2	9.95E+2
I-135	4.92E+3	8.73E+3	7.92E+5	1.34E+4	−	4.44E+3	4.14E+3
Cs-134	6.51E+5	1.01E+6	−	3.30E+5	1.21E+5	3.85E+3	2.25E+5
Cs-136	6.51E+4	1.71E+5	−	9.55E+4	1.45E+4	4.18E+3	1.16E+5
Cs-137	9.07E+5	8.25E+5	−	2.82E+5	1.04E+5	3.62E+3	1.28E+5
Cs-138	6.33E+2	8.40E+2	−	6.22E+2	6.81E+1	2.70E+2	5.55E+2
Ba-139	1.84E+0	9.84E−4	−	8.62E−4	5.77E+3	5.77E+4	5.37E−2
Ba-140	7.40E+4	6.48E+1	−	2.11E+1	1.74E+6	1.02E+5	4.33E+3
Ba-141	1.96E−1	1.09E−4	−	9.47E−5	2.92E+3	2.75E+2	6.36E−3
Ba-142	5.00E−2	3.60E−5	−	2.91E−5	1.64E+3	2.74E+0	2.79E−3
La-140	6.44E+2	2.25E+2	−	−	1.83E+5	2.26E+5	7.55E+1
La-142	1.30E+0	4.11E−1	−	−	8.70E+3	7.59E+4	1.29E−1
Ce-141	3.92E+4	1.95E+4	−	8.55E+3	5.44E+5	5.66E+4	2.90E+3
Ce-143	3.66E+2	1.99E+2	−	8.36E+1	1.15E+5	1.27E+5	2.87E+1
Ce-144	6.77E+6	2.12E+6	−	1.17E+6	1.20E+7	3.89E+5	3.61E+5
Pr-143	1.85E+4	5.55E+3	−	3.00E+3	4.33E+5	9.73E+4	9.14E+2
Pr-144	5.96E−2	1.85E−2	−	9.77E−3	1.57E+3	1.97E+2	3.00E−3
Nd-147	1.08E+4	8.73E+3	−	4.81E+3	3.28E+5	8.21E+4	6.81E+2
W-187	1.63E+1	9.66E+0	−	−	4.11E+4	9.10E+4	4.33E+0
Np-239	4.66E+2	3.34E+1	−	9.73E+1	5.81E+4	6.40E+4	2.35E+1

Table 7.0−4

$R_{aipo,}$ Inhalation Pathway Dose Factors − INFANT

(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	6.47E+2	6.47E+2	6.47E+2	6.47E+2	6.47E+2	6.47E+2
C-14	2.65E+4	5.31E+3	5.31E+3	5.31E+3	5.31E+3	5.31E+3	5.31E+3
Na-24	1.06E+4	1.06E+4	1.06E+4	1.06E+4	1.06E+4	1.06E+4	1.06E+4
P-32	2.03E+6	1.12E+5	−	−	−	1.61E+4	7.74E+4
Cr-51	−	−	5.75E+1	1.32E+1	1.28E+4	3.57E+2	8.95E+1
Mn-54	−	2.53E+4	−	4.98E+3	1.00E+6	7.06E+3	4.98E+3
Mn-56	−	1.54E+0	−	1.10E+0	1.25E+4	7.17E+4	2.21E−1
Fe-55	1.97E+4	1.17E+4	−	−	8.69E+4	1.09E+3	3.33E+3
Fe-59	1.36E+4	2.35E+4	−	−	1.02E+6	2.48E+4	9.48E+3
Co-57	−	6.51E+2	−	−	3.79E+5	4.86E+3	6.41E+2
Co-58	−	1.22E+3	−	−	7.77E+5	1.11E+4	1.82E+3
Co-60	−	8.02E+3	−	−	4.51E+6	3.19E+4	1.18E+4
Ni-63	3.39E+5	2.04E+4	−	−	2.09E+5	2.42E+3	1.16E+4
Ni-65	2.39E+0	2.84E−1	−	−	8.12E+3	5.01E+4	1.23E−1
Cu-64	−	1.88E+0	−	3.98E+0	9.30E+3	1.50E+4	7.74E−1
Zn-65	1.93E+4	6.26E+4	−	3.25E+4	6.47E+5	5.14E+4	3.11E+4
Zn-69	5.39E−2	9.67E−2	−	4.02E−2	1.47E+3	1.32E+4	7.18E−3
Br-82	−	−	−	−	−	−	1.33E+4
Br-83	−	−	−	−	−	−	3.81E+2
Br-84	−	−	−	−	−	−	4.00E+2
Br-85	−	−	−	−	−	−	2.04E+1
Rb-86	−	1.90E+5	−	−	−	3.04E+3	8.82E+4
Rb-88	−	5.57E+2	−	−	−	3.39E+2	2.87E+2
Rb-89	−	3.21E+2	−	−	−	6.82E+1	2.06E+2
Sr-89	3.98E+5	−	−	−	2.03E+6	6.40E+4	1.14E+4
Sr-90	4.09E+7	−	−	−	1.12E+7	1.31E+5	2.59E+6
Sr-91	9.56E+1	−	−	−	5.26E+4	7.34E+4	3.46E+0
Sr-92	1.05E+1	−	−	−	2.38E+4	1.40E+5	3.91E−1
Y-90	3.29E+3	−	−	−	2.69E+5	1.04E+5	8.82E+1
Y-91m	4.07E−1	−	−	−	2.79E+3	2.35E+3	1.39E−2
Y-91	5.88E+5	−	−	−	2.45E+6	7.03E+4	1.57E+4
Y-92	1.64E+1	−	−	−	2.45E+4	1.27E+5	4.61E−1
Y-93	1.50E+2	−	−	−	7.64E+4	1.67E+5	4.07E+0
Zr-95	1.15E+5	2.79E+4	−	3.11E+4	1.75E+6	2.17E+4	2.03E+4
Zr-97	1.50E+2	2.56E+1	−	2.59E+1	1.10E+5	1.40E+5	1.17E+1
Nb-95	1.57E+4	6.43E+3	−	4.72E+3	4.79E+5	1.27E+4	3.78E+3
Nb-97	3.42E−1	7.29E−2	−	5.70E−2	3.32E+3	2.69E+4	2.63E−2
Mo-99	−	1.65E+2	−	2.65E+2	1.35E+5	4.87E+4	3.23E+1
Tc-99m	1.40E−3	2.88E−3	−	3.11E−2	8.11E+2	2.03E+3	3.72E−2
Tc-101	6.51E−5	8.23E−5	−	9.79E−4	5.84E+2	8.44E+2	8.12E−4
Ru-103	2.02E+3	−	−	4.24E+3	5.52E+5	1.61E+4	6.79E+2
Ru-105	1.22E+0	−	−	8.99E−1	1.57E+4	4.84E+4	4.10E−1
Ru-106	8.68E+4	−	−	1.07E+5	1.16E+7	1.64E+5	1.09E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − INFANT (cont.)
(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	9.98E+3	7.22E+3	−	1.09E+4	3.67E+6	3.30E+4	5.00E+3
Sb-124	3.79E+4	5.56E+2	1.01E+2	−	2.65E+6	5.91E+4	1.20E+4
Sb-125	5.17E+4	4.77E+2	6.23E+1	−	1.64E+6	1.47E+4	1.09E+4
Te-125m	4.76E+3	1.99E+3	1.62E+3	−	4.47E+5	1.29E+4	6.58E+2
Te-127m	1.67E+4	6.90E+3	4.87E+3	3.75E+4	1.31E+6	2.73E+4	2.07E+3
Te-127	2.23E+0	9.53E−1	1.85E+0	4.86E+0	1.03E+4	2.44E+4	4.89E−1
Te-129m	1.41E+4	6.09E+3	5.47E+3	3.18E+4	1.68E+6	6.90E+4	2.23E+3
Te-129	7.88E−2	3.47E−2	6.75E−2	1.75E−1	3.00E+3	2.63E+4	1.88E−2
Te-131m	1.07E+2	5.50E+1	8.93E+1	2.65E+2	1.99E+5	1.19E+5	3.63E+1
Te-131	1.74E−2	8.22E−3	1.58E−2	3.99E−2	2.06E+3	8.22E+3	5.00E−3
Te-132	3.72E+2	2.37E+2	2.79E+2	1.03E+3	3.40E+5	4.41E+4	1.76E+2
I-130	6.36E+3	1.39E+4	1.60E+6	1.53E+4	−	1.99E+3	5.57E+3
I-131	3.79E+4	4.44E+4	1.48E+7	5.18E+4	−	1.06E+3	1.96E+4
I-132	1.69E+3	3.54E+3	1.69E+5	3.95E+3	−	1.90E+3	1.26E+3
I-133	1.32E+4	1.92E+4	3.56E+6	2.24E+4	−	2.16E+3	5.60E+3
I-134	9.21E+2	1.88E+3	4.45E+4	2.09E+3	−	1.29E+3	6.65E+2
I-135	3.86E+3	7.60E+3	6.96E+5	8.47E+3	−	1.83E+3	2.77E+3
Cs-134	3.96E+5	7.03E+5	−	1.90E+5	7.97E+4	1.33E+3	7.45E+4
Cs-136	4.83E+4	1.35E+5	−	5.64E+4	1.18E+4	1.43E+3	5.29E+4
Cs-137	5.49E+5	6.12E+5	−	1.72E+5	7.13E+4	1.33E+3	4.55E+4
Cs-138	5.05E+2	7.81E+2	−	4.10E+2	6.54E+1	8.76E+2	3.98E+2
Ba-139	1.48E+0	9.84E−4	−	5.92E−4	5.95E+3	5.10E+4	4.30E−2
Ba-140	5.60E+4	5.60E+1	−	1.34E+1	1.60E+6	3.84E+4	2.90E+3
Ba-141	1.57E−1	1.08E−4	−	6.50E−5	2.97E+3	4.75E+3	4.97E−3
Ba-142	3.98E−2	3.30E−5	−	1.90E−5	1.55E+3	6.93E+2	1.96E−3
La-140	5.05E+2	2.00E+2	−	−	1.68E+5	8.48E+4	5.15E+1
La-142	1.03E+0	3.77E−1	−	−	8.22E+3	5.95E+4	9.04E−2
Ce-141	2.77E+4	1.67E+4	−	5.25E+3	5.17E+5	2.16E+4	1.99E+3
Ce-143	2.93E+2	1.93E+2	−	5.64E+1	1.16E+5	4.97E+4	2.21E+1
Ce-144	3.19E+6	1.21E+6	−	5.38E+5	9.84E+6	1.48E+5	1.76E+5
Pr-143	1.40E+4	5.24E+3	−	1.97E+3	4.33E+5	3.72E+4	6.99E+2
Pr-144	4.79E−2	1.85E−2	−	6.72E−3	1.61E+3	4.28E+3	2.41E−3
Nd-147	7.94E+3	8.13E+3	−	3.15E+3	3.22E+5	3.12E+4	5.00E+2
W-187	1.30E+1	9.02E+0	−	−	3.96E+4	3.56E+4	3.12E+0
Np-239	3.71E+2	3.32E+1	−	6.62E+1	5.95E+4	2.49E+4	1.88E+1

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − ADULT
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	7.63E+2	7.63E+2	7.63E+2	7.63E+2	7.63E+2	7.63E+2
C-14	3.63E+5	7.26E+4	7.26E+4	7.26E+4	7.26E+4	7.26E+4	7.26E+4
Na-24	2.54E+6	2.54E+6	2.54E+6	2.54E+6	2.54E+6	2.54E+6	2.54E+6
P-32	1.71E+10	1.06E+9	−	−	−	1.92E+9	6.60E+8
Cr-51	−	−	1.71E+4	6.30E+3	3.80E+4	7.20E+6	2.86E+4
Mn-54	−	8.40E+6	−	2.50E+6	−	2.57E+7	1.60E+6
Mn-56	−	4.23E−3	−	5.38E−3	−	1.35E−1	7.51E−4
Fe-55	2.51E+7	1.73E+7	−	−	9.67E+6	9.95E+6	4.04E+6
Fe-59	2.98E+7	7.00E+7	−	−	1.95E+7	2.33E+8	2.68E+7
Co-57	−	1.28E+6	−	−	−	3.25E+7	2.13E+6
Co-58	−	4.72E+6	−	−	−	9.57E+7	1.06E+7
Co-60	−	1.64E+7	−	−	−	3.08E+8	3.62E+7
Ni-63	6.73E+9	4.66E+8	−	−	−	9.73E+7	2.26E+8
Ni-65	3.70E−1	4.81E−2	−	−	−	1.22E+0	2.19E−2
Cu-64	−	2.41E+4	−	6.08E+4	−	2.05E+6	1.13E+4
Zn-65	1.37E+9	4.36E+9	−	2.92E+9	−	2.75E+9	1.97E+9
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	3.72E+7	3.25E+7
Br-83	−	−	−	−	−	1.49E−1	1.03E−1
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	2.59E+9	−	−	−	5.11E+8	1.21E+9
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	1.45E+9	−	−	−	−	2.33E+8	4.16E+7
Sr-90	4.68E+10	−	−	−	−	1.35E+9	1.15E+10
Sr-91	3.13E+4	−	−	−	−	1.49E+5	1.27E+3
Sr-92	4.89E−1	−	−	−	−	9.68E+0	2.11E−2
Y-90	7.07E+1	−	−	−	−	7.50E+5	1.90E+0
Y-91m	−	−	−	−	−	−	−
Y-91	8.60E+3	−	−	−	−	4.73E+6	2.30E+2
Y-92	5.42E−5	−	−	−	−	9.49E−1	1.58E−6
Y-93	2.33E−1	−	−	−	−	7.39E+3	6.43E−3
Zr-95	9.46E+2	3.03E+2	−	4.76E+2	−	9.62E+5	2.05E+2
Zr-97	4.26E−1	8.59E−2	−	1.30E−1	−	2.66E+4	3.93E−2
Nb-95	8.25E+4	4.59E+4	−	4.54E+4	−	2.79E+8	2.47E+4
Nb-97	−	−	−	−	−	5.47E−9	−
Mo-99	−	2.52E+7	−	5.72E+7	−	5.85E+7	4.80E+6
Tc-99m	3.25E+0	9.19E+0	−	1.40E+2	4.50E+0	5.44E+3	1.17E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	1.02E+3	−	−	3.89E+3	−	1.19E+5	4.39E+2
Ru-105	8.57E−4	−	−	1.11E−2	−	5.24E−1	3.38E−4
Ru-106	2.04E+4	−	−	3.94E+4	−	1.32E+6	2.58E+3
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − ADULT (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	5.83E+7	5.39E+7	−	1.06E+8	−	2.20E+10	3.20E+7
Sb-124	2.57E+7	4.86E+5	6.24E+4	−	2.00E+7	7.31E+8	1.02E+7
Sb125	2.04E+7	2.28E+5	2.08E+4	−	1.58E+7	2.25E+8	4.86E+6
Te-125m	1.63E+7	5.90E+6	4.90E+6	6.63E+7	−	6.50E+7	2.18E+6
Te-127m	4.58E+7	1.64E+7	1.17E+7	1.86E+8	−	1.54E+8	5.58E+6
Te-127	6.72E+2	2.41E+2	4.98E+2	2.74E+3	−	5.30E+4	1.45E+2
Te-129m	6.04E+7	2.25E+7	2.08E+7	2.52E+8	−	3.04E+8	9.57E+6
Te-129	−	−	−	−	−	−	−
Te-131m	3.61E+5	1.77E+5	2.80E+5	1.79E+6	−	1.75E+7	1.47E+5
Te-131	−	−	−	−	−	−	−
Te-132	2.39E+6	1.55E+6	1.71E+6	1.49E+7	−	7.32E+7	1.45E+6
I-130	4.26E+5	1.26E+6	1.07E+8	1.96E+6	−	1.08E+6	4.96E+5
I-131	2.96E+8	4.24E+8	1.39E+11	7.27E+8	−	1.12E+8	2.43E+8
I-132	1.64E−1	4.37E−1	1.53E+1	6.97E−1	−	8.22E−2	1.53E−1
I-133	3.97E+6	6.90E+6	1.01E+9	1.20E+7	−	6.20E+6	2.10E+6
I-134	−	−	−	−	−	−	−
I-135	1.39E+4	3.63E+4	2.40E+6	5.83E+4	−	4.10E+4	1.34E+4
Cs-134	5.65E+9	1.34E+10	−	4.35E+9	1.44E+9	2.35E+8	1.10E+10
Cs-136	2.61E+8	1.03E+9	−	5.74E+8	7.87E+7	1.17E+8	7.42E+8
Cs-137	7.38E+9	1.01E+10	−	3.43E+9	1.14E+9	1.95E+8	6.61E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	4.70E−8	−	−	−	−	8.34E−8	1.38E−9
Ba-140	2.69E+7	3.38E+4	−	1.15E+4	1.93E+4	5.54E+7	1.76E+6
Ba-141	−	−	−	−	−	−	−
Ba142	−	−	−	−	−	−	−
La-140	4.49E+0	2.26E+0	−	−	−	1.66E+5	5.97E−1
La-142	−	−	−	−	−	3.03E−8	−
Ce-141	4.84E+3	3.27E+3	−	1.52E+3	−	1.25E+7	3.71E+2
Ce-143	4.19E+1	3.09E+4	−	1.36E+1	−	1.16E+6	3.42E+0
Ce-144	3.58E+5	1.50E+5	−	8.87E+4	−	1.21E+8	1.92E+4
Pr-143	1.59E+2	6.37E+1	−	3.68E+1	−	6.96E+5	7.88E+0
Pr-144	−	−	−	−	−	−	−
Nd-147	9.42E+1	1.09E+2	−	6.37E+1	−	5.23E+5	6.52E+0
W-187	6.56E+3	5.48E+3	−	−	−	1.80E+6	1.92E+3
Np-239	3.66E+0	3.60E−1	−	1.12E+0	−	7.39E+4	1.98E−1

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Milk Pathway Dose Factors − TEENAGER
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	9.94E+2	9.94E+2	9.94E+2	9.94E+2	9.94E+2	9.94E+2
C-14	6.70E+5	1.34E+5	1.34E+5	1.34E+5	1.34E+5	1.34E+5	1.34E+5
Na-24	4.44E+6	4.44E+6	4.44E+6	4.44E+6	4.44E+6	4.44E+6	4.44E+6
P-32	3.15E+10	1.95E+9	−	−	−	2.65E+9	1.22E+9
Cr-51	−	−	2.78E+4	1.10E+4	7.13E+4	8.40E+6	5.00E+4
Mn-54	−	1.40E+7	−	4.17E+6	−	2.87E+7	2.78E+6
Mn-56	−	7.51E−3	−	9.50E−3	−	4.94E−1	1.33E−3
Fe-55	4.45E+7	3.16E+7	−	−	2.00E+7	1.37E+7	7.36E+6
Fe-59	5.20E+7	1.21E+8	−	−	3.82E+7	2.87E+8	4.68E+7
Co-57	−	2.25E+6	−	−	−	4.19E+7	3.76E+6
Co-58	−	7.95E+6	−	−	−	1.10E+8	1.83E+7
Co-60	−	2.78E+7	−	−	−	3.62E+8	6.26E+7
Ni-63	1.18E+10	8.35E+8	−	−	−	1.33E+8	4.01E+8
Ni-65	6.78E−1	8.66E−2	−	−	−	4.70E+0	3.94E−2
Cu-64	−	4.29E+4	−	1.09E+5	−	3.33E+6	2.02E+4
Zn-65	2.11E+9	7.31E+9	−	4.68E+9	−	3.10E+9	3.41E+9
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	−	5.64E+7
Br-83	−	−	−	−	−	−	1.91E−1
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.73E+9	−	−	−	7.00E+8	2.22E+9
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	2.67E+9	−	−	−	−	3.18E+8	7.66E+7
Sr-90	6.61E+10	−	−	−	−	1.86E+9	1.63E+10
Sr-91	5.75E+4	−	−	−	−	2.61E+5	2.29E+3
Sr-92	8.95E−1	−	−	−	−	2.28E+1	3.81E−2
Y-90	1.30E+2	−	−	−	−	1.07E+6	3.50E+0
Y-91m	−	−	−	−	−	−	−
Y-91	1.58E+4	−	−	−	−	6.48E+6	4.24E+2
Y-92	1.00E−4	−	−	−	−	2.75E+0	2.90E−6
Y-93	4.30E−1	−	−	−	−	1.31E+4	1.18E−2
Zr-95	1.65E+3	5.22E+2	−	7.67E+2	−	1.20E+6	3.59E+2
Zr-97	7.75E−1	1.53E−1	−	2.32E−1	−	4.15E+4	7.06E−2
Nb-95	1.41E+5	7.80E+4	−	7.57E+4	−	3.34E+8	4.30E+4
Nb-97	−	−	−	−	−	6.34E−8	−
Mo-99	−	4.56E+7	−	1.04E+8	−	8.16E+7	8.69E+6
Tc-99m	5.64E+0	1.57E+1	−	2.34E+2	8.73E+0	1.03E+4	2.04E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	1.81E+3	−	−	6.40E+3	−	1.52E+5	7.75E+2
Ru-105	1.57E−3	−	−	1.97E−2	−	1.26E+0	6.08E−4
Ru-106	3.75E+4	−	−	7.23E+4	−	1.80E+6	4.73E+3
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4

$R_{aipo,}$ Grass−Cow−Milk Pathway Dose Factors − TEENAGER (cont.)

(mrem/yr per µCi/m^3) for H-3 and C-14

(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	9.63E+7	9.11E+7	−	1.74E+8	−	2.56E+10	5.54E+7
Sb-124	4.59E+7	8.46E+5	1.04E+5	−	4.01E+7	9.25E+8	1.79E+7
Sb-125	3.65E+7	3.99E+5	3.49E+4	−	3.21E+7	2.84E+8	8.54E+6
Te-125m	3.00E+7	1.08E+7	8.39E+6	−	−	8.86E+7	4.02E+6
Te-127m	8.44E+7	2.99E+7	2.01E+7	3.42E+8	−	2.10E+8	1.00E+7
Te-127	1.24E+3	4.41E+2	8.59E+2	5.04E+3	−	9.61E+4	2.68E+2
Te-129m	1.11E+8	4.10E+7	3.57E+7	4.62E+8	−	4.15E+8	1.75E+7
Te-129	−	−	−	1.67E−9	−	2.18E−9	−
Te-131m	6.57E+5	3.15E+5	4.74E+5	3.29E+6	−	2.53E+7	2.63E+5
Te-131	−	−	−	−	−	−	−
Te-132	4.28E+6	2.71E+6	2.86E+6	2.60E+7	−	8.58E+7	2.55E+6
I-130	7.49E+5	2.17E+6	1.77E+8	3.34E+6	−	1.67E+6	8.66E+5
I-131	5.38E+8	7.53E+8	2.20E+11	1.30E+9	−	1.49E+8	4.04E+8
I-132	2.90E−1	7.59E−1	2.56E+1	1.20E+0	−	3.31E−1	2.72E−1
I-133	7.24E+6	1.23E+7	1.72E+9	2.15E+7	−	9.30E+6	3.75E+6
I-134	−	−	−	−	−	−	−
I-135	2.47E+4	6.35E+4	4.08E+6	1.00E+5	−	7.03E+4	2.35E+4
Cs-134	9.81E+9	2.31E+10	−	7.34E+9	2.80E+9	2.87E+8	1.07E+10
Cs-136	4.45E+8	1.75E+9	−	9.53E+8	1.50E+8	1.41E+8	1.18E+9
Cs-137	1.34E+10	1.78E+10	−	6.06E+9	2.35E+9	2.53E+8	6.20E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	8.69E−8	−	−	−	−	7.75E−7	2.53E−9
Ba-140	4.85E+7	5.95E+4	−	2.02E+4	4.00E+4	7.49E+7	3.13E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	8.06E+0	3.96E+0	−	−	−	2.27E+5	1.05E+0
La-142	−	−	−	−	−	2.23E−7	−
Ce-141	8.87E+3	5.92E+3	−	2.79E+3	−	1.69E+7	6.81E+2
Ce-143	7.69E+1	5.60E+4	−	2.51E+1	−	1.68E+6	6.25E+0
Ce-144	6.58E+5	2.72E+5	−	1.63E+5	−	1.66E+8	3.54E+4
Pr-143	2.92E+2	1.17E+2	−	6.77E+1	−	9.61E+5	1.45E+1
Pr-144	−	−	−	−	−	−	−
Nd-147	1.81E+2	1.97E+2	−	1.16E+2	−	7.11E+5	1.18E+1
W-187	1.20E+4	9.78E+3	−	−	−	2.65E+6	3.43E+3
Np-239	6.99E+0	6.59E−1	−	2.07E+0	−	1.06E+5	3.66E−1

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.57E+3	1.57E+3	1.57E+3	1.57E+3	1.57E+3	1.57E+3
C-14	1.65E+6	3.29E+5	3.29E+5	3.29E+5	3.29E+5	3.29E+5	3.29E+5
Na-24	9.23E+6	9.23E+6	9.23E+6	9.23E+6	9.23E+6	9.23E+6	9.23E+6
P-32	7.77E+10	3.64E+9	−	−	−	2.15E+9	3.00E+9
Cr-51	−	−	5.66E+4	1.55E+4	1.03E+5	5.41E+6	1.02E+5
Mn-54	−	2.09E+7	−	5.87E+6	−	1.76E+7	5.58E+6
Mn-56	−	1.31E−2	−	1.58E−2	−	1.90E+0	2.95E−3
Fe-55	1.12E+8	5.93E+7	−	−	3.35E+7	1.10E+7	1.84E+7
Fe-59	1.20E+8	1.95E+8	−	−	5.65E+7	2.03E+8	9.71E+7
Co-57	−	3.84E+6	−	−	−	3.14E+7	7.77E+6
Co-58	−	1.21E+7	−	−	−	7.08E+7	3.72E+7
Co-60	−	4.32E+7	−	−	−	2.39E+8	1.27E+8
Ni-63	2.96E+10	1.59E+9	−	−	−	1.07E+8	1.01E+9
Ni-65	1.66E+0	1.56E−1	−	−	−	1.91E+1	9.11E−2
Cu-64	−	7.55E+4	−	1.82E+5	−	3.54E+6	4.56E+4
Zn-65	4.13E+9	1.10E+10	−	6.94E+9	−	1.93E+9	6.85E+9
Zn-69	−	−	−	−	−	2.14E−9	−
Br-82	−	−	−	−	−	−	1.15E+8
Br-83	−	−	−	−	−	−	4.69E−1
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	8.77E+9	−	−	−	5.64E+8	5.39E+9
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	6.62E+9	−	−	−	−	2.56E+8	1.89E+8
Sr-90	1.12E+11	−	−	−	−	1.51E+9	2.83E+10
Sr-91	1.41E+5	−	−	−	−	3.12E+5	5.33E+3
Sr-92	2.19E+0	−	−	−	−	4.14E+1	8.76E−2
Y-90	3.22E+2	−	−	−	−	9.15E+5	8.61E+0
Y-91m	−	−	−	−	−	−	−
Y-91	3.91E+4	−	−	−	−	5.21E+6	1.04E+3
Y-92	2.46E−4	−	−	−	−	7.10E+0	7.03E−6
Y-93	1.06E+0	−	−	−	−	1.57E+4	2.90E−2
Zr-95	3.84E+3	8.45E+2	−	1.21E+3	−	8.81E+5	7.52E+2
Zr-97	1.89E+0	2.72E−1	−	3.91E−1	−	4.13E+4	1.61E−1
Nb-95	3.18E+5	1.24E+5	−	1.16E+5	−	2.29E+8	8.84E+4
Nb-97	−	−	−	−	−	1.45E−6	−
Mo-99	−	8.29E+7	−	1.77E+8	−	6.86E+7	2.05E+7
Tc-99m	1.29E+1	2.54E+1	−	3.68E+2	1.29E+1	1.44E+4	4.20E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	4.29E+3	−	−	1.08E+4	−	1.11E+5	1.65E+3
Ru-105	3.82E−3	−	−	3.36E−2	−	2.49E+0	1.39E−3
Ru-106	9.24E+4	−	−	1.25E+5	−	1.44E+6	1.15E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − CHILD (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	2.09E+8	1.41E+8	−	2.63E+8	−	1.68E+10	1.13E+8
Sb-124	1.09E+8	1.41E+8	2.40E+5	−	6.03E+7	6.79E+8	3.81E+7
Sb-125	8.70E+7	1.41E+6	8.06E+4	−	4.85E+7	2.08E+8	1.82E+7
Te-125m	7.38E+7	2.00E+7	2.07E+7	−	−	7.12E+7	9.84E+6
Te-127m	2.08E+8	5.60E+7	4.97E+7	5.93E+8	−	1.68E+8	2.47E+7
Te-127	3.06E+3	8.25E+2	2.12E+3	8.71E+3	−	1.20E+5	6.56E+2
Te-129m	2.72E+8	7.61E+7	8.78E+7	8.00E+8	−	3.32E+8	4.23E+7
Te-129	−	−	−	2.87E−9	−	6.12E−8	−
Te-131m	1.60E+6	5.53E+5	1.14E+6	5.35E+6	−	2.24E+7	5.89E+5
Te-131	−	−	−	−	−	−	−
Te-132	1.02E+7	4.52E+6	6.58E+6	4.20E+7	−	4.55E+7	5.46E+6
I-130	1.75E+6	3.54E+6	3.90E+8	5.29E+6	−	1.66E+6	1.82E+6
I-131	1.30E+9	1.31E+9	4.34E+11	2.15E+9	−	1.17E+8	7.46E+8
I-132	6.86E−1	1.26E+0	5.85E+1	1.93E+0	−	1.48E+0	5.80E−1
I-133	1.76E+7	2.18E+7	4.04E+9	3.63E+7	−	8.77E+6	8.23E+6
I-134	−	−	−	−	−	−	−
I-135	5.84E+4	1.05E+5	9.30E+6	1.61E+5	−	8.00E+4	4.97E+4
Cs-134	2.26E+10	3.71E+10	−	1.15E+10	4.13E+9	2.00E+8	7.83E+9
Cs-136	1.00E+9	2.76E+9	−	1.47E+9	2.19E+8	9.70E+7	1.79E+9
Cs-137	3.22E+10	3.09E+10	−	1.01E+10	3.62E+9	1.93E+8	4.55E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	2.14E−7	−	−	−	−	1.23E−5	6.19E−9
Ba-140	1.17E+8	1.03E+5	−	3.34E+4	6.12E+4	5.94E+7	6.84E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	1.93E+1	6.74E+0	−	−	−	1.88E+5	2.27E+0
La-142	−	−	−	−	−	2.51E−6	−
Ce-141	2.19E+4	1.09E+4	−	4.78E+3	−	1.36E+7	1.62E+3
Ce-143	1.89E+2	1.02E+5	−	4.29E+1	−	1.50E+6	1.48E+1
Ce-144	1.62E+6	5.09E+5	−	2.82E+5	−	1.33E+8	8.66E+4
Pr-143	7.23E+2	2.17E+2	−	1.17E+2	−	7.80E+5	3.59E+1
Pr-144	−	−	−	−	−	−	−
Nd-147	4.45E+2	3.60E+2	−	1.98E+2	−	5.71E+5	2.79E+1
W-187	2.91E+4	1.72E+4	−	−	−	2.42E+6	7.73E+3
Np-239	1.72E+1	1.23E+0	−	3.57E+0	−	9.14E+4	8.68E−1

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Milk Pathway Dose Factors − INFANT
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	2.38E+3	2.38E+3	2.38E+3	2.38E+3	2.38E+3	2.38E+3
C-14	3.23E+6	6.89E+5	6.89E+5	6.89E+5	6.89E+5	6.89E+5	6.89E+5
Na-24	1.61E+7	1.61E+7	1.61E+7	1.61E+7	1.61E+7	1.61E+7	1.61E+7
P-32	1.60E+11	9.42E+9	−	−	−	2.17E+9	6.21E+9
Cr-51	−	−	1.05E+5	2.30E+4	2.05E+5	4.71E+6	1.61E+5
Mn-54	−	3.89E+7	−	8.63E+6	−	1.43E+7	8.83E+6
Mn-56	−	3.21E−2	−	2.76E−2	−	2.91E+0	5.53E−3
Fe-55	1.35E+8	8.72E+7	−	−	4.27E+7	1.11E+7	2.33E+7
Fe-59	2.25E+8	3.93E+8	−	−	1.16E+8	1.88E+8	1.55E+8
Co-57	−	8.95E+6	−	−	−	3.05E+7	1.46E+7
Co-58	−	2.43E+7	−	−	−	6.05E+7	6.06E+7
Co-60	−	8.81E+7	−	−	−	2.10E+8	2.08E+8
Ni-63	3.49E+10	2.16E+9	−	−	−	1.07E+8	1.21E+9
Ni-65	3.51E+0	3.97E−1	−	−	−	3.02E+1	1.81E−1
Cu-64	−	1.88E+5	−	3.17E+5	−	3.85E+6	8.69E+4
Zn-65	5.55E+9	1.90E+10	−	9.23E+9	−	1.61E+10	8.78E+9
Zn-69	−	−	−	−	−	7.36E−9	−
Br-82	−	−	−	−	−	−	1.94E+8
Br-83	−	−	−	−	−	−	9.95E−1
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	2.22E+10	−	−	−	5.69E+8	1.10E+10
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	1.26E+10	−	−	−	−	2.59E+8	3.61E+8
Sr-90	1.22E+11	−	−	−	−	1.52E+9	3.10E+10
Sr-91	2.94E+5	−	−	−	−	3.48E+5	1.06E+4
Sr-92	4.65E+0	−	−	−	−	5.01E+1	1.73E−1
Y-90	6.80E+2	−	−	−	−	9.39E+5	1.82E+1
Y-91m	−	−	−	−	−	−	−
Y-91	7.33E+4	−	−	−	−	5.26E+6	1.95E+3
Y-92	5.22E−4	−	−	−	−	9.97E+0	1.47E−5
Y-93	2.25E+0	−	−	−	−	1.78E+4	6.13E−2
Zr-95	6.83E+3	1.66E+3	−	1.79E+3	−	8.28E+5	1.18E+3
Zr-97	3.99E+0	6.85E−1	−	6.91E−1	−	4.37E+4	3.13E−1
Nb-95	5.93E+5	2.44E+5	−	1.75E+5	−	2.06E+8	1.41E+5
Nb-97	−	−	−	−	−	3.70E−6	−
Mo-99	−	2.12E+8	−	3.17E+8	−	6.98E+7	4.13E+7
Tc-99m	2.69E+1	5.55E+1	−	5.97E+2	2.90E+1	1.61E+4	7.15E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	8.69E+3	−	−	1.81E+4	−	1.06E+5	2.91E+3
Ru-105	8.06E−3	−	−	5.92E−2	−	3.21E+0	2.71E−3
Ru-106	1.90E+5	−	−	2.25E+5	−	1.44E+6	2.38E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Milk Pathway Dose Factors − INFANT (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	3.86E+8	2.82E+8	−	4.03E+8	−	1.46E+10	1.86E+8
Sb-124	2.09E+8	3.08E+6	5.56E+5	−	1.31E+8	6.46E+8	6.49E+7
Sb-125	1.49E+8	1.45E+6	1.87E+5	−	9.38E+7	1.99E+8	3.07E+7
Te-125m	1.51E+8	5.04E+7	5.07E+7	−	−	7.18E+7	2.04E+7
Te-127m	4.21E+8	1.40E+8	1.22E+8	1.04E+9	−	1.70E+8	5.10E+7
Te-127	6.50E+3	2.18E+3	5.29E+3	1.59E+4	−	1.36E+5	1.40E+3
Te-129m	5.59E+8	1.92E+8	2.15E+8	1.40E+9	−	3.34E+8	8.62E+7
Te-129	2.08E−9	−	1.75E−9	5.18E−9	−	1.66E−7	−
Te-131m	3.38E+6	1.36E+6	2.76E+6	9.35E+6	−	2.29E+7	1.12E+6
Te-131	−	−	−	−	−	−	−
Te-132	2.10E+7	1.04E+7	1.54E+7	6.51E+7	−	3.85E+7	9.72E+6
I-130	3.60E+6	7.92E+6	8.88E+8	8.70E+6	−	1.70E+6	3.18E+6
I-131	2.72E+9	3.21E+9	1.05E+12	3.75E+9	−	1.15E+8	1.41E+9
I-132	1.42E+0	2.89E+0	1.35E+2	3.22E+0	−	2.34E+0	1.03E+0
I-133	3.72E+7	5.41E+7	9.84E+9	6.36E+7	−	9.16E+6	1.58E+7
I-134	−	−	1.01E−9	−	−	−	−
I-135	1.21E+5	2.41E+5	2.16E+7	2.69E+5	−	8.74E+4	8.80E+4
Cs-134	3.65E+10	6.80E+10	−	1.75E+10	7.18E+9	1.85E+8	6.87E+9
Cs-136	1.96E+9	5.77E+9	−	2.30E+9	4.70E+8	8.76E+7	2.15E+9
Cs-137	5.15E+10	6.02E+10	−	1.62E+10	6.55E+9	1.88E+8	4.27E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	4.55E−7	−	−	−	−	2.88E−5	1.32E−8
Ba-140	2.41E+8	2.41E+5	−	5.73E+4	1.48E+5	5.92E+7	1.24E+7
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	4.03E+1	1.59E+1	−	−	−	1.87E+5	4.09E+0
La-142	−	−	−	−	−	5.21E−6	−
Ce-141	4.33E+4	2.64E+4	−	8.15E+3	−	1.37E+7	3.11E+3
Ce-143	4.00E+2	2.65E+5	−	7.72E+1	−	1.55E+6	3.02E+1
Ce-144	2.33E+6	9.52E+5	−	3.85E+5	−	1.33E+8	1.30E+5
Pr-143	1.49E+3	5.59E+2	−	2.08E+2	−	7.89E+5	7.41E+1
Pr-144	−	−	−	−	−	−	−
Nd-147	8.82E+2	9.06E+2	−	3.49E+2	−	5.74E+5	5.55E+1
W-187	6.12E+4	4.26E+4	−	−	−	2.50E+6	1.47E+4
Np-239	3.64E+1	3.25E+0	−	6.49E+0	−	9.40E+4	1.84E+0

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Meat Pathway Dose Factors − ADULT
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	3.25E+2	3.25E+2	3.25E+2	3.25E+2	3.25E+2	3.25E+2
C-14	3.33E+5	6.66E+4	6.66E+4	6.66E+4	6.66E+4	6.66E+4	6.66E+4
Na-24	1.84E−3	1.84E−3	1.84E−3	1.84E−3	1.84E−3	1.84E−3	1.84E−3
P-32	4.65E+9	2.89E+8	−	−	−	5.23E+8	1.80E+8
Cr-51	−	−	4.22E+3	1.56E+3	9.38E+3	1.78E+6	7.07E+3
Mn-54	−	9.15E+6	−	2.72E+6	−	2.80E+7	1.75E+6
Mn-56	−	−	−	−	−	−	−
Fe-55	2.93E+8	2.02E+8	−	−	1.13E+8	1.16E+8	4.72E+7
Fe-59	2.67E+8	6.27E+8	−	−	1.75E+8	2.09E+9	2.40E+8
Co-57	−	5.64E+6	−	−	−	1.43E+8	9.37E+6
Co-58	−	1.83E+7	−	−	−	3.70E+8	4.10E+7
Co-60	−	7.52E+7	−	−	−	1.41E+9	1.66E+8
Ni-63	1.89E+10	1.31E+9	−	−	−	2.73E+8	6.33E+8
Ni-65	−	−	−	−	−	−	−
Cu-64	−	2.95E−7	−	7.45E−7	−	2.52E−5	1.39E−7
Zn-65	3.56E+8	1.13E+9	−	7.57E+8	−	7.13E+8	5.12E+8
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	1.44E+3	1.26E+3
Br-83	−	−	−	−	−	−	−
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.87E+8	−	−	−	9.60E+7	2.27E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	3.01E+8	−	−	−	−	4.84E+7	8.65E+6
Sr-90	1.24E+10	−	−	−	−	3.59E+8	3.05E+9
Sr-91	−	−	−	−	−	1.38E−9	−
Sr-92	−	−	−	−	−	−	−
Y-90	1.07E+2	−	−	−	−	1.13E+6	2.86E+0
Y-91m	−	−	−	−	−	−	−
Y-91	1.13E+6	−	−	−	−	6.24E+8	3.03E+4
Y-92	−	−	−	−	−	−	−
Y-93	−	−	−	−	−	2.08E−7	−
Zr-95	1.88E+6	6.04E+5	−	9.48E+5	−	1.91E+9	4.09E+5
Zr-97	1.83E−5	3.69E−6	−	5.58E−6	−	1.14E+0	1.69E−6
Nb-95	2.29E+6	1.28E+6	−	1.26E+6	−	7.75E+9	6.86E+5
Nb-97	−	−	−	−	−	−	−
Mo-99	−	1.09E+5	−	2.46E+5	−	2.52E+5	2.07E+4
Tc-99m	−	−	−	−	−	−	−
Tc-101	−	−	−	−	−	−	−
Ru-103	1.06E+8	−	−	4.03E+8	−	1.23E+10	4.55E+7
Ru-105	−	−	−	−	−	−	−
Ru-106	2.80E+9	−	−	5.40E+9	−	1.81E+11	3.54E+8
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Meat Pathway Dose Factors − ADULT (cont.)
(mrem/yr per $\mu Ci/m^3$) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	6.69E+6	6.19E+6	−	1.22E+7	−	2.52E+9	3.67E+6
Sb-124	1.98E+7	3.74E+5	4.80E+4	−	1.54E+7	5.62E+8	7.85E+6
Sb-125	1.91E+7	2.13E+5	1.94E+4	−	1.47E+7	2.10E+8	4.54E+6
Te-125m	3.59E+8	1.30E+8	1.08E+8	1.46E+9	−	1.43E+9	4.81E+7
Te-127m	1.12E+9	3.99E+8	2.85E+8	4.53E+9	−	3.74E+9	1.36E+8
Te-127	−	−	−	1.09E−9	−	2.10E−8	−
Te-129m	1.14E+9	4.27E+8	3.93E+8	4.77E+9	−	5.76E+9	1.81E+8
Te-129	−	−	−	−	−	−	−
Te-131m	4.51E+2	2.21E+2	3.50E+2	2.24E+3	−	2.19E+4	1.84E+2
Te-131	−	−	−	−	−	−	−
Te-132	1.40E+6	9.07E+5	1.00E+6	8.73E+6	−	4.29E+7	8.51E+5
I-130	2.35E−6	6.94E−6	5.88E−4	1.08E−5	−	5.98E−6	2.74E−6
I-131	1.08E+7	1.54E+7	5.05E+9	2.64E+7	−	4.07E+6	8.83E+6
I-132	−	−	−	−	−	−	−
I-133	4.30E−1	7.47E−1	1.10E+2	1.30E+0	−	6.72E−1	2.28E−1
I-134	−	−	−	−	−	−	−
I-135	−	−	−	−	−	−	−
Cs-134	6.57E+8	1.56E+9	−	5.06E+8	1.68E+8	2.74E+7	1.28E+9
Cs-136	1.18E+7	4.67E+7	−	2.60E+7	3.56E+6	5.30E+6	3.36E+7
Cs-137	8.72E+8	1.19E+9	−	4.05E+8	1.35E+8	2.31E+7	7.81E+8
Cs-138	−	−	−	−	−	−	−
Ba-139	−	−	−	−	−	−	−
Ba-140	2.88E+7	3.61E+4	−	1.23E+4	2.07E+4	5.92E+7	1.89E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	3.60E−2	1.81E−2	−	−	−	1.33E+3	4.79E−3
La-142	−	−	−	−	−	−	−
Ce-141	1.40E+4	9.48E+3	−	4.40E+3	−	3.62E+7	1.08E+3
Ce-143	2.09E−2	1.55E+1	−	6.80E−3	−	5.78E+2	1.71E−3
Ce-144	1.46E+6	6.09E+5	−	3.61E+5	−	4.93E+8	7.83E+4
Pr-143	2.13E+4	8.54E+3	−	4.93E+3	−	9.33E+7	1.06E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	7.08E+3	8.18E+3	−	4.78E+3	−	3.93E+7	4.90E+2
W-187	2.16E−2	1.81E−2	−	−	−	5.92E+0	6.32E−3
Np-239	2.56E−1	2.51E−2	−	7.84E−2	−	5.15E+3	1.39E−2

Table 7.0−4

$R_{aipo,}$ Grass−Cow−Meat Pathway Dose Factors − TEENAGER

(mrem/yr per µCi/m^3) for H-3 and C-14

(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.94E+2	1.94E+2	1.94E+2	1.94E+2	1.94E+2	1.94E+2
C-14	2.81E+5	5.62E+4	5.62E+4	5.62E+4	5.62E+4	5.62E+4	5.62E+4
Na-24	1.47E−3	1.47E−3	1.47E−3	1.47E−3	1.47E−3	1.47E−3	1.47E−3
P-32	3.93E+9	2.44E+8	−	−	−	3.30E+8	1.52E+8
Cr-51	−	−	3.14E+3	1.24E+3	8.07E+3	9.50E+5	5.65E+3
Mn-4	−	6.98E+6	−	2.08E+6	−	1.43E+7	1.38E+6
Mn-56	−	−	−	−	−	−	−
Fe-55	2.38E+8	1.69E+8	−	−	1.07E+8	7.30E+7	3.93E+7
Fe-59	2.13E+8	4.98E+8	−	−	1.57E+8	1.18E+9	1.92E+8
Co-57	−	4.53E+6	−	−	−	8.45E+7	7.59E+6
Co-58	−	1.41E+7	−	−	−	1.94E+8	3.25E+7
Co-60	−	5.83E+7	−	−	−	7.60E+8	1.31E+8
Ni-63	1.52E+10	1.07E+9	−	−	−	1.71E+8	5.15E+8
Ni-65	−	−	−	−	−	−	−
Cu-64	−	2.41E−7	−	6.10E−7	−	1.87E−5	1.13E−7
Zn-65	2.50E+8	8.69E+8	−	5.56E+8	−	3.68E+8	4.05E+8
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	−	9.98E+2
Br-83	−	−	−	−	−	−	−
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.06E+8	−	−	−	6.01E+7	1.91E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	2.54E+8	−	−	−	−	3.03E+7	7.29E+6
Sr-90	8.05E+9	−	−	−	−	2.26E+8	1.99E+9
Sr-91	−	−	−	−	−	1.10E−9	−
Sr-92	−	−	−	−	−	−	−
Y-90	8.98E+1	−	−	−	−	7.40E+5	2.42E+0
Y-91m	−	−	−	−	−	−	−
Y-91	9.56E+5	−	−	−	−	3.92E+8	2.56E+4
Y-92	−	−	−	−	−	−	−
Y-93	−	−	−	−	−	1.69E−7	−
Zr-95	1.51E+6	4.76E+5	−	6.99E+5	−	1.10E+9	3.27E+5
Zr-97	1.53E−5	3.02E−6	−	4.58E−6	−	8.18E−1	1.39E−6
Nb-95	1.79E+6	9.94E+5	−	9.64E+5	−	4.25E+9	5.47E+5
Nb-97	−	−	−	−	−	−	−
Mo-99	−	8.98E+4	−	2.06E+5	−	1.61E+5	1.71E+4
Tc-99m	−	−	−	−	−	−	−
Tc-101	−	−	−	−	−	−	−
Ru-103	8.60E+7	−	−	3.03E+8	−	7.18E+9	3.68E+7
Ru-105	−	−	−	−	−	−	−
Ru-106	2.36E+9	−	−	4.55E+9	−	1.13E+11	2.97E+8
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Meat Pathway Dose Factors − TEENAGER (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	5.06E+6	4.79E+6	−	9.14E+6	−	1.35E+9	2.91E+6
Sb-124	1.62E+7	2.98E+5	3.67E+4	−	1.41E+7	3.26E+8	6.31E+6
Sb-125	1.56E+7	1.71E+5	1.49E+4	−	1.37E+7	1.22E+8	3.66E+6
Te-125m	3.03E+8	1.09E+8	8.47E+7	−	−	8.94E+8	4.05E+7
Te-127m	9.41E+8	3.34E+8	2.24E+8	3.82E+9	−	2.35E+9	1.12E+8
Te-127	−	−	−	−	−	1.75E−8	−
Te-129m	9.58E+8	3.56E+8	3.09E+8	4.01E+9	−	3.60E+9	1.52E+8
Te-129	−	−	−	−	−	−	−
Te-131m	3.76E+2	1.80E+2	2.71E+2	1.88E+3	−	1.45E+4	1.50E+2
Te-131	−	−	−	−	−	−	−
Te-132	1.15E+6	7.26E+5	7.66E+5	6.97E+6	−	2.30E+7	6.84E+5
I-130	1.89E−6	5.48E−6	4.47E−4	8.44E−6	−	4.21E−6	2.19E−6
I-131	8.95E+6	1.25E+7	3.66E+9	2.16E+7	−	2.48E+6	6.73E+6
I-132	−	−	−	−	−	−	−
I-133	3.59E−1	6.10E−1	8.51E+1	1.07E+0	−	4.61E−1	1.86E−1
I-134	−	−	−	−	−	−	−
I-135	−	−	−	−	−	−	−
Cs-134	5.23E+8	1.23E+9	−	3.91E+8	1.49E+8	1.53E+7	5.71E+8
Cs-136	9.22E+6	3.63E+7	−	1.97E+7	3.11E+6	2.92E+6	2.44E+7
Cs-137	7.24E+8	9.63E+8	−	3.28E+8	1.27E+8	1.37E+7	3.36E+8
Cs-138	−	−	−	−	−	−	−
Ba-139	−	−	−	−	−	−	−
Ba-140	2.38E+7	2.91E+4	−	9.88E+3	1.96E+4	3.67E+7	1.53E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	2.96E−2	1.45E−2	−	−	−	8.35E+2	3.87E−3
La-142	−	−	−	−	−	−	−
Ce-141	1.18E+4	7.86E+3	−	3.70E+3	−	2.25E+7	9.03E+2
Ce-143	1.76E−2	1.28E+1	−	5.74E−3	−	3.85E+2	1.43E−3
Ce-144	1.23E+6	5.08E+5	−	3.04E+5	−	3.09E+8	6.60E+4
Pr-143	1.79E+4	7.15E+3	−	4.16E+3	−	5.90E+7	8.92E+2
Pr-144	−	−	−	−	−	−	−
Nd-147	6.24E+3	6.79E+3	−	3.98E+3	−	2.45E+7	4.06E+2
W-187	1.81E−2	1.48E−2	−	−	−	3.99E+0	5.17E−3
Np-239	2.23E−1	2.11E−2	−	6.61E−2	−	3.39E+3	1.17E−2

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Meat Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	**Bone**	**Liver**	**Thyroid**	**Kidney**	**Lung**	**GI−LLI**	**T. Body**
H-3	−	2.34E+2	2.34E+2	2.34E+2	2.34E+2	2.34E+2	2.34E+2
C-14	5.29E+5	1.06E+5	1.06E+5	1.06E+5	1.06E+5	1.06E+5	1.06E+5
Na-24	2.34E−3	2.34E−3	2.34E−3	2.34E−3	2.34E−3	2.34E−3	2.34E−3
P-32	7.41E+9	3.47E+8	−	−	−	2.05E+8	2.86E+8
Cr-51	−	−	4.89E+3	1.34E+3	8.93E+3	4.67E+5	8.81E+3
Mn-54	−	7.99E+6	−	2.24E+6	−	6.70E+6	2.13E+6
Mn-56	−	−	−	−	−	−	−
Fe-55	4.57E+8	2.42E+8	−	−	1.37E+8	4.49E+7	7.51E+7
Fe-59	3.78E+8	6.12E+8	−	−	1.77E+8	6.37E+8	3.05E+8
Co-57	−	5.92E+6	−	−	−	4.85E+7	1.20E+7
Co-58	−	1.65E+7	−	−	−	9.60E+7	5.04E+7
Co-60	−	6.93E+7	−	−	−	3.84E+8	2.04E+8
Ni-63	2.91E+10	1.56E+9	−	−	−	1.05E+8	9.91E+8
Ni-65	−	−	−	−	−	−	−
Cu-64	−	3.24E−7	−	7.82E−7	−	1.52E−5	1.96E−7
Zn-65	3.75E+8	1.00E+9	−	6.30E+8	−	1.76E+8	6.22E+8
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	−	1.56E+3
Br-83	−	−	−	−	−	−	−
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	5.76E+8	−	−	−	3.71E+7	3.54E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	4.82E+8	−	−	−	−	1.86E+7	1.38E+7
Sr-90	1.04E+10	−	−	−	−	1.40E+8	2.64E+9
Sr-91	−	−	−	−	−	1.01E−9	−
Sr-92	−	−	−	−	−	−	−
Y-90	1.70E+2	−	−	−	−	4.84E+5	4.55E+0
Y-91m	−	−	−	−	−	−	−
Y-91	1.81E+6	−	−	−	−	2.41E+8	4.83E+4
Y-92	−	−	−	−	−	−	−
Y-93	−	−	−	−	−	1.55E−7	−
Zr-95	2.68E+6	5.89E+5	−	8.43E+5	−	6.14E+8	5.24E+5
Zr-97	2.84E−5	4.10E−6	−	5.89E−6	−	6.21E−1	2.42E−6
Nb-95	3.09E+6	1.20E+6	−	1.13E+6	−	2.23E+9	8.61E+5
Nb-97	−	−	−	−	−	−	−
Mo-99	−	1.25E+5	−	2.67E+5	−	1.03E+5	3.09E+4
Tc-99m	−	−	−	−	−	−	−
Tc-101	−	−	−	−	−	−	−
Ru-103	1.56E+8	−	−	3.92E+8	−	4.02E+9	5.98E+7
Ru-105	−	−	−	−	−	−	−
Ru-106	4.44E+9	−	−	5.99E+9	−	6.90E+10	5.54E+8
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Grass−Cow−Meat Pathway Dose Factors − CHILD (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	8.40E+6	5.67E+6	–	1.06E+7	–	6.75E+8	4.53E+6
Sb-124	2.93E+7	3.80E+5	6.46E+4	–	1.62E+7	1.83E+8	1.03E+7
Sb-125	2.85E+7	2.19E+5	2.64E+4	–	1.59E+7	6.80E+7	5.96E+6
Te-125m	5.69E+8	1.54E+8	1.60E+8	–	–	5.49E+8	7.59E+7
Te-127m	1.77E+9	4.78E+8	4.24E+8	5.06E+9	–	1.44E+9	2.11E+8
Te-127	–	–	–	1.21E−9	–	1.66E−8	–
Te-129m	1.81E+9	5.04E+8	5.82E+8	5.30E+9	–	2.20E+9	2.80E+8
Te-129	–	–	–	–	–	–	–
Te-131m	7.00E+2	2.42E+2	4.98E+2	2.34E+3	–	9.82E+3	2.58E+2
Te-131	–	–	–	–	–	–	–
Te-132	2.09E+6	9.27E+5	1.35E+6	8.60E+6	–	9.33E+6	1.12E+6
I-130	3.39E−6	6.85E−6	7.54E−4	1.02E−5	–	3.20E−6	3.53E−6
I-131	1.66E+7	1.67E+7	5.52E+9	2.74E+7	–	1.49E+6	9.49E+6
I-132	–	–	–	–	–	–	–
I-133	6.68E−1	8.26E−1	1.53E+2	1.38E+0	–	3.33E−1	3.12E−1
I-134	–	–	–	–	–	–	–
I-135	–	–	–	–	–	–	–
Cs-134	9.22E+8	1.51E+9	–	4.69E+8	1.68E+8	8.15E+6	3.19E+8
Cs-136	1.59E+7	4.37E+7	–	2.33E+7	3.47E+6	1.54E+6	2.83E+7
Cs-137	1.33E+9	1.28E+9	–	4.16E+8	1.50E+8	7.99E+6	1.88E+8
Cs-138	–	–	–	–	–	–	–
Ba-139	–	–	–	–	–	–	–
Ba-140	4.39E+7	3.85E+4	–	1.25E+4	2.29E+4	2.22E+7	2.56E+6
Ba-141	–	–	–	–	–	–	–
Ba-142	–	–	–	–	–	–	–
La-140	5.41E−2	1.89E−2	–	–	–	5.27E+2	6.38E−3
La-142	–	–	–	–	–	–	–
Ce-141	2.22E+4	1.11E+4	–	4.84E+3	–	1.38E+7	1.64E+3
Ce-143	3.30E−2	1.79E+1	–	7.51E−3	–	2.62E+2	2.59E−3
Ce-144	2.32E+6	7.26E+5	–	4.02E+5	–	1.89E+8	1.24E+5
Pr-143	3.39E+4	1.02E+4	–	5.51E+3	–	3.66E+7	1.68E+3
Pr-144	–	–	–	–	–	–	–
Nd-147	1.17E+4	9.48E+3	–	5.20E+3	–	1.50E+7	7.34E+2
W-187	3.36E−2	1.99E−2	–	–	–	2.79E+0	8.92E−3
Np-239	4.20E−1	3.02E−2	–	8.73E−2	–	2.23E+3	2.12E−2

Table 7.0−4
$R_{aipo,}$ Vegetation Pathway Dose Factors − ADULT
(mrem/yr per $\mu Ci/m^3$) for H-3 and C-14
(m^2 x mrem/yr per $\mu Ci/sec$) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	2.26E+3	2.26E+3	2.26E+3	2.26E+3	2.26E+3	2.26E+3
C-14	8.97E+5	1.79E+5	1.79E+5	1.79E+5	1.79E+5	1.79E+5	1.79E+5
Na-24	2.76E+5	2.76E+5	2.76E+5	2.76E+5	2.76E+5	2.76E+5	2.76E+5
P-32	1.40E+9	8.73E+7	−	−	−	1.58E+8	5.42E+7
Cr-51	−	−	2.79E+4	1.03E+4	6.19E+4	1.17E+7	4.66E+4
Mn-54	−	3.11E+8	−	9.27E+7	−	9.54E+8	5.94E+7
Mn-56	−	1.61E+1	−	2.04E+1	−	5.13E+2	2.85E+0
Fe-55	2.09E+8	1.45E+8	−	−	8.06E+7	8.29E+7	3.37E+7
Fe-59	1.27E+8	2.99E+8	−	−	8.35E+7	9.96E+8	1.14E+8
Co-57	−	1.17E+7	−	−	−	2.97E+8	1.95E+7
Co-58	−	3.09E+7	−	−	−	6.26E+8	6.92E+7
Co-60	−	1.67E+8	−	−	−	3.14E+9	3.69E+8
Ni-63	1.04E+10	7.21E+8	−	−	−	1.50E+8	3.49E+8
Ni-65	6.15E+1	7.99E+0	−	−	−	2.03E+2	3.65E+0
Cu-64	−	9.27E+3	−	2.34E+4	−	7.90E+5	4.35E+3
Zn-65	3.17E+8	1.01E+9	−	6.75E+8	−	6.36E+8	4.56E+8
Zn-69	8.75E−6	1.67E−5	−	1.09E−5	−	2.51E−6	1.16E−6
Br-82	−	−	−	−	−	1.73E+6	1.51E+6
Br-83	−	−	−	−	−	4.63E+0	3.21E+0
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	2.19E+8	−	−	−	4.32E+7	1.02E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	9.96E+9	−	−	−	−	1.60E+9	2.86E+8
Sr-90	6.05E+11	−	−	−	−	1.75E+10	1.48E+11
Sr-91	3.20E+5	−	−	−	−	1.52E+6	1.29E+4
Sr-92	4.27E+2	−	−	−	−	8.46E+3	1.85E+1
Y-90	1.33E+4	−	−	−	−	1.41E+8	3.56E+2
Y-91m	5.83E−9	−	−	−	−	1.71E−8	−
Y-91	5.13E+6	−	−	−	−	2.82E+9	1.37E+5
Y-92	9.01E−1	−	−	−	−	1.58E+4	2.63E−2
Y-93	1.74E+2	−	−	−	−	5.52E+6	4.80E+0
Zr-95	1.19E+6	3.81E+5	−	5.97E+5	−	1.21E+9	2.58E+5
Zr-97	3.33E+2	6.73E+1	−	1.02E+2	−	2.08E+7	3.08E+1
Nb-95	1.42E+5	7.91E+4	−	7.81E+4	−	4.80E+8	4.25E+4
Nb-97	2.90E−6	7.34E−7	−	8.56E−7	−	2.71E−3	2.68E−7
Mo-99	−	6.25E+6	−	1.41E+7	−	1.45E+7	1.19E+6
Tc-99m	3.06E+0	8.66E+0	−	1.32E+2	4.24E+0	5.12E+3	1.10E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	4.80E+6	−	−	1.83E+7	−	5.61E+8	2.07E+6
Ru-105	5.39E+1	−	−	6.96E+2	−	3.30E+4	2.13E+1
Ru-106	1.93E+8	−	−	3.72E+8	−	1.25E+10	2.44E+7
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Vegetation Pathway Dose Factors − ADULT (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.06E+7	9.76E+6	−	1.92E+7	−	3.98E+9	5.80E+6
Sb-124	1.04E+8	1.96E+6	2.52E+5	−	8.08E+7	2.95E+9	4.11E+7
Sb-125	1.36E+8	1.52E+6	1.39E+5	−	1.05E+8	1.50E+9	3.25E+7
Te-125m	9.66E+7	3.50E+7	2.90E+7	3.93E+8	−	3.86E+8	1.29E+7
Te-127m	3.49E+8	1.25E+8	8.92E+7	1.42E+9	−	1.17E+9	4.26E+7
Te-127	5.76E+3	2.07E+3	4.27E+3	2.35E+4	−	4.54E+5	1.25E+3
Te-129m	2.55E+8	9.50E+7	8.75E+7	1.06E+9	−	1.28E+9	4.03E+7
Te-129	6.65E−4	2.50E−4	5.10E−4	2.79E−3	−	5.02E−4	1.62E−4
Te-131m	9.12E+5	4.46E+5	7.06E+5	4.52E+6	−	4.43E+7	3.72E+5
Te-131	−	−	−	−	−	−	−
Te-132	4.29E+6	2.77E+6	3.06E+6	2.67E+7	−	1.31E+8	2.60E+6
I-130	3.96E+5	1.17E+6	9.90E+7	1.82E+6	−	1.01E+6	4.61E+5
I-131	8.09E+7	1.16E+8	3.79E+10	1.98E+8	−	3.05E+7	6.63E+7
I-132	5.74E+1	1.54E+2	5.38E+3	2.45E+2	−	2.89E+1	5.38E+1
I-133	2.12E+6	3.69E+6	5.42E+8	6.44E+6	−	3.31E+6	1.12E+6
I-134	1.06E−4	2.88E−4	5.00E−3	4.59E−4	−	2.51E−7	1.03E−4
I-135	4.08E+4	1.07E+5	7.04E+6	1.71E+5	−	1.21E+5	3.94E+4
Cs-134	4.66E+9	1.11E+10	−	3.59E+9	1.19E+9	1.94E+8	9.07E+9
Cs-136	4.20E+7	1.66E+8	−	9.24E+7	1.27E+7	1.89E+7	1.19E+8
Cs-137	6.36E+9	8.70E+9	−	2.95E+9	9.81E+8	1.68E+8	5.70E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	2.95E−2	2.10E−5	−	1.96E−5	1.19E−5	5.23E−2	8.64E−4
Ba-140	1.29E+8	1.62E+5	−	5.49E+4	9.25E+4	2.65E+8	8.43E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	1.97E+3	9.92E+2	−	−	−	7.28E+7	2.62E+2
La-142	1.40E−4	6.35E−5	−	−	−	4.64E−1	1.58E−5
Ce-141	1.96E+5	1.33E+5	−	6.17E+4	−	5.08E+8	1.51E+4
Ce-143	1.00E+3	7.42E+5	−	3.26E+2	−	2.77E+7	8.21E+1
Ce-144	3.29E+7	1.38E+7	−	8.16E+6	−	1.11E+10	1.77E+6
Pr-143	6.34E+4	2.54E+4	−	1.47E+4	−	2.78E+8	3.14E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	3.34E+4	3.86E+4	−	2.25E+4	−	1.85E+8	2.31E+3
W-187	3.82E+4	3.19E+4	−	−	−	1.05E+7	1.12E+4
Np-239	1.42E+3	1.40E+2	−	4.37E+2	−	2.87E+7	7.72E+1

Table 7.0−4
$R_{aipo,}$ Vegetation Pathway Dose Factors − TEENAGER
(mrem/yr per μCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per μCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	2.59E+3	2.59E+3	2.59E+3	2.59E+3	2.59E+3	2.59E+3
C-14	1.45E+6	2.91E+5	2.91E+5	2.91E+5	2.91E+5	2.91E+5	2.91E+5
Na-24	2.45E+5	2.45E+5	2.45E+5	2.45E+5	2.45E+5	2.45E+5	2.45E+5
P-32	1.61E+9	9.96E+7	−	−	−	1.35E+8	6.23E+7
Cr-51	−	−	3.44E+4	1.36E+4	8.85E+4	1.04E+7	6.20E+4
Mn-54	−	4.52E+8	−	1.35E+8	−	9.27E+8	8.97E+7
Mn-56	−	1.45E+1	−	1.83E+1	−	9.54E+2	2.58E+0
Fe-55	3.25E+8	2.31E+8	−	−	1.46E+8	9.98E+7	5.38E+7
Fe59	1.81E+8	4.22E+8	−	−	1.33E+8	9.98E+8	1.63E+8
Co-57	−	1.79E+7	−	−	−	3.34E+8	3.00E+7
Co-58	−	4.38E+7	−	−	−	6.04E+8	1.01E+8
Co-60	−	2.49E+8	−	−	−	3.24E+9	5.60E+8
Ni-63	1.61E+10	1.13E+9	−	−	−	1.81E+8	5.45E+8
Ni-65	5.73E+1	7.32E+0	−	−	−	3.97E+2	3.33E+0
Cu-64	−	8.40E+3	−	2.12E+4	−	6.51E+5	3.95E+3
Zn-65	4.24E+8	1.47E+9	−	9.41E+8	−	6.23E+8	6.86E+8
Zn-69	8.19E−6	1.56E−5	−	1.02E−5	−	2.88E−5	1.09E−6
Br-82	−	−	−	−	−	−	1.33E+6
Br-83	−	−	−	−	−	−	3.01E+0
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	2.73E+8	−	−	−	4.05E+7	1.28E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	1.51E+10	−	−	−	−	1.80E+9	4.33E+8
Sr-90	7.51E+11	−	−	−	−	2.11E+10	1.85E+11
Sr-91	2.99E+5	−	−	−	−	1.36E+6	1.19E+4
Sr-92	3.97E+2	−	−	−	−	1.01E+4	1.69E+1
Y-90	1.24E+4	−	−	−	−	1.02E+8	3.34E+2
Y-91m	5.43E−9	−	−	−	−	2.56E−7	−
Y-91	7.87E+6	−	−	−	−	3.23E+9	2.11E+5
Y-92	8.47E−1	−	−	−	−	2.32E+4	2.45E−2
Y-93	1.63E+2	−	−	−	−	4.98E+6	4.47E+0
Zr-95	1.74E+6	5.49E+5	−	8.07E+5	−	1.27E+9	3.78E+5
Zr-97	3.09E+2	6.11E+1	−	9.26E+1	−	1.65E+7	2.81E+1
Nb-95	1.92E+5	1.06E+5	−	1.03E+5	−	4.55E+8	5.86E+4
Nb-97	2.69E−6	6.67E−7	−	7.80E−7	−	1.59E−2	2.44E−7
Mo-99	−	5.74E+6	−	1.31E+7	−	1.03E+7	1.09E+6
Tc-99m	2.70E+0	7.54E+0	−	1.12E+2	4.19E+0	4.95E+3	9.77E+1
Tc-101	−	−	−	−	−	−	−
Ru-103	6.87E+6	−	−	2.42E+7	−	5.74E+8	2.94E+6
Ru-105	5.00E+1	−	−	6.31E+2	−	4.04E+4	1.94E+1
Ru-106	3.09E+8	−	−	5.97E+8	−	1.48E+10	3.90E+7
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Vegetation Pathway Dose Factors − TEENAGER (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.52E+7	1.44E+7	−	2.74E+7	−	4.04E+9	8.74E+6
Sb-124	1.55E+8	2.85E+6	3.51E+5	−	1.35E+8	3.11E+9	6.03E+7
Sb-125	2.14E+8	2.34E+6	2.04E+5	−	1.88E+8	1.66E+9	5.00E+7
Te-125m	1.48E+8	5.34E+7	4.14E+7	−	−	4.37E+8	1.98E+7
Te-127m	5.51E+8	1.96E+8	1.31E+8	2.24E+9	−	1.37E+9	6.56E+7
Te-127	5.43E+3	1.92E+3	3.74E+3	2.20E+4	−	4.19E+5	1.17E+3
Te-129m	3.67E+8	1.36E+8	1.18E+8	1.54E+9	−	1.38E+9	5.81E+7
Te-129	6.22E−4	2.32E−4	4.45E−4	2.61E−3	−	3.40E−3	1.51E−4
Te-131m	8.44E+5	4.05E+5	6.09E+5	4.22E+6	−	3.25E+7	3.38E+5
Te-131	−	−	−	−	−	−	−
Te-132	3.90E+6	2.47E+6	2.60E+6	2.37E+7	−	7.82E+7	2.32E+6
I-130	3.54E+5	1.02E+6	8.35E+7	1.58E+6	−	7.87E+5	4.09E+5
I-131	7.70E+7	1.08E+8	3.14E+10	1.85E+8	−	2.13E+7	5.79E+7
I-132	5.18E+1	1.36E+2	4.57E+3	2.14E+2	−	5.91E+1	4.87E+1
I-133	1.97E+6	3.34E+6	4.66E+8	5.86E+6	−	2.53E+6	1.02E+6
I-134	9.59E−5	2.54E−4	4.24E−3	4.01E−4	−	3.35E−6	9.13E−5
I-135	3.68E+4	9.48E+4	6.10E+6	1.50E+5	−	1.05E+5	3.52E+4
Cs-134	7.09E+9	1.67E+10	−	5.30E+9	2.02E+9	2.08E+8	7.74E+9
Cs-136	4.29E+7	1.69E+8	−	9.19E+7	1.45E+7	1.36E+7	1.13E+8
Cs-137	1.01E+10	1.35E+10	−	4.59E+9	1.78E+9	1.92E+8	4.69E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	2.77E−2	1.95E−5	−	1.84E−5	1.34E−5	2.47E−1	8.08E−4
Ba-140	1.38E+8	1.69E+5	−	5.75E+4	1.14E+5	2.13E+8	8.91E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	1.80E+3	8.84E+2	−	−	−	5.08E+7	2.35E+2
La-142	1.28E−4	5.69E−5	−	−	−	1.73E+0	1.42E−5
Ce-141	2.82E+5	1.88E+5	−	8.86E+4	−	5.38E+8	2.16E+4
Ce-143	9.37E+2	6.82E+5	−	3.06E+2	−	2.05E+7	7.62E+1
Ce-144	5.27E+7	2.18E+7	−	1.30E+7	−	1.33E+10	2.83E+6
Pr-143	7.12E+4	2.84E+4	−	1.65E+4	−	2.34E+8	3.55E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	3.63E+4	3.94E+4	−	2.32E+4	−	1.42E+8	2.36E+3
W-187	3.55E+4	2.90E+4	−	−	−	7.84E+6	1.02E+4
Np-239	1.38E+3	1.30E+2	−	4.09E+2	−	2.10E+7	7.24E+1

Table 7.0−4
$R_{aipo,}$ Vegetation Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	4.01E+3	4.01E+3	4.01E+3	4.01E+3	4.01E+3	4.01E+3
C-14	3.50E+6	7.01E+5	7.01E+5	7.01E+5	7.01E+5	7.01E+5	7.01E+5
Na-24	3.83E+5	3.83E+5	3.83E+5	3.83E+5	3.83E+5	3.83E+5	3.83E+5
P-32	3.37E+9	1.58E+8	−	−	−	9.30E+7	1.30E+8
Cr-51	−	−	6.54E+4	1.79E+4	1.19E+5	6.25E+6	1.18E+5
Mn-54	−	6.61E+8	−	1.85E+8	−	5.55E+8	1.76E+8
Mn-56	−	1.90E+1	−	2.29E+1	−	2.75E+3	4.28E+0
Fe-55	8.00E+8	4.24E+8	−	−	2.40E+8	7.86E+7	1.31E+8
Fe-59	4.01E+8	6.49E+8	−	−	1.88E+8	6.76E+8	3.23E+8
Co-57	−	2.99E+7	−	−	−	2.45E+8	6.04E+7
Co-58	−	6.47E+7	−	−	−	3.77E+8	1.98E+8
Co-60	−	3.78E+8	−	−	−	2.10E+9	1.12E+9
Ni-63	3.95E+10	2.11E+9	−	−	−	1.42E+8	1.34E+9
Ni-65	1.05E+2	9.89E+0	−	−	−	1.21E+3	5.77E+0
Cu-64	−	1.11E+4	−	2.68E+4	−	5.20E+5	6.69E+3
Zn-65	8.12E+8	2.16E+9	−	1.36E+9	−	3.80E+8	1.35E+9
Zn-69	1.51E−5	2.18E−5	−	1.32E−5	−	1.38E−3	2.02E−6
Br-82	−	−	−	−	−	−	2.04E+6
Br-83	−	−	−	−	−	−	5.55E+0
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.52E+8	−	−	−	2.91E+7	2.78E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	3.59E+10	−	−	−	−	1.39E+9	1.03E+9
Sr-90	1.24E+12	−	−	−	−	1.67E+10	3.15E+11
Sr-91	5.50E+5	−	−	−	−	1.21E+6	2.08E+4
Sr-92	7.28E+2	−	−	−	−	1.38E+4	2.92E+1
Y-90	2.30E+4	−	−	−	−	6.56E+7	6.17E+2
Y-91m	9.94E−9	−	−	−	−	1.95E−5	−
Y-91	1.87E+7	−	−	−	−	2.49E+9	5.01E+5
Y-92	1.56E+0	−	−	−	−	4.51E+4	4.46E−2
Y-93	3.01E+2	−	−	−	−	4.48E+6	8.25E+0
Zr-95	3.90E+6	8.58E+5	−	1.23E+6	−	8.95E+8	7.64E+5
Zr-97	5.64E+2	8.15E+1	−	1.17E+2	−	1.23E+7	4.81E+1
Nb-95	4.10E+5	1.59E+5	−	1.50E+5	−	2.95E+8	1.14E+5
Nb-97	4.90E−6	8.85E−7	−	9.82E−7	−	2.73E−1	4.13E−7
Mo-99	−	7.83E+6	−	1.67E+7	−	6.48E+6	1.94E+6
Tc-99m	4.65E+0	9.12E+0	−	1.33E+2	4.63E+0	5.19E+3	1.51E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	1.55E+7	−	−	3.89E+7	−	3.99E+8	5.94E+6
Ru-105	9.17E+1	−	−	8.06E+2	−	5.98E+4	3.33E+1
Ru-106	7.45E+8	−	−	1.01E+9	−	1.16E+10	9.30E+7
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Vegetation Pathway Dose Factors − CHILD (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	**Bone**	**Liver**	**Thyroid**	**Kidney**	**Lung**	**GI−LLI**	**T. Body**
Ag-110m	3.22E+7	2.17E+7	−	4.05E+7	−	2.58E+9	1.74E+7
Sb-124	3.52E+8	4.57E+6	7.78E+5	−	1.96E+8	2.20E+9	1.23E+8
Sb-125	4.99E+8	3.85E+6	4.62E+5	−	2.78E+8	1.19E+9	1.05E+8
Te-125m	3.51E+8	9.50E+7	9.84E+7	−	−	3.38E+8	4.67E+7
Te-127m	1.32E+9	3.56E+8	3.16E+8	3.77E+9	−	1.07E+9	1.57E+8
Te-127	1.00E+4	2.70E+3	6.93E+3	2.85E+4	−	3.91E+5	2.15E+3
Te-129m	8.54E+8	2.39E+8	2.75E+8	2.51E+9	−	1.04E+9	1.33E+8
Te-129	1.15E−3	3.22E−4	8.22E−4	3.37E−3	−	7.17E−2	2.74E−4
Te-131m	1.54E+6	5.33E+5	1.10E+6	5.16E+6	−	2.16E+7	5.68E+5
Te-131	−	−	−	−	−	−	−
Te-132	6.98E+6	3.09E+6	4.50E+6	2.87E+7	−	3.11E+7	3.73E+6
I-130	6.21E+5	1.26E+6	1.38E+8	1.88E+6	−	5.87E+5	6.47E+5
I-131	1.43E+8	1.44E+8	4.76E+10	2.36E+8	−	1.28E+7	8.18E+7
I-132	9.20E+1	1.69E+2	7.84E+3	2.59E+2	−	1.99E+2	7.77E+1
I-133	3.59E+6	4.44E+6	8.25E+8	7.40E+6	−	1.79E+6	1.68E+6
I-134	1.70E−4	3.16E−4	7.28E−3	4.84E−4	−	2.10E−4	1.46E−4
I-135	6.54E+4	1.18E+5	1.04E+7	1.81E+5	−	8.98E+4	5.57E+4
Cs-134	1.60E+10	2.63E+10	−	8.14E+9	2.92E+9	1.42E+8	5.54E+9
Cs-136	8.06E+7	2.22E+8	−	1.18E+8	1.76E+7	7.79E+6	1.43E+8
Cs-137	2.39E+10	2.29E+10	−	7.46E+9	2.68E+9	1.43E+8	3.38E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	5.11E−2	2.73E−5	−	2.38E−5	1.61E−5	2.95E+0	1.48E−3
Ba-140	2.77E+8	2.43E+5	−	7.90E+4	1.45E+5	1.40E+8	1.62E+7
Ba-141	−	−	−	−	−	−	−
Ba142	−	−	−	−	−	−	−
La-140	3.23E+3	1.13E+3	−	−	−	3.15E+7	3.81E+2
La-142	2.32E−4	7.40E−5	−	−	−	1.47E+1	2.32E−5
Ce-141	1.23E+5	6.14E+4	−	2.69E+4	−	7.66E+7	9.12E+3
Ce-143	1.73E+3	9.36E+5	−	3.93E+2	−	1.37E+7	1.36E+2
Ce-144	1.27E+8	3.98E+7	−	2.21E+7	−	1.04E+10	6.78E+6
Pr-143	1.48E+5	4.46E+4	−	2.41E+4	−	1.60E+8	7.37E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	7.16E+4	5.80E+4	−	3.18E+4	−	9.18E+7	4.49E+3
W-187	6.47E+4	3.83E+4	−	−	−	5.38E+6	1.72E+4
Np-239	2.55E+3	1.83E+2	−	5.30E+2	−	1.36E+7	1.29E+2

Table 7.0−4
R_{aipo}, Ground Plane Pathway Dose Factors
(m^2 x mrem/yr per µCi/sec)

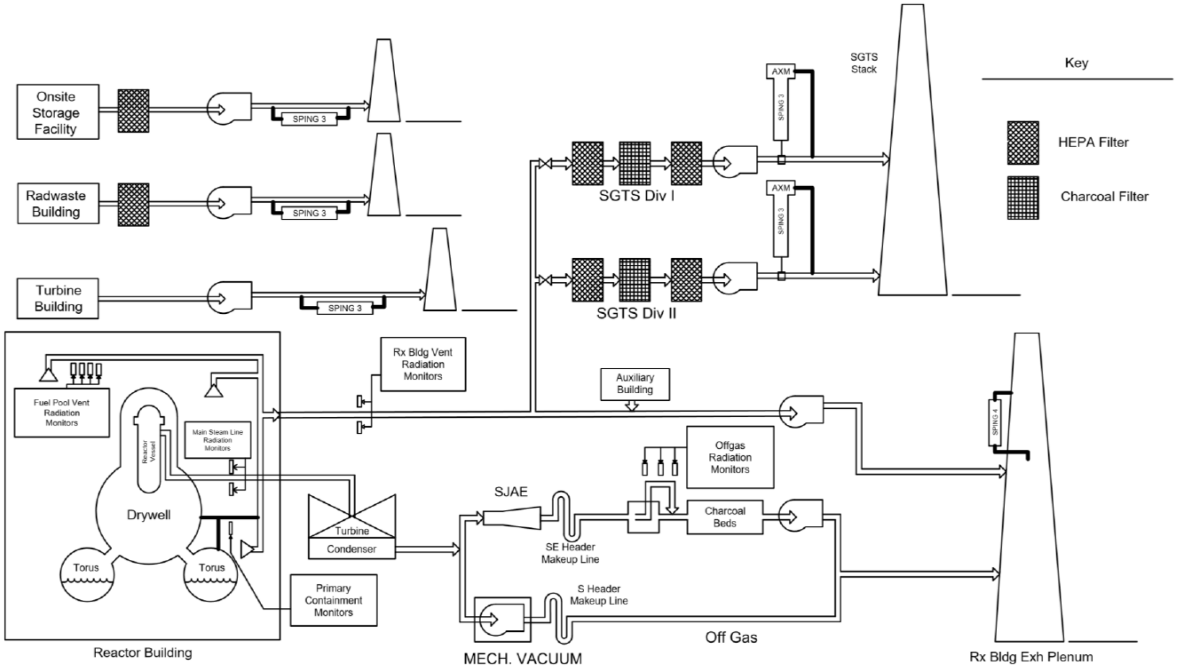
Nuclide	Any Organ
H-3	−
C-14	−
Na-24	1.21E+7
P-32	−
Cr-51	4.68E+6
Mn-54	1.34E+9
Mn-56	9.05E+5
Fe-55	−
Fe-59	2.75E+8
Co-58	3.82E+8
Co-60	2.16E+10
Ni-63	−
Ni-65	2.97E+5
Cu-64	6.09E+5
Zn-65	7.45E+8
Zn-69	−
Br-83	4.89E+3
Br-84	2.03E+5
Br-85	−
Rb-86	8.89E+6
Rb-88	3.29E+4
Rb-89	1.21E+5
Sr-89	2.16E+4
Sr-90	−
Sr-91	2.19E+6
Sr-92	7.77E+5
Y-90	4.48E+3
Y-91m	1.01E+5
Y-91	1.08E+6
Y-92	1.80E+5
Y-93	1.85E+5
Zr-95	2.48E+8
Zr-97	2.94E+6
Nb-95	1.36E+8
Mo-99	4.05E+6
Tc-99m	1.83E+5
Tc-101	2.04E+4
Ru-103	1.09E+8
Ru-105	6.36E+5
Ru-106	4.21E+8
Rh-103m	−
Rh-106	−
Ag-110m	3.47E+9
Te-125m	1.55E+6
Te-127m	9.17E+4

Table 7.0−4
$R_{aipo,}$ Ground Plane Pathway Dose Factors
(m^2 x mrem/yr per µCi/sec) (cont.)

Nuclide	Any Organ
Te-127	3.00E+3
Te-129m	2.00E+7
Te-129	2.60E+4
Te-131m	8.03E+6
Te-131	2.93E+4
Te-132	4.22E+6
I-130	5.53E+6
I-131	1.72E+7
I-132	1.24E+6
I-133	2.47E+6
I-134	4.49E+5
I-135	2.56E+6
Cs-134	6.75E+9
Cs-136	1.49E+8
Cs-137	1.04E+10
Cs-138	3.59E+5
Ba-139	1.06E+5
Ba-140	2.05E+7
Ba-141	4.18E+4
Ba-142	4.49E+4
La-140	1.91E+7
La-142	7.36E+5
Ce-141	1.36E+7
Ce-143	2.32E+6
Ce-144	6.95E+7
Pr-143	−
Pr-144	1.83E+3
Nd-147	8.40E+6
W-187	2.36E+6
Np-239	1.71E+6

FIGURE 7.0-1

GASEOUS RADIOACTIVE EFFLUENT MONITORING AND VENTILATION SYSTEMS DIAGRAM



NOTE: The HEPA and charcoal filters identified on the Standby Gas Treatment System (SGTS) are engineered safety features and are not considered Ventilation Exhaust Treatment Systems (VETS). No effluent reduction was credited in the UFSAR 10CFR50 Appendix I evaluation for filters installed in plant ventilation systems. Fermi 2 conforms to 10CFR50 Appendix I without filtration installed.

END OF SECTION 7.0

SECTION 8.0

SPECIAL DOSE ANALYSIS

8.0 SPECIAL DOSE ANALYSES

8.1 Doses Due to Activities Inside the SITE BOUNDARY

In accordance with ODCM 5.9.1.8, the Annual Radioactive Effluent Release Report submitted prior to May 1 of each year shall include an assessment of radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY.

Two locations within the Fermi 2 SITE BOUNDARY are accessible to MEMBERS OF THE PUBLIC for activities unrelated to DTE Energy operational and support activities. One is the over-water portion of the SITE BOUNDARY due east of the plant. Ice fishermen sometimes fish here during the winter. The other is the Fermi 2 Visitor's Center, outside the protected area (but inside the Owner Controlled Area), approximately 470 meters SSW of the Reactor Building. The Visitor's Center is open to the public and is routinely visited by MEMBERS OF THE PUBLIC, including school tour groups on a frequency of once per year.

Conservative assumptions of locations, exposure times, and exposure pathways for assessing doses from gaseous and liquid effluents due to activities inside the SITE BOUNDARY are presented in Table 8.0-1. The calculational methods presented in ODCM Sections 7.6 and 7.7 may be used for determining the maximum potential dose to a MEMBER OF THE PUBLIC based on the above assumptions. Alternatively, the effluent concentration values of Appendix B, Table 2, of the revised 10 CFR Part 20 may be used to assess dose since these concentrations, if continuously inhaled or ingested, produce a total effective dose equivalent of 50 mrem per year.

The potential dose from the fish pathway to a MEMBER OF THE PUBLIC engaged in ice fishing within the SITE BOUNDARY is accounted for by the modeling presented in ODCM Section 6.5. Therefore, no additional special dose analyses are required for this exposure pathway for reporting in the Annual Radioactive Effluent Release Report.

8.2 Doses to MEMBERS OF THE PUBLIC - 40 CFR 190

The Annual Radioactive Effluent Release Report shall also include an assessment of the radiation dose to the likely most exposed MEMBER OF THE PUBLIC for reactor releases and other nearby uranium fuel cycle sources (including dose contributions from effluents and direct radiation from onsite sources). For the likely most exposed MEMBER OF THE PUBLIC in the vicinity of the Fermi 2 site, the sources of exposure need consider only the radioactive effluents and direct exposure contribution from Fermi 2.

No other fuel cycle facilities contribute significantly to the cumulative dose to a MEMBER OF THE PUBLIC in the immediate vicinity of the site. Davis-Besse is the closest fuel cycle facility located about 20 miles to the SSE. Due to environmental dispersion, any routine releases from Davis-Besse would contribute insignificantly to the potential doses in the vicinity of Fermi 2.

As appropriate for demonstrating/evaluating compliance with the limits of ODCM 3.11.4 (40 CFR 190), the results of the environmental monitoring program may be used to provide data on actual measured levels of radioactive material in the actual pathways of exposure.

8.2.1 **Effluent Dose Calculations**

For purposes of implementing the surveillance requirements of ODCM 3.11.4 and the reporting requirements of ODCM 5.9.1.8, dose calculations for Fermi 2 may be performed using the calculational methods contained within this ODCM and the conservative controlling pathways and locations of Table 7.0-3. Liquid pathway doses may be calculated using Equation (6-10). Doses due to releases of radioiodines, tritium and particulates may be calculated based on Equation (7-14).

The following equations may be used for calculating the doses to MEMBERS OF THE PUBLIC from releases of noble gases. Equation (8-2) is not used for evaluating compliance with 40 CFR Part 190, since this regulation does not address skin dose. If noble gases are being released from more than one point, these equations must be used to evaluate each release point separately, and then the doses must be added to obtain the total noble gas dose.

$$\mathbf{D_{tb} = 3.17\,E - 08 * \chi/Q * \sum\left(K_i * Q_i\right)} \qquad \text{(8-1)}$$

and

$$\mathbf{D_s = 3.17\,E - 08 * \chi/Q * \sum\left[(L_i \;\; + 1.1M_i) * Q_i\right]} \qquad \text{(8-2)}$$

where:

D_{tb} = total body dose due to gamma emissions for noble gas radionuclides (mrem)

D_s = skin dose due to gamma and beta emissions for noble gas radionuclides (mrad)

χ/Q = atmospheric dispersion to the offsite location (sec/m^3)

Q_i = cumulative release of noble gas radionuclide i over the period of interest (µCi)--may be determined according to Equation (7-8)

1.67E + 01 = (1E + 03 ml/liter) * (1 min/60 sec)

K_i = total body dose factor due to gamma emissions from noble gas radionuclide i (mrem/yr per μCi/m^3) (from Table 7.0-2)

L_i = skin dose factor due to beta emissions from noble gas radionuclide i (mrem/yr per μCi/m^3) (from Table 7.0-2)

M_i = gamma air dose factor for noble gas radionuclide i (mrad/yr per μCi/m^3) (from Table 7.0-2)

1.1 = mrem skin dose per mrad gamma air dose (mrem/mrad)

3.17 E - 08 = 1 / 3.15 E + 07 yr/sec

Note: Average annual meteorological dispersion parameters or meteorological conditions concurrent with the release period under evaluation may be used (e.g., quarterly averages or year-specific annual averages, 5-year averages).

8.2.2 Direct Exposure Dose Determination

From evaluations performed in the Fermi 2 Environmental Report, Section 5.3.4, the direct exposure to the highest offsite location from the Turbine Building N-16 skyshine dose has been calculated to be approximately 3 mrem/year. The introduction of hydrogen injection at Fermi 2 in 1997 (hydrogen water chemistry) tends to increase direct exposure. Direct exposure to offsite or onsite individuals may be evaluated based on the results of environmental measurements (e.g. area TLD and survey meter data) or by the use of a radiation transport and shielding calculational method. Only during atypical conditions will there exist any potential for significant onsite sources at Fermi 2 that would yield potentially significant offsite doses to a MEMBER OF THE PUBLIC. However, should a situation exist whereby the direct exposure contribution is potentially significant, onsite measurements, offsite measurements and calculational techniques will be used for determination of dose for assessing 40 CFR 190 compliance. The calculational techniques will be identified, reviewed, and approved at that time, and will be included in any report on doses due to such atypical conditions.

8.2.3 Dose Assessment Based on Radiological Environmental Monitoring Data

Normally, the assessment of potential doses to MEMBERS OF THE PUBLIC must be calculated based on the measured radioactive effluents at the plant. The resultant levels of radioactive material in the offsite environment are usually so minute as to be undetectable. The calculational methods presented in this ODCM are used for modeling the transport in the environment and the resultant exposure to offsite individuals.

The results of the radiological environmental monitoring program can provide input into the overall assessment of impact of plant operations and radioactive effluents. With measured levels of plant related radioactive material in principal pathways of exposure, a quantitative assessment of potential exposures can be performed. With the monitoring program not identifying any measurable levels, the data provides a qualitative assessment - a confirmatory demonstration of the negligible impact.

Dose modeling can be simplified into three basic parameters that can be applied in using environmental monitoring data for dose assessment:

$$\mathbf{D} = \mathbf{C} * \mathbf{U} * \mathbf{DF} \tag{8-3}$$

where:

D = dose or dose commitment

C = concentration in the exposure media, such as air concentration for the inhalation pathway, or fish, vegetation or milk concentration for the ingestion pathway

U = individual exposure to the pathway, such as hr/yr for direct exposure, kg/yr for ingestion pathway

DF = dose conversion factor to convert from an exposure or uptake to an individual dose or dose commitment

The applicability of each of these basic modeling parameters to the use of environmental monitoring data for dose assessment is addressed below:

Concentration - C

The main value of using environmental sampling data to assess potential doses to individuals is that the data represents actual measured levels of radioactive material in the exposure pathways. This eliminates one main uncertainty and the modeling has been removed - the release from the plant and the transport to the environmental exposure medium.

Environmental samples are collected on a routine frequency per the ODCM. To determine the annual average concentration in the environmental medium for use in assessing cumulative dose for the year, an average concentration should be determined based on the sampling frequency and measured levels:

$$\overline{C_i} = \sum\left(C_i * t\right) / 365 \tag{8-4}$$

where:

$\overline{C_i}$ = average concentration in the sampling medium for the year

C_i = concentration of each radionuclide i measured in the individual sampling medium

t = period of time that the measured concentration is considered representative of the sampling medium (typically equal to the sampling frequency; e.g., 7 days for weekly samples, 30 days for monthly samples).

If the concentration in the sampling medium is below the detection capabilities (i.e., less than Lower Limits of Detection (LLD), a value of zero should be used for C_i ($C_i = 0$).

Exposure - U

Default Exposure Values (U) as recommended in Regulatory Guide 1.109 are presented in Table 8.0-2. These values should be used only when specific data applicable to the environmental pathway being evaluated is unavailable.

Also, the routine radiological environmental monitoring program is designed to sample/monitor the environmental media that would provide early indications of any measurable levels in the environment but not necessarily levels to which any individual is exposed. For example, sediment samples are collected in the area of the liquid discharge: typically, no individuals are directly exposed. To apply the measured levels of radioactivity in samples that are not directly applicable to exposure to real individuals, the approach recommended is to correlate the location and measured levels to actual locations of exposure.

Hydrological or atmospheric dilution factors can be used to provide reasonable correlations of concentrations (and doses) at other locations. The other alternative is to conservatively assume a hypothetical individual at the sampling location. Doses that are calculated in this manner should be presented as hypothetical and very conservatively determined - actual exposure would be much less. Samples collected from the Monroe water supply intake should be used for estimating the potential drinking water doses. Other water samples collected, such as near field dilution area, are not applicable to this pathway.

Dose Factors - DF

The dose factors are used to convert the intake of the radioactive material to an individual dose commitment. Values of the dose factors are presented in NRC Regulatory Guide 1.109. The use of the RG 1.109 values applicable to the exposure pathway and maximum exposed individual is referenced in Table 8.0-2.

Assessment of Direct Exposure Doses from Noble Gases

Thermoluminescent Dosimeters (TLD) are routinely used to assess the direct exposure component of radiation doses in the environment. However, because routine releases of radioactive material (noble gases) are so low, the resultant direct exposure doses are also very low. A study* performed for the NRC concluded that it was generally impractical to distinguish any plant contribution to the natural background radiation levels (direct exposure) below around 10 mrem per year. Therefore, for routine releases from nuclear power plants the use of TLD is mainly confirmatory - ensuring actual exposures are within the expected natural background variation.

For releases of noble gases, environmental modeling using plant measured releases and atmospheric transport models as presented in ODCM Sections 7.6 and 8.2.1 represents the best method of assessing potential environmental doses. However, under unusual conditions, direct radiation from noble gas concentrations could be sufficient to cause significant increases in TLD readings; any observed variations in TLD measurements outside the norm should be evaluated.

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* NUREG/CR-0711, Evaluation of Methods for the Determination of X- and Gamma-Ray Exposure Attributable to a Nuclear Facility Using Environmental TLD Measurements, Gail dePlanque, June 1979, USNRC.

TABLE 8.0-1

Assumptions for Assessing Doses Due to Activities inside SITE BOUNDARY

	Periodic Onsite Work for Another Employer	**Site Tours**
Distance / Direction:	0.25 miles / SSW	0.25 miles / SSE
Estimated Exposure Time:	400 hr/yr (8 hr/week for 50 weeks)	16 hr/yr (8 hr/visit, 2 visits per year)
Exposure Pathways:	direct exposure from noble gases inhalation of tritium, iodines particulates	direct exposure from noble gases inhalation of tritium, iodines particulates
Meteorological Dispersion	annual average (as determined for year(s) being evaluated) 1.04E-05 sec/m^3*	annual average (as determined for year(s) being evaluated) 2.03E-5 sec/m^3*

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* 2009 – 2013 Five-year average χ/Q values for the Turbine Building release point. These values are shown as examples of the range of values to be expected.

TABLE 8.0-2

Recommended Exposure Rates in Lieu of Site Specific Data*

Exposure Pathway	Maximum Exposed Age Group	Exposure Rates	Table Reference for Dose Factor from RG 1.109
Liquid Releases			
Fish	Adult	21 kg/y	E-11
Drinking Water	Adult	730 l/y	E-11
Bottom Sediment	Teen	67 h/y	E-6
Atmospheric Releases			
Inhalation	Teen	8,000 m^3/y	E-8
Direct Exposure	All	6,100 h/y**	N/A
Leafy Vegetables	Child	26 kg/y	E-13
Fruits, Vegetables and Grain	Teen	630 kg/y	E-12
Milk	Infant	330 l/y	E-14

* Adapted from Regulatory Guide 1.109, Table E-5. This table is not a complete list of exposure rates; other applicable values may be found in Regulatory Guide 1.109.

** Net exposure of 6,100 h/y is based on the total 8760 hours per year adjusted by a 0.7 shielding factor as recommended in Regulatory Guide 1.109.

END OF SECTION 8.0

SECTION 9.0

ASSESSMENT OF LAND USE CENSUS DATA

9.0 ASSESSMENT OF LAND USE CENSUS DATA

A Land Use Census (LUC) is conducted annually in the vicinity of the Fermi 2 site. This census fulfills two main purposes: 1) Meet requirements of ODCM 3.12.2 for identifying controlling location/pathway for dose assessment of ODCM 3.11.2.3; and 2) provide data on actual exposure pathways for assessing realistic doses to MEMBERS OF THE PUBLIC.

9.1 Land Use Census as Required by ODCM 3.12.2

As required by ODCM 3.12.2, a Land Use Census shall be conducted during the growing season at least once per twelve months. The purpose of the census is to identify within a 5 mile distance the location in each of the 16 meteorological sectors of all milk producing animals, all meat producing animals, all gardens larger than 500 ft^2 producing broadleaf vegetation, and the closest residence to the plant. The data from the LUC is used for updating the location/pathway for dose assessment and for updating the Radiological Environmental Monitoring Program.

If the census identifies a location/pathway(s) yielding a higher potential dose to a MEMBER OF THE PUBLIC than currently being assessed as required by ODCM 3.11.2.3 (and ODCM Section 7.7 and Table 7.0-3), this new location pathway(s) shall be used for dose assessment. In this case, Table 7.0-3 shall be updated to include the currently identified controlling location/pathway(s). Also, if the census identifies a location(s) that yields a calculated potential dose (via the same exposure pathway) 20% greater than a location currently included in the Radiological Environmental Monitoring Program, the new location(s) shall be added to the program within 30 days, unless permission to take samples cannot be obtained from the affected landowner or site boundary vegetation sampling is being performed per the note in section 9.1.3. The sampling location(s), excluding control locations, having the lowest calculated dose may be deleted from the program after October 31 following the current census. As required by ODCM 3.12.2 and 5.9.1.8, the new location/pathway(s) shall be identified in the next Annual Radioactive Effluent Release Report. The following guideline shall be used for assessing the results from the land use census to ensure compliance with ODCM 3.12.2.

9.1.1 Data Compilation

1. Compile all locations and pathways of exposure as identified by the land use census.

2. From these compiled data, identify any changes from the previous year's census. Identify the current controlling location/pathway (critical receptor) used in ODCM Table 7.0-3. Also, identify any location currently included in the REMP (Table 10.0-1).

3. Perform relative dose calculations based on actual Fermi 2 gaseous effluent releases for a recent period of reactor operation, using the pathway dose equations of the ODCM. In identifying the critical receptor for Table 7.0-3, all age groups and all pathways relevant to ODCM 3.11.2.3 that may be present at each evaluated location are considered. The critical receptor is assumed to be a member of the age group with the highest calculated dose to the maximally exposed organ due to I-131, I-133, H-3, C-14 and particulates with half lives greater than 8 days. Other receptors may have higher doses to other organs than the critical receptor has to those organs.

4. Formulate a listing of locations of high dose significance in descending order of relative dose significance. Include the relative dose significance in the listing.

9.1.3 Program Updates

1. If any receptor is identified with a higher relative dose than the current critical receptor in ODCM Table 7.0-3, this receptor and its associated location and pathways should replace the previously identified critical receptor information in Table 7.0-3.

2. The Land Use Census data should be used to revise the REMP and Section 10.0 of the ODCM in accordance with ODCM 3.12.2, Action Item b.

3. Any changes in either the controlling location/pathway(s) (critical receptor) for the ODCM dose calculations (Section 7.7 and Table 7.0-3) or the REMP (ODCM Section 10.0 and Table 10.0-1) shall be reported to NRC in accordance with ODCM 3.12.2, Action Items a. and b. and ODCM 5.9.1.8.

   NOTE: As permitted by footnote to ODCM 3.12.2, broadleaf vegetation sampling may be performed at the SITE BOUNDARY in two locations, in different sectors with highest predicted D/Qs, in lieu of the garden sampling. Also, for conservatism in dose assessment for compliance with ODCM 3.11.2.3 (see also ODCM Section 7.7 and Table 7.0-3), hypothetical exposure location/pathway(s) and conservative dispersion factors may be assumed (e.g., milk cow at 5 mile location or garden at SITE BOUNDARY in highest D/Q sector). By this approach, the ODCM is not subject to frequent revision as pathways and locations change from year to year. A verification that the hypothetical pathways and dispersion factors lead to conservative calculated doses, relative to doses calculated using actual pathways and factors, is still required.

9.2 Land Use Census to Support Realistic Dose Assessment

The LUC provides data needed to support the special dose analyses of the ODCM Section 8.0. Activities inside the SITE BOUNDARY should be periodically reviewed for dose assessment as required by ODCM 5.9.1.8 (see also ODCM Section 8.1). Assessment of realistic doses to MEMBERS OF THE PUBLIC is required by ODCM 3.11.4 for demonstrating compliance with the EPA Environmental Dose Standard, 40 CFR 190 (ODCM Section 8.2).

To support these dose assessments, the LUC shall include use of Lake Erie water on and near the site. The LUC shall include data on Lake Erie use obtained from local and state officials. Reasonable efforts shall be made to identify individual irrigation and potable water users, and industrial and commercial water users whose source is Lake Erie. This data is used to verify the pathways of exposure used in ODCM Section 6.5. If Fermi 2 is in zero liquid release status for the year in which the LUC is performed, i.e. if no radioactive liquid releases have occurred or are planned for the entire year, the requirements of this paragraph do not apply.

END OF SECTION 9.0

SECTION 10.0

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

10.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

The Radiological Environmental Monitoring Program (REMP) is conducted in accordance with the requirements of ODCM 3.12.1. The sampling and analysis program described herein was developed to provide representative measurements of radiation and radioactive materials resulting from station operation in the principal pathways of exposure of MEMBERS OF THE PUBLIC. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR Part 50 and thereby supplements the radiological effluent control program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Guidance for the development of this monitoring program is provided by the NRC Radiological Assessment Branch Technical Position on Environmental Monitoring, Revision 1, November 1979.

10.1 Sampling Locations

Sampling locations as required by ODCM 3.12.1 are described in Table 10.0-1.

NOTE: For purposes of implementing ODCM 3.12.2, sampling locations will be modified as required to reflect the findings of the annual land use census as described in ODCM Section 9.1 and as required by other contingencies (e.g. unavailability of milk from a listed location). Such changes will be documented in plant records and reflected in the next ODCM revision, the next Annual Effluent Release Report, and the next Annual Radiological Environmental Operating Report. Also, if the circumstances of such changes involve a possible change in the maximally exposed individual evaluated for ODCM Control 3.11.2.3, the identity of this individual will be reevaluated.

10.2 Reporting Levels

ODCM 3.12.1, Action b, describes criteria for a Special Report to the NRC if levels of plant-related radioactive material, when averaged over a calendar quarter, exceed the prescribed levels of ODCM Table 3.12.1-2. The reporting levels are based on the design objective doses of 10 CFR 50, Appendix I (i.e., the annual limits of ODCM 3.11.1.2, 3.11.2.2 and 3.11.2.3). In other words, levels of radioactive material in the respective sampling medium equal to the prescribed reporting levels are representative of potential annual doses of 3 mrem, total body or 10 mrem, maximum organ from liquid pathways; or 5 mrem, total body, or 15 mrem, maximum organ for the gaseous effluent pathway. These potential doses are modeled on the maximum individual exposure or consumption rates of NRC Regulatory Guide 1.109.

The evaluation of potential doses should be based solely on radioactive material resulting from plant operation. As stated in ODCM 3.12.1, Action b, the report shall also be submitted if radionuclides other than those in ODCM Table 3.12.1-2 are detected (and are a result of plant effluents) and the potential dose exceeds the above annual design objectives. The method described in ODCM Section 8.2.3 may be used for assessing the potential dose and required reporting for radionuclides other than those in ODCM Table 3.12.1-2.

10.3 **Interlaboratory Comparison Program**

A major objective of this program is to assist laboratories involved in environmental radiation measurements to develop and maintain both an intralaboratory and an interlaboratory quality control program. This is accomplished through a laboratory intercomparison study ("cross-check") program involving environmental media and a variety of radionuclides with activities at or near environmental levels.

Simulated environmental samples, containing known amounts of one or more radionuclides, are prepared and routinely distributed to DTE Energy's contract environmental laboratory, which performs the required analyses. The analysis results are then compared to the known concentrations in the samples. The program thus enables the laboratory to document the precision and accuracy of its radiation data, and identify instrument and procedural problems.

The environmental laboratory is required to participate in an Interlaboratory Comparison Program and to submit QA Program Progress Summary Reports to DTE Energy on an annual basis. These reports contain performance data summaries on blind spiked analyses, and explanations of deviations from expected results. A summary of the Interlaboratory Comparison Program results obtained is required to be included in the Annual Radiological Environmental Operating Report pursuant to ODCM 5.9.1.7.

Participation in an Interlaboratory Comparison Program ensures that an independent check on the precision and accuracy of the measurements of radioactive material in environmental sample matrices is performed as part of the QA Program for environmental monitoring in order to demonstrate that the results are valid for the purpose of Section IV.B.2 of Appendix I to 10 CFR Part 50.

TABLE 10.0-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM FERMI 2 SAMPLE LOCATIONS AND ASSOCIATED MEDIA

KEY

1 -	T	TLD Locations (Pg. 10-5 through 10-9)
2 -	S	Sediments Locations (Pg. 10-10)
3 -	F	Fish Locations (Pg. 10-10)
4 -	M	Milk Locations (Pg. 10-11)
5 -	DW	Drinking Water Locations (Pg. 10-12)
6 -	SW	Surface Water Locations (Pg. 10-12)
7 -	GW	Ground Water Locations (Pg. 10-12)
8 -	API	Air Particulate/Iodine Locations (Pg. 10-13)
9 -	FP	Food Products Locations (Pg. 10-14)

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	***Meteorological Sector/Azimuth Direction***	***Distance from Reactor (Approx.)***	***Description***	***Media***	***Frequency***
T1	NE/38°	1.3 mi	Estral Beach Pole on Lakeshore, 23 Poles S of Lakeview (Special Area)	Direct Radiation	Q
T2	NNE/22°	1.2 mi	Pole at termination of Brancheau St. (Special Area)	Direct Radiation	Q
T3	N/9°	1.1 mi	Pole, NW Corner of Swan Boat Club Fence (Special Area)	Direct Radiation	Q
T4	NNW/337°	0.6 mi	Site Boundary and Toll Rd, on Site Fence by API #2	Direct Radiation	Q
T5	NW/313°	0.6 mi	Site Boundary and Toll Rd, on Site Fence by API #3	Direct Radiation	Q
T6	WNW/294°	0.6 mi	Site boundary fence at south end of N. Bullit Rd. by API-6	Direct Radiation	Q
T7	W/270°	14.0 mi	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles W of Doty Rd. (Control)	Direct Radiation	Q
T8	NW/305°	1.9 mi	Pole on Post Rd. near NE Corner of Dixie Hwy. and Post Rd.	Direct Radiation	Q
T9	NNW/334°	1.5 mi	Pole, NW Corner of Trombley and Swan View Road	Direct Radiation	Q
T10	N/6°	2.1 mi	Pole, S Side of Masserant - 2 Poles W of Chinavare	Direct Radiation	Q
T11	NNE/23°	6.2 mi	Pole, NE Corner of Milliman and Jefferson	Direct Radiation	Q
T12	NNE/29°	6.3 mi	Pointe Mouillee Game Area - Field Office, Pole near Tree, N Area of Parking Lot	Direct Radiation	Q
T13	N/356°	4.1 mi	Labo and Dixie Hwy - Pole on SW Corner with Light	Direct Radiation	Q
T14	NNW/337°	4.4 mi	Labo and Brandon - Pole on SE Corner near RR	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T15	NW/315°	3.9 mi	Pole, behind building at the corner of Swan Creek and Mill St.	Direct Radiation	Q
T16	WNW/283°	4.9 mi	Pole, SE corner of War and Post Rds. (2nd pole past War Rd.)	Direct Radiation	Q
T17	W/271°	4.9 mi	Pole, NE Corner of Nadeau and LaPrad near Mobile Home Park	Direct Radiation	Q
T18	WSW/247°	4.8 mi	Pole, NE Corner of Mentel and Hurd	Direct Radiation	Q
T19	SW/236°	5.2 mi	Fermi siren pole on Waterworks Rd, NE corner of intersection—Sterling State Park Rd Entrance Drive/Waterworks	Direct Radiation	Q
T20	WSW/257°	2.7 mi	Pole, S Side of Williams Rd. - 9 Poles W of Dixie Hwy. (Special Area)	Direct Radiation	Q
T21	WSW/239°	2.7 mi	Pole, N Side of Pearl at Parkview (last pole at end of road N. side) - Woodland Beach (Special Area)	Direct Radiation	Q
T22	S/172°	1.2 mi	Pole, N Side of Pointe Aux Peaux 2 Poles W of Long - Site Boundary	Direct Radiation	Q
T23	SSW/195°	1.1 mi	Pole, S Side of Pointe Aux Peaux - 1 Pole E of St. Clair next to Vent Pipe - Site Boundary	Direct Radiation	Q
T24	SW/225°	1.2 mi	Fermi Gate along Pointe Aux Peaux Rd.- on fence wire W of Gate - Site Boundary	Direct Radiation	Q
T25	WSW/252°	1.5 mi	Pole, Toll Rd. - 11 Poles S of Fermi Dr.	Direct Radiation	Q
T26	WSW/259°	1.1 mi	Pole, Toll Rd. - 5 Poles S of Fermi Dr.	Direct Radiation	Q
T27	SW/225°	6.8 mi	Pole, NE Corner of McMillan and East Front St. (Special Area)	Direct Radiation	Q
T28	SW/229°	10.7 mi	Pole, Mortar Creek – 1st pole south of Hull Rd, E side	Direct Radiation	Q
T29	WSW/237°	10.3 mi	Pole, NE Corner of S Dixie and Albain	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T30	WSW/247°	7.8 mi	Elm St. Pole on North Side near parking lot next to St. Mary's Church (Special Area)	Direct Radiation	Q
T31	WSW/255°	9.6 mi	1st Pole W of Entrance Drive Milton "Pat" Munson Recreational Reserve - N. Custer Rd. (Control)	Direct Radiation	Q
T32	WNW/295°	10.3 mi	Pole, Corner of Stony Creek and Finzel Rds.	Direct Radiation	Q
T33	NW/317°	9.2 mi	Pole, W Side of Grafton Rd. 1 Pole N of Ash/Grafton Intersection	Direct Radiation	Q
T34	NNW/338°	9.8 mi	Pole, SW Corner of Port Creek and Will-Carleton Rd (1st pole on Port Creek)	Direct Radiation	Q
T35	N/359°	6.9 mi	Pole, S Side of S. Huron River Dr. across from Race St. (Special Area)	Direct Radiation	Q
T36	N/358°	9.1 mi	Pole, NE Corner of Gibraltar and Cahill Rds.	Direct Radiation	Q
T37	NNE/21°	9.8 mi	Pole, On Gibraltar Rd (next to Humbug Marina)	Direct Radiation	Q
T38	WNW/294°	1.7 mi	Residence - 6594 N. Dixie Hwy.	Direct Radiation	Q
T39	S/176°	0.3 mi	SE Corner of Protected Area Fence (PAF)	Direct Radiation	Q
T40	S/170°	0.3 mi	Midway along OBA - PAF	Direct Radiation	Q
T41	SSE/161°	0.2 mi	Midway between OBA and Shield Wall – PAF (North end of OBA)	Direct Radiation	Q
T42	SSE/149°	0.2 mi	Midway along Shield Wall - PAF	Direct Radiation	Q
T43	SE/131°	0.1 mi	Midway between Shield Wall and Aux Boilers - PAF	Direct Radiation	Q
T44	ESE/109°	0.1 mi	Opposite OSSF Door - PAF	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T45	E/86°	0.1 mi	NE Corner - PAF	Direct Radiation	Q
T46	ENE/67°	0.2 mi	NE Side Barge Slip - on Fence	Direct Radiation	Q
T47	S/185°	0.1 mi	South of Turbine Bldg. rollup door on PAF (fence adjacent to SE Corner of AIB)	Direct Radiation	Q
T48	SW/235°	0.2 mi	30 ft. from corner of AAP on PAF	Direct Radiation	Q
T49	WSW/251°	1.1 mi	Corner of site boundary fence north of NOC along Critical Path Rd. (at the turn)	Direct Radiation	Q
T50	W/270°	0.9 mi	Site boundary fence near main gate by the south Bullit St. sign	Direct Radiation	Q
T51	N/3°	0.4 mi	Site boundary fence north of North Cooling Tower	Direct Radiation	Q
T52	NNE/20°	0.4 mi	Site boundary fence at the corner of Arson and Tower	Direct Radiation	Q
T53	NE/55°	0.2 mi	Site boundary fence east of South Cooling Tower	Direct Radiation	Q
T54	S/189°	0.3 mi	Pole, across from Fermi 2 Visitors Center	Direct Radiation	Q
T55	WSW/251°	3.3 mi	Pole, N side of Nadeau Rd, across from Sodt Elementary School Marquee (entrance to Fire Station)	Direct Radiation	Q
T56	WSW/255°	4.9 mi	Pole, entrance to Jefferson Middle School on Stony Creek Rd. (NE Side of road)	Direct Radiation	Q
T57	W/260°	2.7 mi	Pole, north side of Williams Rd. across from Jefferson High School entrance (by long residential driveway)	Direct Radiation	Q
T58	WSW/249°	4.9 mi	Pole, on Hurd Rd, half way between Mentel Rd and Yax Rd (near former Hurd Elementary School lot)	Direct Radiation	Q
T59	NW/325°	2.6 mi	Pole, north of St. Charles Church entrance on Dixie Hwy.	Direct Radiation	Q
T60	NNW/341°	2.5 mi	1st pole north of North Elementary School entrance on Dixie Hwy.	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T61	W/268º	10.1 mi	Pole, SW Corner of Stewart and Raisinville Rds.	Direct Radiation	Q
T62	SW/232º	9.7 mi	Pole, SE Corner of Albain and Hull Rds.	Direct Radiation	Q
T63	WSW/245º	9.6 mi	Pole, Corner of Dunbar and Telegraph Rds.	Direct Radiation	Q
T64	WNW/286º	0.2 mi	W of switchgear yard midway along PAF	Direct Radiation	Q
T65	NW/322º	0.1 mi	PAF – North East corner of ISFSI Pad	Direct Radiation	Q
T66	NE/50º	0.1 mi	Behind Bldg. 42 on PAF	Direct Radiation	Q
T67	NNW/338º	0.2 mi	Site boundary fence W of S cooling tower	Direct Radiation	Q
T68	WNW/303 º	0.6 mi	Langton Rd seven poles E of Leroux Rd	Direct Radiation	Q
T69	NW/306 º	0.8 mi	Langton Rd four poles E of Leroux Rd	Direct Radiation	Q
T70	NNW/333 º	1.1 mi	Leroux Rd and Post Rd pole at West corner of turn	Direct Radiation	Q
T71	WNW/300 º	1.1 mi	Leroux Rd six poles N of Fermi Dr	Direct Radiation	Q
ISFSI-1	WNW/302.3º	0.175 mi	Center of west ISFSI fence line	Direct Radiation	Q
ISFSI-2	NW/310.2º	0.186 mi	Northwest corner of ISFSI fence	Direct Radiation	Q
ISFSI-3	NW/313.2º	0.166 mi	Center of north ISFSI fence line	Direct Radiation	Q
ISFSI-4	NW/315.6º	0.149 mi	Northeast corner of ISFSI fence	Direct Radiation	Q
ISFSI-5	NW/305.4º	0.140 mi	Center of east ISFSI fence line	Direct Radiation	Q
ISFSI-6	WNW/294.1º	0.136 mi	Southeast corner of ISFSI fence	Direct Radiation	Q
ISFSI-7	WNW/293.0º	0.157 mi	Center of south ISFSI fence line	Direct Radiation	Q
ISFSI-8	WNW/293.0º	0.177 mi	Southwest corner of ISFSI fence	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Fish and Sediment

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
SEDIMENTS					
S-1	SSE/165°	0.9 mi	Pointe Aux Peaux, Shoreline to 500 ft. offshore sighting directly to Land Base Water Tower	Sediment	SA
S-2	E/81°	0.2 mi	Fermi 2 Discharge, approx. 200 ft. offshore	Sediment	SA
S-3	NE/39°	1.1 mi	Estral Beach, approx. 200 ft. offshore, off North shoreline where Swan Creek and Lake Erie meet	Sediment	SA
S-4	WSW/241°	3.0 mi	Indian Trails Community Beach	Sediment	SA
S-5	NNE/20°	11.7 mi	DTE Energy Trenton Channel Power Plant intake area (Control)	Sediment	SA
FISH					
F-1	NNE/31°	9.5 mi	Celeron Island (Control)	Fish	SA
F-2	E/86°	0.4 mi	Fermi 2 Discharge (Approx. 1200 ft. offshore)	Fish	SA
F-3	SW/227°	3.5 mi	Breast Bay Area (Control)	Fish	SA

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Milk/Grass

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
M-8	WNW/289°	9.9 mi	Calder Dairy - 9334 Finzel Rd. (Control)	Milk	M-SM

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Water

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
DRINKING WATER					
DW-1	S/174°	1.1 mi	Monroe Water Station N Side of Pointe Aux Peaux 1/2 Block W of Long Rd.	Drinking Water	M
DW-2	N/8°	18.5 mi	Great Lakes Water Authority, 14700 Moran Rd. Allen Park (Control)	Drinking Water	M
SURFACE WATER					
SW-2	NNE/20°	11.7 mi	DTE Energy Trenton Channel Power Plant Intake Structure (Screenhouse #1) (Control)	Surface Water	M
SW-3	SSE/160°	0.2 mi	DTE Energy Fermi 2 General Service Water Intake Structure	Surface Water	M
SITE WELLS					
GW-1	S/175°	0.4 mi	Approx. 100 ft. W of Lake Erie, EF-1 Parking lot Groundwater near gas fired peakers	Groundwater	Q
GW-2	SSW/208°	1.0 mi	4 ft. S of Pointe Aux Peaux (PAP) Rd. Fence 427 ft. W of where PAP crosses over Stony Point's Western Dike	Groundwater	Q
GW-3	SW/226°	1.0 mi	143 ft. W of PAP Rd. Gate, 62 ft. N of PAP Rd. Fence	Groundwater	Q
GW-4	WNW/299°	0.6 mi	42 ft. S of Langton Rd., 8 ft. E of Toll Rd. Fence	Groundwater	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Air Particulate Air Iodine

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
API-1	NE/39°	1.4 mi	Estral Beach Pole on Lakeshore, 18 Poles S of Lakeview (Nearest Community with highest χ/Q)	Radioiodine Particulates	W W
API-2	NNW/337°	0.6 mi	Site Boundary and Toll Road, on Site Fence by T-4	Radioiodine Particulates	W W
API-3	NW/313°	0.6 mi	Site Boundary and Toll Road, on Site Fence by T-5	Radioiodine Particulates	W W
API-4	W/270°	14.0 mi	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles W of Doty Rd. (control)	Radioiodine Particulates	W W
API-5	S/188°	1.2 mi	Pole, N corner of Pointe Aux Peaux and Dewey Rd.	Radioiodine Particulates	W W
API-6	WNW/295°	0.6 mi	Pole, Site boundary and Toll Road inside Site fence by T-6	Radioiodine Particulates	W W

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Food Products

Station Number	***Meteorological Sector/Azimuth Direction***	***Distance from Reactor (Approx.)***	***Description***	***Media***	***Frequency***
FP-9	W/261°	10.9 mi	4074 North Custer Road (across the street)	Food Products (vegetation)	M (when available)
FP-HD1	NE	1.4 mi	Near highest D/Q offsite location in Sector C (near API-2)	Food Products (vegetation)	M (when available)
FP-HD2	NW	0.6 mi	Near highest D/Q offsite location in Sector Q (near API-3)	Food Products (vegetation)	M (when available)
FP-HD3	WNW	0.6 mi	Near highest D/Q offsite location in Sector P (near API-6)	Food Products (vegetation)	M (when available)

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Land Use Census Closest Residences

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*
	NE	1.1 mi	
	NNE	1.0 mi	
	N	1.1 mi	
	NNW	1.1 mi	
	NW	1.1 mi	
	WNW	0.7 mi	
	W	1.2 mi	
	WSW	1.4 mi	
	SW	1.3 mi	
	SSW	1.1 mi	
	S	1.0 mi	
	ESE-SSE		Lake Erie

END OF SECTION 10.0

END OF ODCM

Appendix F

ODCM Revision 25

OFFSITE DOSE CALCULATION MANUAL

Revision Summary

1. Standardize formatting for text and tables
2. Update Table of Contents
3. Defined semimonthly (SM) in Table 2.1
4. Changed terminology “fresh leafy vegetable” to “broad leaf vegetation” in 3.12.1.c to be consistent with Table 3.12.1-1
5. Added clarity in 3.12.1.c by providing specific action for broad leaf vegetation samples that are unobtainable due to seasonal unavailability
6. Removed “Station Number” from last page of Table 10.0-1 as it is not applicable
7. Corrected meteorological sector / azimuth directions in Table 10.0-1 to state ENE – SSE for Lake Erie.

Implementation Plan

This revision goes into effect upon approval.

Discard all pages of current TRM Volume II (ODCM Revision 24) and replace with this document (ODCM Revision 25)

Information and Procedures								
DTC	**DSN**	**Revision**	**Date Issued**	**Change#**	**File #**	**IP**	**ISFSI**	**Recipient**
TMTRM	TRM VOL II	25		21-014-ODM	1754	I	N	

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

END OF SECTION 0.0

PART 1 – RADIOLOGICAL EFFLUENT CONTROLS

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

Part I of the Fermi 2 Offsite Dose Calculation Manual (ODCM), which includes Sections 2.0 through 5.0, contains the controls and surveillance requirements for radioactive effluents and radiological environmental monitoring. It also contains requirements for the Annual Radiological Environmental Operating Report and the Annual Radioactive Effluent Release Report.

This satisfies the requirements for Technical Specification 5.5.1, the Offsite Dose Calculation Manual (ODCM), and Technical Specification 5.5.4, Radioactive Effluent Controls Program.

Part II of the ODCM describes the methodology and parameters used in calculating radioactive liquid and gaseous effluent monitoring instrumentation alarm/trip setpoints, and in calculating liquid and gaseous effluent dose rates and cumulative doses.

The methodology provided in Part II of this manual is acceptable for use in demonstrating compliance with the dose limits for members of the public of 10 CFR 20, the cumulative dose criteria of 10 CFR 50, Appendix I and 40 CFR 190, and the controls in Part I of this manual.

Part II, Section 6.0 of the ODCM describes equipment for monitoring and controlling liquid effluents, sampling requirements, and dose evaluation methods. Section 7.0 provides similar information on gaseous effluent controls, sampling, and dose evaluation. Section 8.0 describes special dose analyses required for compliance with Fermi 2 Offsite Dose Calculation Manual and 40 CFR 190. Section 9.0 describes the role of the annual land use census in identifying the controlling pathways and locations of exposure for assessing potential off-site doses. Section 10.0 describes the Radiological Environmental Monitoring Program.

The ODCM will be maintained at Fermi 2 for use as a listing of radiological effluent controls and surveillance requirements, as well as a reference guide and training document for accepted methodologies and calculations. Changes to the ODCM calculational methodologies and parameters will be made as necessary to ensure reasonable conservatism in keeping with the principles of 10 CFR 50.36a and Appendix I for demonstrating that radioactive effluents are "As Low As Reasonably Achievable."

NOTE: Throughout this document words appearing all capitalized denote either definitions specified in the Fermi 2 Controls or common acronyms.

END OF SECTION 1.0

SECTION 2.0

DEFINITIONS

2.0 DEFINITIONS

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. A CHANNEL CALIBRATION shall encompass the entire channel including the required sensor, alarm, display, and trip functions, and shall include a CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detectors (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. A CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.
CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify FUNCTIONAL CAPABILITY, including required alarm, interlock, display, and trip functions, and channel failure trips. A CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

Term	Definition
FREQUENCY NOTATION	The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 2.1.
FUNCTIONALLY CAPABLE	A system, subsystem, division, component, or device shall be FUNCTIONALLY CAPABLE or have FUNCTIONAL CAPABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
MEMBER(S) OF THE PUBLIC	MEMBER(S) OF THE PUBLIC means any individual except when that individual is receiving an occupational dose.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 2.2 with fuel in the reactor vessel.
MPC	(Maximum Permissible Concentration in water) For individual nuclides, 10 times the concentration values in 10 CFR Part 20.1001-20.2402, Appendix B, Table 2, Column 2, except for noble gases which are limited to 2E-4 uCi/ml total activity concentration. For nuclide mixtures, concentrations for which the sum of individual nuclide concentrations divided by their corresponding individual MPC values equals 1.
OCCUPATIONAL DOSE	OCCUPATIONAL DOSE means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation and/or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the general public.

Term	Definition
OFF-GAS TREATMENT SYSTEM	An OFF-GAS TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting reactor coolant system offgases from the reactor coolant and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.
OFFSITE DOSE CALCULATIONAL MANUAL	The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluent, in the calculation of gaseous and liquid effluent monitoring alarm/trip setpoints, and in the conduct of the radiological environmental monitoring program. The ODCM shall also contain (1) the Radiological Effluent Controls and Radiological Environmental Monitoring Program Controls, and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Reports required by Controls 5.9.1.7 and 5.9.1.8.
PUBLIC DOSE	PUBLIC DOSE means the dose received by a member of the public from exposure to radiation and/or radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. It does not include occupational dose or doses received from background radiation, as a patient from medical practices, or from voluntary participation in medical research programs.
PURGE - PURGING	PURGE or PURGING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3486 MWt.
REPORTABLE EVENT	A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

Term	Definition
SITE BOUNDARY	The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled, by the licensee.
SOURCE CHECK	A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
UNRESTRICTED AREA	The Fermi 2 Energy Center UNRESTRICTED AREA includes all areas outside the site boundary.
VENTILATION EXHAUST TREATMENT SYSTEM	A VENTILATION EXHAUST TREATMENT SYSTEM shall be any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment. Such a system is not considered to have any effect on noble gas effluents. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.
VENTING	VENTING shall be the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is not provided or required during VENTING. Vent, used in system names, does not imply a VENTING process.

TABLE 2.1

SURVEILLANCE FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours
D	At least once per 24 hours
W	At least once per 7 days
SM	At least twice per 31 days
M	At least once per 31 days
Q	At least once per 92 days
SA	At least once per 184 days
A	At least once per 366 days
R	At least once per 24 months (732 days)
S/U	Prior to each reactor startup
P	Prior to each radioactive release
N.A	Not applicable

TABLE 2.2

MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	Run	NA
2	Startup	Refuel[(a)] or Startup/Hot Standby	NA
3	Hot Shutdown[(a)]	Shutdown	> 200
4	Cold Shutdown[(a)]	Shutdown	≤ 200
5	Refueling[(b)]	Shutdown or Refuel	NA

(a) All reactor vessel head closure bolts fully tensioned.

(b) One or more reactor vessel head closure bolts less than fully tensioned.

END OF SECTION 2.0

SECTION 3.0

CONTROLS

AND

SURVEILLANCE REQUIREMENTS

3/4 CONTROLS AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

CONTROLS

3.0.1 Controls shall be met during the MODES or other specified conditions in the Applicability, except as provided in Control 3.0.2.

3.0.2 Upon discovery of a failure to meet a Control, the Actions shall be met, except as provided in Control 3.0.5.

If the Control is met or is no longer applicable prior to expiration of the specified completion time(s), completion of the Action(s) is not required, unless otherwise stated.

3.0.3 When a Control is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the Control is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

1. Mode 2 within 7 hours;
2. Mode 3 within 13 hours; and
3. Mode 4 within 37 hours.

Exceptions to this Control are stated in the individual Controls.

Where corrective measures are completed that permit operation in accordance with the Control or ACTIONS, completion of the actions required by Control 3.0.3 is not required.

Control 3.0.3 is only applicable in MODES 1, 2, and 3.

3.0.4 When a Control is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Exceptions to this Control are stated in the individual Controls. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.

Control 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

3.0.5 Equipment removed from service or declared not FUNCTIONALLY CAPABLE to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its FUNCTIONAL CAPABILITY or the FUNCTIONAL CAPABILITY of other equipment. This is an exception to Control 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate FUNCTIONAL CAPABILITY.

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Controls, unless otherwise stated in the Surveillance Requirements. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Control. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the Control except as provided in Surveillance Requirement 4.0.3. Surveillances do not have to be performed on equipment which is not FUNCTIONALLY CAPABLE or variables outside specified limits.

4.0.2 The specified Frequency is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per …" basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Control are stated in the individual Controls.

4.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the Control not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

If the Surveillance is not performed within the delay period, the Control must immediately be declared not met, and the applicable ACTIONS must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the Control must immediately be declared not met, and the applicable ACTIONS must be entered.

4.0.4 Entry into a MODE or other specified condition in the Applicability of a Control shall not be made unless the Control's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

4.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

3/4.3.7.11 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

3.3.7.11 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3.7.11-1 shall be FUNCTIONALLY CAPABLE with their alarm/trip setpoints set to ensure that the limits of Control 3.11.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATIONAL MANUAL (ODCM).

APPLICABILITY: At all times.

ACTION:

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above control, immediately suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel not FUNCTIONALLY CAPABLE, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels FUNCTIONALLY CAPABLE, take the ACTION shown in Table 3.3.7.11-1. Restore the instrumentation which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status within 30 days and, if unsuccessful, explain why this condition was not corrected in a timely manner in the next Annual Radioactive Effluent Release Report.

c. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.11 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated FUNCTIONALLY CAPABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3.7.11-1.

TABLE 3.3.7.11-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Instrument	***Minimum Channels Functionally Capable***	***Action***
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE		
a. Liquid Radwaste Effluent Line D11-N007	1	110
2. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE		
a. Circulating Water Reservoir Decant Line D11-N402	1	111
3. FLOW RATE MEASUREMENT DEVICES *		
a. Liquid Radwaste Effluent Line G11-R703	1	112

TABLE NOTATION

* The circulating water reservoir decant line flow rate monitor has been removed. The flow rate in this decant line is now measured using certified pump performance curves for the circulating water reservoir decant pumps, together with readings from pump discharge pressure gauges and reservoir level indication. The circulating water reservoir decant line flow rate device was deleted from this table; the Liquid Radwaste Effluent Line flow rate device refers to a monitor on the radwaste blowdown line from the Waste Sample Tanks, upstream of the circulating water decant line.

TABLE 3.3.7.11-1 (Continued)

TABLE NOTATIONS

ACTION 110 - With the number of channels FUNCTIONALLY CAPABLE less than that required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases from this pathway may continue provided that prior to initiating a release:

a. At least two independent samples are analyzed in accordance with Surveillance Requirement 4.11.1.1.1, and

b. At least two technically qualified individuals independently verify the release rate calculations and discharge line valving (one technically qualified individual can be the preparer of the calculation, the other independently reviews the release rate calculations to verify accuracy);

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 111 - With the number of channels FUNCTIONALLY CAPABLE less than the Minimum Channels FUNCTIONALLY CAPABLE requirement, radioactive effluent releases via this pathway may continue provided that grab samples are collected and analyzed at least once per 12 hours for gross radioactivity (beta or gamma) at a lower limit of detection of at least 1×10^{-7} microcurie/ml, for Cs-137. Otherwise, suspend release of radioactive effluents via this pathway. If radioactive effluent releases are not in progress, i.e., if no Waste Sample Tank (or other tank containing radioactive liquid) is being released and the circulating water is not contaminated as shown by the most recent circulating water sample(s), this sampling requirement does not apply.

ACTION 112 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, radioactive effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours during actual releases. Otherwise, suspend release of radioactive effluents via this pathway. If radioactive effluent releases are not in progress, i.e., if no Waste Sample Tank (or other tank containing radioactive liquid) is being released, this requirement does not apply.

TABLE 4.3.7.11-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	***Channel Check***	***Source Check***	***Channel Calibration***	***Channel Functional Test***
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE				
a. Liquid Radwaste Effluent Line	P	P	R(3)	Q(1) (2)
2. GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE				
a. Circulating Water Reservoir Decant Line D11-N402	D	M	R(3)	Q(5)
3. FLOW RATE MEASUREMENT DEVICES (4)				
a. Liquid Radwaste Effluent Line	D(4)	N.A.	R	Q

TABLE 4.3.7.11-1 (Continued)

TABLE NOTATIONS

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

(3) The initial CHANNEL CALIBRATION shall be performed using National Institute of Standards and Technology traceable sources. These standards shall permit calibrating the system over the range of energy and measurement expected during normal operation and anticipated operational occurrences. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration or are National Institute of Standards and Technology traceable shall be used.

(4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made.

(5) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.

3/4.3.7.12 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

3.3.7.12 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3.7.12-1 shall be FUNCTIONALLY CAPABLE with their alarm/trip setpoints set to ensure that the limits of Control 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels, with the exception of the offgas monitoring system, shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY: Actions a and b: As shown in Table 3.3.7.12-1
Actions c and d: At all times

ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Control, immediately suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel not FUNCTIONALLY CAPABLE, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels FUNCTIONALLY CAPABLE, take the ACTION shown in Table 3.3.7.12-1.

c. Restore radioactive gaseous effluent monitoring instrumentation which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status within 30 days and, if unsuccessful, explain why this condition was not corrected in a timely manner in the next Annual Radioactive Effluent Release Report.

d. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.12 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated FUNCTIONALLY CAPABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3.7.12-1.

TABLE 3.3.7.12-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Instrument	*Minimum Channels Functionally Capable*	*Applicability*	*Action*
1. REACTOR BUILDING EXHAUST PLENUM EFFLUENT MONITORING SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123
2. OFFGAS MONITORING SYSTEM (At the 2.2 minute delay piping)			
a. Noble Gas Activity Monitor - Providing Alarm	1	**	126
3. STANDBY GAS TREATMENT SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm Alarm	1	#	125
b. Iodine Sampler	1	#	122
c. Particulate Sampler	1	#	122
d, Sampler Flow Rate Monitor	1	#	123
4. TURBINE BLDG. VENTILATION MONITORING SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123

TABLE NOTATIONS

*	At all times.
**	During operation of the main condenser air ejector.
#	During operation of the standby gas treatment system.

TABLE 3.3.7.12-1 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Instrument	*Minimum Channels Functionally Capable*	*Applicability*	*Action*
5. RADWASTE BUILDING VENTILATION MONITORING SYSTEM			
a. Low Range Noble Gas Activity Monitor - Providing Alarm Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123
6. ONSITE STORAGE BUILDING VENTILATION EXHAUST RADIATION MONITOR			
a. Low Range Noble Gas Activity Monitor - Providing Alarm Alarm	1	*	121
b. Iodine Sampler	1	*	122
c. Particulate Sampler	1	*	122
d. Sampler Flow Rate Monitor	1	*	123

TABLE NOTATIONS

* At all times.

TABLE 3.3.7.12-1 (Continued)

ACTION STATEMENTS

ACTION 121 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 9 hours and these samples are analyzed for gross activity within 24 hours, or, if valid monitor indication of noble gas concentration is available, that noble gas concentration readings are recorded at least once per 9 hours. Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 122 - With the number of channels FUNCTIONALLY CAPABLE one less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided that within 8 hours samples are continuously collected with auxiliary sampling equipment as required in Table 4.11.2.1.2-1.

ACTION 123 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 9 hours. Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 124 - Not used.

ACTION 125 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 9 hours and these samples are analyzed for gross activity within 24 hours, or, if valid monitor indication of noble gas concentration is available, that noble gas concentration readings are recorded at least once per 9 hours. Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 126 - With the number of channels FUNCTIONALLY CAPABLE less than required by the Minimum Channels FUNCTIONALLY CAPABLE requirement, releases via this pathway to the environment may continue provided that:

a. The offgas system is not bypassed,
b. The reactor building exhaust plenum noble gas effluent (downstream) monitor is FUNCTIONALLY CABAPLE, and
c. Grab samples are taken at least once per 24 hours and these samples are analyzed for principal emitters within 24 hours with calculation of offgas radioactivity rate.

Otherwise, be in at least HOT STANDBY within 12 hours.

TABLE 4.3.7.12-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	***Channel Check***	***Source Check***	***Channel Calibration***	***Channel Functional Test***	***Modes in Which Surveillance Required***
1. REACTOR BUILDING EXHAUST PLENUM					
a. Low Range Noble Gas Activity Monitor - Providing Alarm	D	M	R(2)	Q(1)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A,	R	Q	*
2. OFFGAS MONITORING SYSTEM (At the 2.2 minute delay piping)					
a. Noble Gas Activity Monitor	D	M	R(2)	Q(1)	**
3. STANDBY GAS TREATMENT MONITORING SYSTEM					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(1)	#
b. Iodine Sampler	W	N.A.	N.A.	N.A.	#
c. Particulate Sampler	W	N.A.	N.A.	N.A.	#
d. Sampler Flow Rate Monitor	D	N.A,	R	Q	#
4. TURBINE BLDG. VENTILATION MONITORING SYSTEM					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(4)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A,	R	Q	*

TABLE 4.3.7.12-1 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	*Channel Check*	*Source Check*	*Channel Calibration*	*Channel Functional Test*	*Modes in Which Surveillance Required*
5. RADWASTE BUILDING VENTILATION MONITORING SYSTEM					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(4)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A,	R	Q	*
6. ONSITE STORAGE BUILDING VENTILATION EXHAUST RADIATION MONITOR					
a. Low Range Noble Gas Activity Monitor	D	M	R(2)	Q(1)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Sampler Flow Rate Monitor	D	N.A,	R	Q	*

TABLE 4.3.7.12-1 (Continued)

TABLE NOTATIONS

* At all times.

** During operation of the main condenser air ejector.

\# During operation of the standby gas treatment system.

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode (alarm or type).

(2) The initial CHANNEL CALIBRATION shall be performed using National Institute of Standards and Technology traceable sources. These standards shall permit calibrating the system over the range of energy and measurement expected during normal operation and anticipated operational occurrences. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration or are National Institute of Standards and Technology traceable shall be used.

(3) Not used.

(4) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation occurs on high level and that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoints.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in the operate mode (alarm or type).

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

CONCENTRATION

CONTROLS

3.11.1.1 The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (see Figure 3.0-1) shall be limited to ten times the concentration values specified in 10 CFR Part 20, 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 2×10^{-4} microcuries/ml total activity.

APPLICABILITY: At all times.

ACTION:

With the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS exceeding the above limits, immediately restore the concentration to within the above limits.

SURVEILLANCE REQUIREMENTS

4.11.1.1.1 Radioactive liquid wastes shall be sampled and analyzed according to the sampling and analysis program of Table 4.11.1.1.1-1.

4.11.1.1.2 The results of the radioactivity analyses shall be used in accordance with the methodology and parameters in the ODCM to assure that the concentrations at the point of release are maintained within the limits of Control 3.11.1.1.

TABLE 4.11.1.1.1-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	***Sampling Frequency***	***Minimum Analysis Frequency***	***Type of Activity Analysis***	***Lower Limit of Detection (LLD)[a] (uCi/ml)***
A. Batch Release[b]: Waste Sample Tanks (3)	P Each Batch	P Each Batch	Principal Gamma Emitters[c]	5×10^{-7}
			I-131	1×10^{-6}
			Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
	P Each Batch	M Composite[d]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	P Each Batch	Q Composite[d]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
B. Continuous Releases[e] Circulating Water System (if contaminated)	W[f] Grab Sample	M[f] Composite[d]	Principal Gamma Emitters[c]	5×10^{-7}
			I-131	1×10^{-6}
			Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
			H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	NA	Q Composite[d]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}

TABLE 4.11.1.1.1-1 (Continued)

TABLE NOTATION

[a]The LLD is defined, for purposes of these controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$\mathrm{LLD} = \frac{4.66 \bullet s_b}{E \bullet V \bullet 2.22 \times 10^6 \bullet Y \bullet \exp(-\lambda t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22×10^6 is the number of disintegrations per minute per microcurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

t for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and t should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

[b]A batch release is the discharge of liquid wastes of a discrete volume.
Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed by a method described in the ODCM to assure representative sampling. Batch liquid discharge may be made from only one tank at a time.

TABLE 4.11.1.1.1-1 (Continued)

TABLE NOTATION

[c] The principal gamma emitters for which the LLD specification applies exclusively are: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, and Ce-141. Ce-144 shall also be measured, but with an LLD of 5 x 10^{-6}. This does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report pursuant to Control 5.9.1.8.

[d] This type of composite sample is a sample composed of aliquots of pre-release samples or grab samples taken during releases, or of aliquots of composite samples so prepared, so as to represent releases taking place over a longer period of time. The volumes of these aliquots should be proportional to the volumes of the releases which they represent.

[e] A continuous release is the discharge of liquid wastes of a nondiscrete volume; e.g., from a volume of a system that has an input flow during the continuous release.

[f] When the circulating water system is first discovered to be contaminated, grab samples may be taken more frequently, and may be analyzed immediately. After the source of the contamination is discovered and isolated, and contamination levels are not increasing, this grab sampling and analysis frequency may be reduced to the schedule specified in the table.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

DOSE

CONTROLS

3.11.1.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each reactor unit, to UNRESTRICTED AREAS (see Figure 3.0-1) shall be limited:

a. During any calendar quarter to less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ, and

b. During any calendar year to less than or equal to 3 mrems to the total body and to less than or equal to 10 mrems to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioactive materials in liquid effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. This Special Report shall also include (1) the results of radiological analyses of the drinking water source and (2) the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR Part 141, Safe Drinking Water Act.*

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.2 Cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days, if radioactive liquid effluent releases have occurred during the period being evaluated.

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*Applicable only if drinking water supply is taken from the receiving water body within 3 miles of the plant discharge.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

LIQUID WASTE TREATMENT

CONTROLS

3.11.1.3 The liquid radwaste treatment system shall be FUNCTIONALLY CAPABLE and appropriate portions of the system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected doses due to the liquid effluent, from each reactor unit, to UNRESTRICTED AREAS (see Figure 3.0-1) would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in any 31-day period.

APPLICABILITY: At all times.

ACTION:

a. With radioactive liquid waste being discharged and in excess of the above limits and any portion of the liquid radwaste treatment system not in operation, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that includes the following information:

1. Explanation of why liquid radwaste was being discharged without complete treatment, identification of any equipment or subsystems which are not FUNCTIONALLY CAPABLE, and the reason for the not FUNCTIONALLY CAPABLE status.

2. Action(s) taken to restore the equipment which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status, and

3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.3.1 Doses due to liquid releases from each reactor unit to UNRESTRICTED AREAS shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM, if radioactive liquid effluent releases have occurred during the period being evaluated.

4.11.1.3.2 The installed liquid radwaste treatment system shall be demonstrated FUNCTIONALLY CAPABLE by meeting Controls 3.11.1.1 and 3.11.1.2.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE RATE

CONTROLS

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 (see Figure 3.0-1) shall be limited to the following:

a. For noble gases: Less than or equal to 500 mrems/yr to the total body and less than or equal to 3000 mrems/yr to the skin, and

b. For iodine-131, iodine-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to 1500 mrems/yr to any organ.

APPLICABILITY: At all times.

ACTION:

With the dose rate(s) exceeding the above limits, immediately restore the release rate to within the above limit(s).

SURVEILLANCE REQUIREMENTS

4.11.2.1.1 The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM.

4.11.2.1.2 The dose rate due to iodine-131, iodine-133, tritium, and all other radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.11.2.1.2-1.

TABLE 4.11.2.1.2-1

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	*Sampling Frequency*	*Minimum Analysis Frequency*	*Type of Activity Analysis*	*Lower Limit of Detection (LLD)[a] (uCi/ml)*
A. Containment PURGE (Pre Treatment)	P^i, S^j Each PURGE Grab Sample	P^i, S^j Each PURGE P^i	Principal Gamma Emitters[b] H-3	1×10^{-4} 1×10^{-6}
B. Reactor Building Exhaust Plenum Standby Gas Treatment System[h]	$M^{c,e}$ Grab Sample	M^c M^c	Principal Gamma Emitters[b] H-3	1×10^{-4} 1×10^{-6}
C. Radwaste Building Turbine Building On-Site Storage Facility	M Grab Sample	M M	Principal Gamma Emitters[b] H-3	1×10^{-4} 1×10^{-6}
D. All Release Types as listed in B and C above.	Continuous[f]	W^g Absorbent Sample	I-131 I-133	1×10^{-12} 1×10^{-10}
	Continuous[f]	W^g Particulate Sample	Principal Gamma Emitters[b] (I-131, others) Gross Alpha	1×10^{-11}
	Continuous[f]	Q Composite Particulate Sample	Sr-89, Sr-90, Fe-55	1×10^{-11}
	Continuous[f]	Noble Gas Monitor	Noble Gas Gross Beta or Gamma	1×10^{-6}
E. Offgas Vent Pipe	N.A.[k] Grab Sample	N.A.[k]	Principal Gamma Emitters[b]	1×10^{-4}

TABLE 4.11.2.1.2-1 (Continued)

TABLE NOTATION

[a] The LLD is defined, for purposes of these controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$\mathrm{LLD} = \frac{4.66 \bullet s_b}{E \bullet V \bullet 2.22 \times 10^6 \bullet Y \bullet \exp\left(-\lambda t\right)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22×10^6 is the number of disintegrations per minute per microcurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

t for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and t should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

[b] The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-138, Ar-41, Kr-85m, and Xe-135m in noble gas releases and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137, Ce-141, and Ce-144 in iodine and particulate releases. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report pursuant to Control 5.9.1.8.

TABLE 4.11.2.1.2-1 (Continued)

TABLE NOTATION

[c]Sampling and analysis shall also be performed following shutdown, startup, or a THERMAL POWER change exceeding 15% of RATED THERMAL POWER within a 1-hour period. This requirement does not apply if the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

[d]Not used.

[e]Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.

[f]The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Controls 3.11.2.1, 3.11.2.2, and 3.11.2.3.

[g]Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 3 days following each shutdown, startup or THERMAL POWER change exceeding 15% of RATED THERMAL POWER in 1 hour, and analyses shall be completed within 48 hours of changing, at any release point at which the noble gas monitor shows that effluent activity has increased more than a factor of 3.

When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10. When samples collected for periods between 24 hours and 7 days are analyzed, the corresponding LLDs may be increased by a factor equal to the normal weekly sample volume divided by the volume of the sample in question.

[h]Required when the SGTS is in operation.

[i]In MODES 1, 2, 3, and 4, the applicable portion of primary containment shall be sampled and analyzed within 8 hours prior to the start of any PURGING.

[j]In MODES 1, 2, 3, and 4, when the primary containment atmosphere radiation monitoring system is declared not FUNCTIONALLY CAPABLE or is in alarm condition, the applicable portion of primary containment shall be sampled and analyzed within 8 hours prior to the start of any VENTING or PURGING and at least once per 12 hours during VENTING or PURGING through other than SGTS.

[k]Offgas Vent Pipe sampling is performed as directed by Radiation Protection to supplement Reactor Building Exhaust Plenum monthly grab sampling. The Offgas Vent Pipe sample point is upstream of the Reactor Building Exhaust Plenum.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE - NOBLE GASES

CONTROLS

3.11.2.2 The air dose due to noble gases released in gaseous effluents, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 3.0-1) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation and,

b. During any calendar year: Less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

APPLICABILITY: At all times.

ACTION:

With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.2 Cumulative dose contributions for the current calendar quarter and current calendar year for noble gases shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

3/4.11.2 GASEOUS EFFLUENTS

DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

CONTROLS

3.11.2.3 The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 3.0-1) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 7.5 mrems to any organ and,

b. During any calendar year: Less than or equal to 15 mrems to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the cause(s) for exceeding the limit and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.3 Cumulative dose contributions for the current calendar quarter and current calendar year for iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

OFF-GAS TREATMENT SYSTEM

CONTROLS

3.11.2.4 The OFF-GAS TREATMENT SYSTEM shall be FUNCTIONALLY CAPABLE and shall be in operation.

APPLICABILITY: Whenever the main condenser steam jet air ejectors are in operation.

ACTION:

With the OFF-GAS TREATMENT SYSTEM not FUNCTIONALLY CAPABLE for more than 7 days, prepare and submit to the commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that includes the following information:

1. Identification of the equipment or subsystems which are not FUNCTIONALLY CAPABLE and the reason for the not FUNCTIONALLY CAPABLE status,

2. Action(s) taken to restore the equipment which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status, and

3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

c. The provisions of Control 4.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.4 The OFF-GAS TREATMENT SYSTEM shall be demonstrated FUNCTIONALLY CAPABLE by meeting Controls 3.11.2.1, 3.11.2.2, and 3.11.2.3.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

VENTILATION EXHAUST TREATMENT SYSTEM

CONTROLS

3.11.2.5 The VENTILATION EXHAUST TREATMENT SYSTEM as described in the ODCM shall be FUNCTIONALLY CAPABLE and appropriate portions of the system shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses due to gaseous effluent releases from the site to UNRESTRICTED AREAS (see Figure 3.0-1) would exceed 0.3 mrem to any organ in any 31-day period.

APPLICABILITY: At all times.

ACTION:

With radioactive gaseous waste being discharged in excess of the above limits and any portion of the VENTILATION EXHAUST TREATMENT SYSTEM not in operation, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that includes the following information:

1. Identification of any equipment or subsystems which are not FUNCTIONALLY CAPABLE and the reason for the not FUNCTIONALLY CAPABLE status.
2. Action(s) taken to restore the equipment which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status, and
3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.5.1 Doses due to gaseous releases from the site shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM, when any portion of the VENTILATION EXHAUST TREATMENT SYSTEM is not in use.

4.11.2.5.2 The VENTILATION EXHAUST TREATMENT SYSTEM shall be demonstrated FUNCTIONALLY CAPABLE by meeting Controls 3.11.2.1, 3.11.2.2, and 3.11.2.3.

3/4.11.2 GASEOUS EFFLUENTS

VENTING OR PURGING

CONTROLS

3.11.2.8 VENTING or PURGING of the primary containment shall be through the standby gas treatment system or the reactor building ventilation system.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTION:

a. With the requirements of the above control not satisfied, suspend all VENTING or PURGING of the primary containment.

b. The provision of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.8.1 The applicable portion of primary containment shall be sampled and analyzed per Table 4.11.2.1.2-1 of Control 3.11.2.1 within 8 hours prior to the start of any PURGING.

4.11.2.8.2 If the primary containment radiation monitoring system is not FUNCTIONALLY CAPABLE or is in alarm condition, the applicable portion of primary containment shall be sampled and analyzed per Table 4.11.2.1.2-1 of Control 3.11.2.1 within 8 hours prior to the start of and at least once per 12 hours during VENTING or PURGING of primary containment through other than the standby gas treatment system.

4.11.2.8.3 The primary containment shall be determined to be aligned for VENTING or PURGING through the standby gas treatment system or the reactor building ventilation system within 4 hours prior to start of and at least once per 12 hours during VENTING or PURGING of the containment.

4.11.2.8.4 Prior to use of the vent/purge system through the standby gas treatment system assure that:

a. Both standby gas treatment system trains are FUNCTIONALLY CAPABLE whenever the vent/purge system is in use, and

b. Whenever the vent/purge system is in use during MODE 1 or 2 or 3, only one of the standby gas treatment system trains may be used.

4.11.2.8.5 Prior to VENTING or PURGING, assure that at least one of the following monitors is FUNCTIONALLY CAPABLE: the primary containment atmosphere radiation monitor, the reactor building ventilation exhaust radiation monitor (at least one division), or the SPING monitor corresponding to the release path (the reactor building exhaust plenum radiation monitor or the standby gas treatment system radiation monitor, Division 1 or 2).

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.4 TOTAL DOSE

CONTROLS

3.11.4 The annual (calendar year) dose or dose commitment to any member of the public (as defined in 40 CFR Part 190) due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

APPLICABILITY: At all times.
ACTION:

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Controls 3.11.1.2a., 3.11.1.2b., 3.11.2.2a., 3.11.2.2b., 3.11.2.3a., or 3.11.2.3b., calculations should be made including direct radiation contributions from the reactor units and from outside storage tanks to determine whether the above limits of Control 3.11.4 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR 20.2203, shall include an analysis that estimates the radiation exposure (dose) to a member of the public from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Controls 4.11.1.2, 4.11.2.2, and 4.11.2.3, and in accordance with the methodology and parameters in the ODCM.

4.11.4.2 Cumulative dose contributions from direct radiation from the reactor units and from outside storage tanks shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in Control 3.11.4, ACTION a.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.1 MONITORING PROGRAM

CONTROLS

3.12.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.12.1-1.

APPLICABILITY: At all times.

ACTION:

a. With the radiological environmental monitoring program not being conducted as specified in Table 3.12.1-1, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report required by Control 5.9.1.7, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

With the level of radioactivity as the result of plant effluents in an environmental sampling medium at a specified location exceeding the reporting levels of Table 3.12.1-2 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 50.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose* to A MEMBER OF THE PUBLIC is less than the calendar year limits of Controls 3.11.1.2, 3.11.2.2, and 3.11.2.3. When more than one of the radionuclides in Table 3.12.1-2 are detected in the sampling medium, this report shall be submitted if:

$$\frac{concentration\ (1)}{reporting\ level\ (1)} + \frac{concentration\ (2)}{reporting\ level\ (2)} + \cdots \geq 1.0$$

b. When radionuclides other than those in Table 3.12.1-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose* to A MEMBER OF THE PUBLIC from all radionuclides is equal to or greater than the calendar year limits of Controls 3.11.1.2, 3.11.2.2, and 3.11.2.3. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

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*The methodology used to estimate the potential annual dose to a MEMBER OF THE PUBLIC shall be indicated in this report.

CONTROLS (Continued)

c. With milk or broad leaf vegetation samples unavailable (not just unobtainable as described below) from one or more of the sample locations required by Table 3.12.1-1, identify specific locations for obtaining replacement samples and add them to the radiological environmental monitoring program within 30 days. The specific locations from which samples were unavailable may then be deleted from the monitoring program. Pursuant to Control 5.9.1.8, identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report pursuant to Control 5.9.1.8 and also include in the report a revised table for the ODCM reflecting the new location(s). For broad leaf vegetation samples that are unobtainable due to seasonal unavailability, new sample locations are not required to be identified, however the deviation and cause must be included in the next Annual Radioactive Effluent Release Report pursuant to Control 5.9.1.8.

d. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.1 The radiological environmental monitoring samples shall be collected pursuant to Table 3.12.1-1 from the specific locations given in the table in the ODCM, and shall be analyzed pursuant to the requirements of Table 3.12.1-1 and the detection capabilities required by Table 4.12.1-1.

TABLE 3.12.1-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	***Number of Representative Samples and Sample Locations[a]***	***Sampling and Collection Frequency***	***Type and Frequency of Analysis***
1. DIRECT RADIATION[b]	71 routine monitoring stations, with two or more dosimeters placed as follows: 1) an inner ring of stations in the general area of the SITE BOUNDARY and additional rings at approximately 2, 5, and 10 miles, with a station in at least every other meteorological sector for each ring with the exception of those sectors over Lake Erie. The balance of the stations, 8, should be placed in special interest areas such as population centers, nearby residences, schools, and in 2 or 3 areas to serve as control stations.	Quarterly	Gamma dose quarterly.
2. AIRBORNE Radioiodine and Particulates	Samples from 5 locations. a. 3 samples from close to the 3 SITE BOUNDARY locations, in different sectors, of the highest calculated 5-year average D/Q. b. 1 sample from the vicinity of a community having the highest calculated 5-year averages D/Q. c. 1 sample from a control location, as for example 15-30 km distant and in the least prevalent wind direction[c].	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading.	Radioiodine Canister: I-131 analysis weekly. Particulate Sampler: Gross beta radioactivity analysis following filter change:[d] Gamma isotopic analysis[e] of composite (by location) quarterly.

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	***Number of Representative Samples and Sample Locations***[a]	***Sampling and Collection Frequency***	***Type and Frequency of Analysis***
3. WATERBORNE			
a. Surface[f]	a. 1 sample upstream. b. 1 sample downstream.	Composite sample over 1-month period[g]	Gamma isotopic analysis[e] monthly. Composite for tritium analysis quarterly.
b. Ground	Samples from 1 or 2 sources only if likely to be affected[h].	Quarterly	Gamma isotopic[e] and tritium analysis quarterly.
c. Drinking	a. 1 sample of each of 1 to 3 of the nearest water supplies that could be affected by its discharge. b. 1 sample from a control location.	Composite sample over 2-week period[g] when I-131 analysis is performed, monthly composite otherwise.	I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year.[i] Composite for gross beta and gamma isotopic analyses[e] monthly. Composite for tritium analysis quarterly.
d. Sediment from shoreline	1 sample from downstream area with existing or potential recreational value.	Semiannually	Gamma isotopic analysis[e] semiannually.

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	*Number of Representative Samples and Sample Locations*[a]	*Sampling and Collection Frequency*	*Type and Frequency of Analysis*
4. INGESTION a. Milk	a. Samples from milking animals in 3 locations within 5 km distance having the highest dose potential. If there are none, then, 1 sample from milking animals in each of 3 areas between 5 to 8 km distant where doses are calculated to be greater than 1 mrem per yr[i]. b. 1 sample from milking animals at a control location 15-30 km distant and in the least prevalent wind direction.	Semimonthly when animals are on pasture, monthly at other times.	Gamma isotopic[e] and I-131 analysis semimonthly when animals are on pasture; monthly at other times.
b. Fish and Invertebrates	a. 1 sample of each commercially and recreationally important species in vicinity of plant discharge area. b. 1 sample of same species in areas not influenced by plant discharge.	Sample in season, or semiannually if they are not seasonal.	Gamma isotopic analysis[e] on edible portions.
c. Food Products	a. 1 sample of each principal class of food products from any area that is irrigated by water in which liquid plant wastes have been discharged.	At time of harvest[j].	Gamma isotopic analyses[e] on edible portions.
	b. Samples of 3 different kinds of broad leaf vegetation grown nearest each of two different offsite locations of highest predicted 5-year averages level D/Q if locations are available and milk sampling is not performed.	Monthly when available.	Gamma isotopic[e] and I-131 analysis.
	c. 1 sample of each of the similar broad leaf vegetation grown 15-30 km distant in the least prevalent wind direction if milk sampling is not performed.	Monthly when available.	Gamma isotopic[e] and I-131 analysis.

TABLE 3.12.1-1 (Continued)

TABLE NOTATIONS

[a] Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 3.12.1-1 in a table in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable specific alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. Pursuant to Control 5.9.1.8, identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report and also include in the report a revised table for the ODCM reflecting the new location(s).

[b] One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purpose of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The frequency of analysis or readout for TLD systems will depend upon the characteristics of the specific system used and should be selected to obtain optimum dose information with minimal fading.

[c] The purpose of this sample is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites that have valid background data may be substituted.

[d] Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than 10 times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

[e] Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

TABLE 3.12.1-1 (Continued)

TABLE NOTATION

[f] The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in an area beyond but near the mixing zone. "Upstream" samples in an estuary must be taken far enough upstream to be beyond the plant influence.

[g] Composite samples should be collected with equipment (or equivalent) which is capable of collecting an aliquot at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly).

[h] Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

[i] The dose shall be calculated for the maximum organ and age group, using the methodology and parameters in the ODCM.

[j] If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attention shall be paid to including samples of tuberous and root food products.

TABLE 3.12.1-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Reporting Levels

Analysis	***Water (pCi/l)***	***Airborne Particulate or Gases (pCi/m^3)***	***Fish (pCi/kg, wet)***	***Milk (pCi/l)***	***Food Products (pCi/kg, wet)***
H-3	20,000*	---	---	---	---
Mn-54	1,000	---	30,000	---	---
Fe-59	400	---	10,000	---	---
Co-58	1,000	---	30,000	---	---
Co-60	300	---	10,000	---	---
Zn-65	300	---	20,000	---	---
Zr-Nb-95	400	---	---	---	---
I-131	2	0.9	---	3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200	---	---	300	---

* For drinking water samples. This is 40 CFR Part 141 value.

TABLE 4.12.1-1

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS [a]

LOWER LIMIT OF DETECTION (LLD)[b,c]

Analysis	*Water (pCi/l)*	*Airborne Particulate or Gases (pCi/m^3)*	*Fish (pCi/kg, wet)*	*Milk (pCi/l)*	*Food Products (pCi/kg, wet)*	*Sediment (pCi/kg, dry)*
gross beta	4	0.01	---	---	---	---
H-3	2000	---	---	---	---	---
Mn-54	15	---	130	---	---	---
Fe-59	30	---	260	---	---	---
Co-58,60	15	---	130	---	---	---
Zn-65	30	----	260	---	---	---
Zr-Nb-95	15	---	---	---	---	---
I-131	1[d]	0.07	---	1	60	---
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-La-140	15	---	---	15	---	---

TABLE 4.12.1-1 (Continued)

TABLE NOTATIONS

[a] This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

[b] Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13.

[c] The LLD is defined, for purposes of these Controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$\mathrm{LLD} = \frac{4.66 \bullet s_b}{E \bullet V \bullet 2.22 \ \bullet Y \bullet \exp\left(-\lambda t\right)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as picocuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22 is the number of disintegrations per minute per picocurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

t for environmental samples is the elapsed time between sample collection, or end of the sample collection period, and time of counting

Typical values of E, V, Y, and t should be used in the calculation.

TABLE 4.12.1-1 (Continued)

TABLE NOTATIONS

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

[d] LLD for drinking water samples.

3/4.12.2 LAND USE CENSUS

CONTROLS

3.12.2 A land use census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest meat animal, the nearest residence and the nearest garden* of greater than 50 m^2 (500 ft^2) producing broad leaf vegetation.

APPLICABILITY: At all times.

ACTION:

a. With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Surveillance Requirement 4.11.2.3, identify the new location(s) in the next Annual Radioactive Effluent Release Report, pursuant to Control 5.9.1.8.

b. With a land use census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20% greater than at a location from which samples are currently being obtained in accordance with Control 3.12.1, add the new location(s) to the radiological environmental monitoring program within 30 days. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after October 31 of the year in which this land use census was conducted. Pursuant to Control 5.9.1.8, identify the new location(s) in the next Annual Radioactive Effluent Release Report and also include in the report a revised table for the ODCM reflecting the new location(s).

c. The provisions of Control 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.2 The land use census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, visual survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

*Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the SITE BOUNDARY in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census. Controls for broad leaf vegetation sampling in Table 3.12.1-1, Part 4.c, shall be followed, including analysis of control samples.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

CONTROLS

3.12.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which is audited periodically by Fermi 2 Quality Assurance.

APPLICABILITY: At all times.

ACTION:

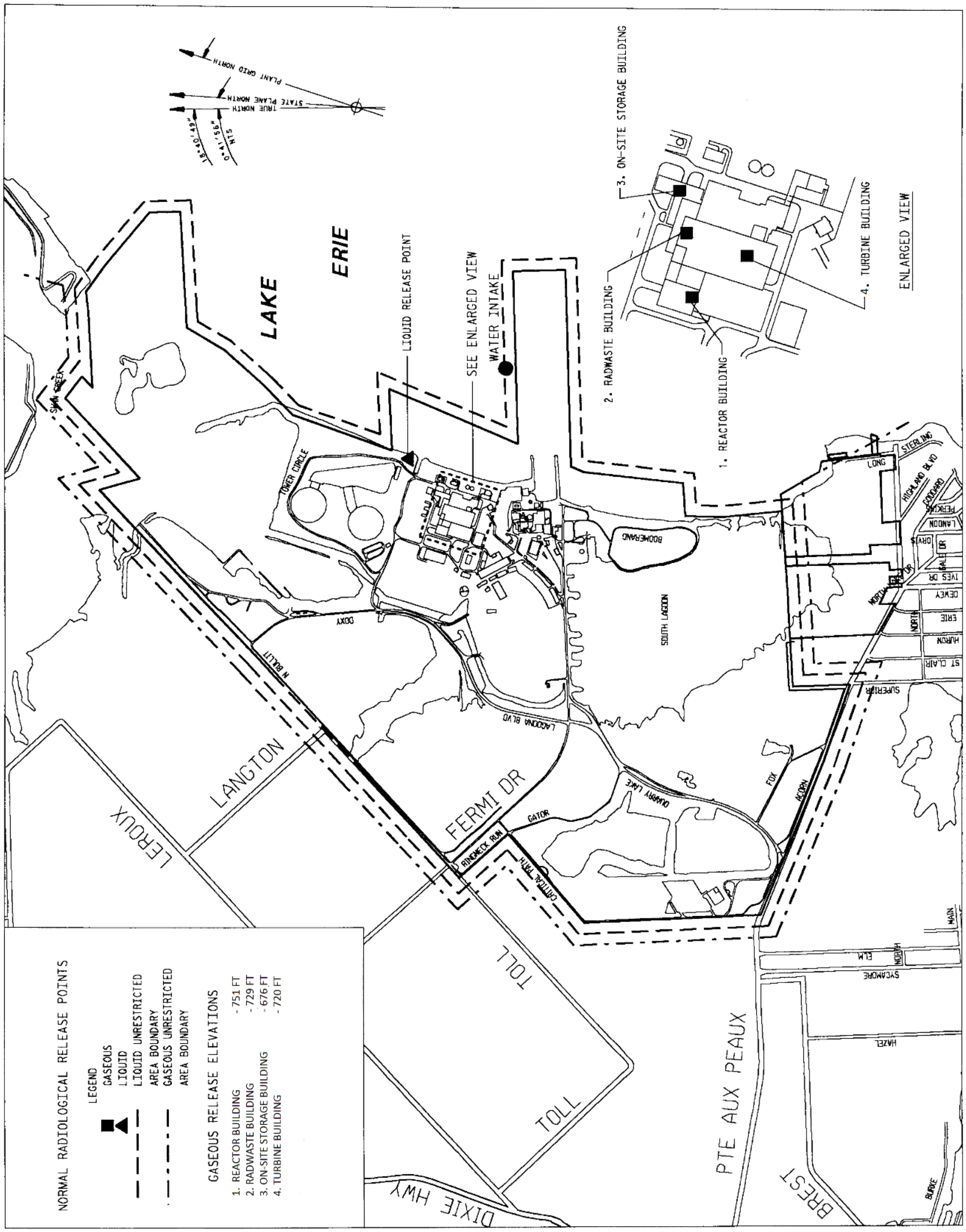
a. With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

b. The provisions of Controls 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.3 The Interlaboratory Comparison Program shall be described in the ODCM. A summary of the results obtained as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report pursuant to Control 5.9.1.7.

Figure 3.0-1
MAP DEFINING UNRESTRICTED AREA AND SITE BOUNDARY FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS



END OF SECTION 3.0

SECTION 4.0

BASES

3/4.3.7.11 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

The radioactive liquid effluent monitoring instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The FUNCTIONAL CAPABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

3/4.3.7.12 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

The radioactive gaseous effluent monitoring instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM utilizing the system design flow rates as specified in the ODCM. This conservative method is used because the Fermi 2 design does not include flow rate measurement devices. This will ensure the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The FUNCTIONAL CAPABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

3/4.11.1 LIQUID EFFLUENTS

3/4.11.1.1 CONCENTRATION

This control is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than ten times the concentration levels specified in 10 CFR Part 20, Appendix B, Table 2, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to a MEMBER OF THE PUBLIC and (2) the limits of 10 CFR Part 20.1301 to a MEMBER OF THE PUBLIC. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its MPC in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission on Radiological Protection (ICRP) Publication 2.

The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in HASL Procedure Manual, HASL-300 (revised annually), Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

3/4.11.1.2 DOSE

This control is provided to implement the requirements of Sections II.A, III.A, and IV.A of Appendix I, 10 CFR Part 50. The control implements the guides set forth in Section II.A of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents to UNRESTRICTED AREAS will be kept "as low as is reasonably achievable." Also, for fresh water sites with drinking water supplies that can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR Part 141. The dose calculation methodology and parameters in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data, such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents are consistent with the methodology provided in NUREG-0133, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977.

3/4.11.1.3 LIQUID RADWASTE TREATMENT SYSTEM

The FUNCTIONAL CAPABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment prior to their release to the environment. The requirement that the appropriate portions of this system be used, when specified, provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonably achievable". This specification implements the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50 and the design objective given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

3/4.11.2 GASEOUS EFFLUENTS

3/4.11.2.1 DOSE RATE

This control is provided to provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in exposure of a MEMBER OF THE PUBLIC in excess of the design objectives of Appendix I to 10 CFR part 50.

3/4.11.2.1 DOSE RATE (Continued)

Although this control applies to the SITE BOUNDARY, the occupancy and exposure pathways applicable to a MEMBER OF THE PUBLIC who may at times be within the SITE BOUNDARY will usually be such that such an individual will not receive significantly greater dose due to gaseous effluents than a MEMBER OF THE PUBLIC who remains outside the SITE BOUNDARY. Examples of calculations for such MEMBERS OF THE PUBLIC, with the appropriate occupancy factors, shall be given in the ODCM. The specified dose rate limits restrict, at all times, the dose rates above background to a MEMBER OF THE PUBLIC at or beyond the SITE BOUNDARY to less than or equal to 500 mrems/year to the total body or to less than or equal to 3000 mrems/year to the skin. These dose rate limits also restrict, at all times, the thyroid dose rates above background to a child via the inhalation pathway to less than or equal to 1500 mrems/year.

The required detection capabilities for radioactive materials in gaseous waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in HASL Procedures Manual, HASL-300 (revised annually), Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

3/4.11.2.2 DOSE - NOBLE GASES

This control is provided to implement the requirements of Sections II.B, III.A, and IV.A of Appendix I, 10 CFR Part 50. The control implements the guides set forth in Section II.B of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents to UNRESTRICTED AREAS will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The dose calculation methodology and parameters established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. The ODCM equations provided for determining the air doses at and beyond the SITE BOUNDARY are based upon the historical 5-year averages atmospheric conditions.

3/4.11.2.3 DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

This control is provided to implement the requirements of Sections II.C, III.A, and IV.A of Appendix I, 10 CFR Part 50. The controls are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents to UNRESTRICTED AREAS will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data, such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methodology and parameters for calculating the doses due to the actual release rates of the subject materials are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical 5-year average atmospheric conditions. The release rate controls for iodine-131, iodine-133, tritium, and radionuclides in particulate form with half lives greater than 8 days are dependent upon the existing radionuclide pathways to man, in the areas at and beyond the SITE BOUNDARY. The pathways that were examined in the development of these calculations were: (1) individual inhalation of airborne radionuclides, (2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, (3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and (4) deposition on the ground with subsequent exposure of man.

3/4.11.2.4 OFF-GAS TREATMENT SYSTEM

The FUNCTIONAL CAPABILITY of the OFF-GAS TREATMENT SYSTEM ensures that the system will be available for use whenever gaseous effluents require treatment prior to release to the environment. The requirement that the appropriate portions of these systems be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." This control implements the requirements of General Design Criteria 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3/4.11.2.5 VENTILATION EXHAUST TREATMENT SYSTEM

The requirement that the appropriate portions of this system be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3/4.11.2.8 VENTING OR PURGING

This control provides reasonable assurance that releases from primary containment purging operations will not exceed the annual dose limits of 10 CFR Part 20 for UNRESTRICTED AREAS.

3/4.11.4 TOTAL DOSE

This control is provided to meet the dose limitations of 40 CFR Part 190 that have been incorporated into 10 CFR Part 20 by 46 FR 18525. The control requires the preparation and submittal of a Special Report whenever the calculated doses from plant generated radioactive effluents and direct radiation exceed 25 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems. For sites containing up to 4 reactors, it is highly unlikely that the resultant dose to a member of the public will exceed the dose limits of 40 CFR Part 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the reactor units and outside storage tanks are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a member of the public to within the 40 CFR Part 190 limits. For the purpose of the Special Report, it may be assumed that the dose commitment to the member of the public from other than uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 8 km must be considered. If the dose to any member of the public is estimated to exceed the requirements of 40 CFR Part 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR Part 190 have not already been corrected), in accordance with the provisions of 40 CFR Part 190.11 and 10 CFR Part 20.2203, is considered to be a timely request and fulfills the requirements of 40 CFR Part 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR Part 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR Part 20, as addressed in Controls 3.11.1.1 and 3.11.2.1. An individual is not considered a member of the public during any period in which he/she is engaged in carrying out any operation that is part of the nuclear fuel cycle.

3/4.12.1 MONITORING PROGRAM

The radiological environmental monitoring program required by this control provides representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of MEMBERS OF THE PUBLIC resulting from the station operation. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR Part 50 and thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Guidance for this monitoring program is provided by the Radiological Assessment Branch Technical Position on Environmental Monitoring. The initially specified monitoring program will be effective for at least the first 3 years of commercial operation. Following this period, program changes may be initiated based on operational experience.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 4.12.1-1 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in HASL Procedure Manual, HASL-300 (revised annually), Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

3/4.12.2 LAND USE CENSUS

This control is provided to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the radiological environmental monitoring program are made if required by the results of this census. The best information from the door-to-door survey, from aerial survey, from visual survey or from consulting with local agricultural authorities shall be used. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 50 m^2 provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were made: (1) 20% of the garden was used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and (2) a vegetation yield of 2 kg/m^2.

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

The requirement for participation in an Interlaboratory Comparison Program which is audited periodically is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR Part 50.

END OF SECTION 4.0

SECTION 5.0

ADMINISTRATIVE CONTROLS

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

5.9.1.7 Routine Annual Radiological Environmental Operating Reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year. The initial report shall be submitted prior to May 1 of the year following initial criticality.

The Annual Radiological Environmental Operating Reports shall include summaries, interpretations, and an analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison as appropriate, with preoperational studies, with operational controls, and with previous environmental surveillance reports, and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of land use censuses required by Control 3.12.2. The Annual Radiological Environmental Operating Reports shall include the results of analysis of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in Table 10.0-1 in the ODCM, as well as summarized and tabulated results of these analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. If possible, the missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program; one or more tables covering all sampling locations; the results of licensee participation in the Interlaboratory Comparison Program, required by Control 3.12.3; discussion of all deviations from the sampling schedule of Table 3.12.1-1; and discussion of all analyses in which the LLD required by Table 4.12.1-1 was not achievable.

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT*

5.9.1.8 Routine Annual Radioactive Effluent Release Reports covering the operation of the unit during the previous year of operation shall be submitted prior to May 1 of each year. The period of the first report shall begin with the date of initial criticality.

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*A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Continued)

The Annual Radioactive Effluent Release Report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

The Annual Radioactive Effluent Release Report shall include an annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing on an electronic medium of wind speed, wind direction, atmospheric stability, and precipitation (if measured), or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability.*** This same report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year. This same report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY (Figure 3.0-1) during the report period. All assumptions used in making these assessments, i.e., specific activity, exposure time and location, shall be included in these reports. The assessment of radiation doses shall be performed in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

The Annual Radioactive Effluent Release Report shall also include an assessment of radiation doses to the likely most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operation. The assessment of radiation doses shall be performed in accordance with methodology and parameters in the ODCM.

The Annual Radioactive Effluent Release Reports shall include the following information for each class of solid waste (as defined by 10 CFR Part 61) shipped offsite during the report period:

a. Total volume in all containers,

b. Total curie quantity (specify whether determined by measurement or estimate),

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***In lieu of submission with the Annual Radioactive Effluent Release Report, the licensee has the option of retaining this summary of required meteorological data on site in a file that shall be provided to the NRC upon request.

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Continued)

c. Principal radionuclides (specify whether determined by measurement or estimate),

d. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),

e. Type of container (e.g.,Type A, Type B, General Design Packages), and

f. Solidification agent or absorbent (e.g., cement, urea formaldehyde).

The Annual Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site to UNRESTRICTED AREAS of radioactive materials in gaseous and liquid effluents made during the reporting period.

The Annual Radioactive Effluent Release Reports shall include any changes made during the reporting period to the OFFSITE DOSE CALCULATION MANUAL (ODCM) as described in Technical Specification 5.5.1.3, as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census pursuant to Control 3.12.2.

The Annual Radioactive Effluent Release Reports shall also include the following: an explanation as to why the not FUNCTIONALLY CAPABLE status of liquid or gaseous effluent monitoring instrumentation was not corrected within the time specified in Control 3.3.7.11 or 3.3.7.12, respectively; and description of the events leading to liquid holdup tanks exceeding the limits of Technical Specification 5.5.8.6.

The Annual Radioactive Effluent Release Reports shall include the results of analysis of all onsite groundwater and rainwater sampling and a description of any detected onsite radioactive leaks or spills into groundwater. Any groundwater related events, or groundwater sample results exceeding ODCM REMP reporting thresholds, voluntarily communicated per NEI 07-07, Objective 2.2 shall also be described in these reports (NEI 07-07 Acceptance Criterion 2.4.c).

5.15 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS*

5.15.1 Licensee-initiated major changes to the radioactive waste systems (liquid, gaseous, and solid):

a. Shall be reported to the Commission in the Annual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the OSRO. The discussion of each change shall contain:

   1. A summary of the evaluation that led to the determination that the change could be made in accordance with 10 CFR 50.59.

   2. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information;

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*Licensees may choose to submit the information called for in this Control as part of the UFSAR revision in accordance with 10 CFR 50.71(e).

3. A detailed description of the equipment, components, and processes involved and the interfaces with other plant systems;

4. An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto;

5. An evaluation of the change, which shows the expected maximum exposures to a MEMBER OF THE PUBLIC in the UNRESTRICTED AREA and to the general population that differ from those previously estimated in the license application and amendments thereto;

6. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made;

7. An estimate of the exposure to plant operating personnel as a result of the change; and

8. Documentation of the fact that the change was reviewed and found acceptable by the OSRO.

b. Shall become effective upon review and acceptance by the OSRO.

END OF SECTION 5.0

PART II - CALCULATIONAL METHODS

SECTION 6.0

LIQUID EFFLUENTS

6.0 LIQUID EFFLUENTS

This section summarizes information on the liquid effluent radiation monitoring instrumentation and controls. More detailed information is provided in the Fermi 2 UFSAR and Fermi 2 design drawings from which this summary was derived. This section also describes the sampling and analysis required by the Offsite Dose Calculation Manual. Methods for calculating alarm setpoints for the liquid effluent monitors are presented. Also, methods for evaluating doses from liquid effluents are provided.

6.1 Radiation Monitoring Instrumentation and Controls

This section summarizes the instrumentation and controls monitoring liquid effluents. This discussion focuses on the role of this equipment in assuring compliance with the Offsite Dose Calculation Manual.

6.1.1 Offsite Dose Calculation Manual (ODCM) 3.3.7.11 Requirement

Fermi 2 ODCM 3.3.7.11 prescribes the monitoring required during liquid releases and the backup sampling required when monitors are not FUNCTIONALLY CAPABLE.

The liquid effluent monitoring instrumentation for controlling and monitoring radioactive effluents in accordance with the Fermi 2 ODCM 3.3.7.11 is summarized below:

1. **Radiation Alarm - Automatic Release Termination**

    a. Liquid Radwaste Effluent Line - The D11-N007 Radiation Monitor on the liquid radwaste effluent line provides the alarm and automatic termination of liquid radioactive material releases prior to exceeding 1 Maximum Permissible Concentration (MPC) at the discharge to Lake Erie, as required by ODCM 3.3.7.11. The monitor is located upstream of the Isolation Valve (G11-F733) on the liquid radwaste discharge line and monitors the concentration of liquid effluent before dilution by the circulating water reservoir (CWR) decant flow.

2. **Radiation Alarm (only)**

    a. Circulating Water Reservoir (CWR) Decant Line - The CWR Decant Line Radiation Monitor (D11-N402) provides indication of the concentration of radioactive material in the diluted radioactive liquid releases just before discharge to Lake Erie. As required by ODCM 3.3.7.11, the alarm setpoint is established to alarm (only) prior to exceeding one MPC.

3. Flow Rate Measuring Devices

a. Liquid Radwaste Effluent Line - In accordance with ODCM 3.3.7.11, the release rate of liquid radwaste discharges is monitored by G11-R703. This flow rate instrumentation is located on the radwaste discharge line prior to the junction with the CWR decant line.

b. Circulating Water Reservoir Decant Line - The flow rate measuring device for the CWR decant line has been removed. The flow rate of the CWR decant line is now measured using certified pump performance curves for the CWR decant pumps, together with readings from pump discharge pressure gauges and reservoir level indication.

6.1.2 Non-ODCM Required Monitor

An additional monitor not required by Fermi 2 ODCM is provided by DTE Energy to reduce the likelihood of an unmonitored release of radioactive liquids.

1. General Service Water - The General Service Water (GSW) Radiation Monitor (D11-N008) provides additional control of potential radioactive effluents. D11-N008 monitors the GSW System prior to discharge into the Main Condenser circulating water discharge line to the Circulating Water Reservoir. Although not an ODCM required monitor, D11-N008 monitors a primary liquid stream in the plant that also discharges to the environment (Lake Erie via the Circulating Water Reservoir). Indication of radioactive material contamination in the GSW System would also indicate potential CWR contamination and the need to control all discharges from the CWR as radioactive effluents.

6.2 Sampling and Analysis of Liquid Effluents

The program for sampling and analysis of liquid waste is prescribed in the Fermi 2 Offsite Dose Calculation Manual Table 4.11.1.1.1-1. This table distinguishes two types of liquid releases: a) BATCH releases, defined as discrete volumes, from the Waste Sample Tanks (normally after processing through the radwaste system), and b) CONTINUOUS releases, from the Circulating Water Reservoir (CWR) System, if it becomes contaminated.

Continuous releases from the CWR System are via the CWR decant line to Lake Erie. The CWR System is not expected to become contaminated. Therefore, continuous radioactive material releases are not expected. However, the General Service Water (GSW) and the CWR systems interface with radioactive systems in the plant. Also, the GSW intake is within a few hundred feet of the CWR decant line discharge to Lake Erie. For these reasons, it is prudent to consider the GSW and the CWR a potential source of radioactive effluents and to sample them regularly.

6.2.1 BATCH Releases

Fermi 2 ODCM Table 4.11.1.1.1-1 requires that a sample representative of the tank contents be obtained before it is released. The table specifies the following program:

- Prior to sampling, the tank is isolated. The tank level is determined and this value is converted to tank volume. A pump with a known recirculation flow rate is then activated to recirculate tank contents. The pump is allowed to run for at least the time required to recirculate the tank volume twice.

- Prior to each batch release, analysis for principal gamma emitters and dissolved and entrained gases (including all peaks identified by gamma spectroscopy)

- Once per month, analysis of a composite sample of all releases that month for tritium (H-3) and gross alpha activity. (The composite sample is required to be representative of the liquids released and sample quantities of the composite are to be proportional to the quantities of liquid discharged).

- Once per quarter, analysis of a composite sample of all releases that quarter for Strontium (Sr)-89, Sr-90, and Iron (Fe)-55.

6.2.2 CONTINUOUS Releases

Fermi 2 ODCM Table 4.11.1.1.1-1 requires that composite samples be collected from the CWR System, if contaminated. The table specifies the following sample analysis:

- Once per month, analysis of a composite sample for principal gamma emitters and for I-131.
- Once per month, analysis of a composite sample for H-3 and gross alpha.
- Once per month, analysis of weekly grab samples (composited) for dissolved and entrained gases (gamma emitters).
- Once per quarter, analysis for Sr-89, Sr-90 and Fe-55.

6.3 Liquid Effluent Monitor Setpoints

Offsite Dose Calculation Manual 3.11.1.1 requires that the concentration of liquid radioactive effluents not exceed the unrestricted area MPC at the discharge point to Lake Erie. Dissolved or entrained noble gases in liquid effluents are limited to a concentration of 2 E-04 µCi/ml, total noble gas activity. ODCM 3.3.7.11 requires that radiation monitor setpoints be established to alarm prior to exceeding the limits of ODCM 3.11.1.1.

To meet this specification, the alarm setpoints for liquid effluent monitors are determined in accordance with the following equation:

$$SP \leq \frac{CL(DF + RR)}{RR} \tag{6-1}$$

Where:

SP = the setpoint, in µCi/ml, of the monitor measuring the radioactivity concentration in the effluent line prior to dilution. The setpoint represents a value which, if exceeded, would result in concentrations exceeding the MPC in the unrestricted area

CL = the effluent concentration limit (ODCM 3.11.1.1) corresponding to ten times the limits of 10 CFR Part 20.1302.b.2.i at the discharge point in µCi/ml, defined in Equation (6-4)

RR = the liquid effluent release rate as measured at the radiation monitor location, in volume per unit time, but in the same units as DF, below

DF = the dilution water flow as measured prior to the release point (Lake Erie) in volume per unit time

At Fermi 2 the available Dilution Water Flow (DF) is essentially constant for a given release, and the waste tank Release Rate (RR) and monitor Setpoint (SP) are set to meet the condition of Equation (6-1) for a given effluent Concentration Limit, CL.

NOTE: If no dilution is provided, SP $\leq$ CL. Also, when DF is large compared to RR, then (DF + RR)$\simeq$DF, and DF may be used instead of (DF + RR) as a simplification, as in Equation (6-5).

6.3.1 Liquid Radwaste Effluent Line Monitor

The Liquid Radwaste Effluent Line Monitor D11-N007 provides alarm and automatic termination of releases prior to exceeding MPC. As required by ODCM Table 4.11.1.1.1-1 and as discussed in ODCM Section 6.2.1, a sample of the liquid radwaste to be discharged is collected and analyzed by gamma spectroscopy to identify principal gamma emitting radionuclides. From the measured individual radionuclide concentrations, the allowable release rate is determined.

The allowable release rate is inversely proportional to the ratio of the radionuclide concentrations to the MPC values. The ratio of the measured concentration to MPC values is referred to as the "MPC fraction" and is calculated by the equation:

$$MPCF = \sum \frac{C_i}{MPC_i} \tag{6-2}$$

Where:

MPCF = fraction of the unrestricted area MPC for a mixture of gamma emitting radionuclides

C_i = concentration of each gamma emitting radionuclide i measured in each tank prior to release (µCi/ml)

MPC_i = unrestricted area most restrictive MPC for each radionuclide i: ten times the value from 10 CFR Part 20, Appendix B, Table 2, Column 2. For dissolved and entrained noble gases an MPC value of 2E-04 µCi/ml may be used, but noble gases need not be included in this calculation.

Including noble gases in Equation (6-2) eliminates the need for a separate evaluation of compliance with the noble gas concentration limit of ODCM 3.11.1.1.

Based on the MPCF, the maximum allowable release rate can be calculated by the following equation:

$$MAX\,RR \leq \frac{DF}{\left(MPCF * \left(1 + BF\right)\right) + H3MPCF} * SF \tag{6-3}$$

Where:

MAX RR = maximum acceptable waste tank discharge rate (gal/min) (Monitor #G11-R703)

DF = dilution flow rate from the CWR decant line, measured as described in ODCM section 6.1.1.3.b.

SF = administrative safety factor to account for variations in monitor response and flow rates. A SF value of 0.5 is suggested because it provides for 100% variation caused by statistical fluctuation and/or errors in measurements.

BF = conservative estimate of the ratio of the MPC fraction of pure beta emitters other than tritium to the gamma MPC fraction (MPCF) (The value 0.10 may be used for BF.)

MPCF = As previously defined by equation (6-2)

H3MPCF = conservative estimate of MPC fraction due to tritium (The value 0.13 may be used for H3MPCF.)

NOTE: Equation (6-3) is valid only for MPCF >1; if the MPCF ≤1, the waste tank concentration meets the limits of 10 CFR Part 20 without dilution, and the tank may be discharged at the maximum rate

If MAX RR as calculated above is greater than the maximum discharge pump capacity, the pump capacity should be used in establishing the actual Release Rate RR for the radwaste discharge. For a Waste Sample Tank, the maximum discharge rate is 50 gallons per minute. This Release Rate RR is monitored in the Radwaste Control Room by G11-R703.

The Concentration Limit (CL) of a liquid radwaste discharge is the same as the effective MPC for the radionuclide mixture of the discharge. Simply, the CL (or effective MPC) represents the equivalent MPC value for a mixture of radionuclides evaluated collectively. The equation for determining CL is:

$$CL = \frac{\sum C_i}{MPCF} \tag{6-4}$$

Based on the Release Rate RR and Dilution Flow DF and by substituting Equation (6-4) for CL in Equation (6-1) and introducing sensitivity factors and factors to account for the presence of pure beta emitters, the alarm setpoint is calculated by the equation:

$$SP \leq \frac{\sum (C_i * SEN_i) * DF * H3F * SF}{MPCF * (1 + BF) * RR} + Bkg \tag{6-5}$$

Where:

SP = setpoint of the radiation monitor counts per second (cps) or counts per minute (cpm)

C_i = concentration of radionuclide i as measured by gamma spectroscopy (µCi/ml)

SEN_i = monitor sensitivity for radionuclide i based on calibration curve (cps/(µCi/ml) or cpm/(µCi/ml)) or single conservative value for all radionuclides (see below)

RR = actual release rate of the liquid radwaste discharge (gal/min)

BF = pure beta factor as defined for Equation (6-3)

MPCF = MPC fraction as determined by Equation (6-2)

H3F = correction factor to account for estimated tritium concentration at the discharge point (The value 0.99 may be used.)

Bkg = background reading of monitor (cps)

DF = dilution flow rate from the CWR decant line, measured as described in ODCM section 6.1.1.3.b. Also see note preceding Section 6.3.1.

SF = 1.0 when a single conservative sensitivity value is used; 0.5 when individual nuclide sensitivity factors are used

The sensitivity of Cr-51 determined from the primary calibration sensitivity curves may be used as a single conservative value for SENj above. The Cr-51 sensitivity has been determined to be conservative based on the nuclide mixes which have been seen in actual liquid discharges from Fermi 2. For the D11-N007 monitor, a monitor sensitivity value of 1.0 E6 cps/(μCi/ml) may be used as the single conservative value of SENj.

If no radionuclides are measured by gamma spectroscopy, the alarm setpoint can be established at one half the setpoint of the most recent discharge for which radionuclides were detected by gamma spectroscopy.

Prior to conducting any batch liquid radwaste release, Equation (6-3) is used to determine the allowable release rate in accordance with ODCM 3.11.1.1. Equation (6-5) is used to determine the alarm setpoint in accordance with ODCM 3.3.7.11.

6.3.2 Circulating Water Reservoir Decant Line Radiation Monitor (D11-N402)

ODCM 3.3.7.11 requires that the setpoint for the CWR Decant Line Radiation Monitor D11-N402 be established to ensure the radioactive material concentration in the decant line prior to discharge to Lake Erie does not exceed MPC, unrestricted area (ten times 10 CFR 20, Appendix B, Table 2, Column 2 values). The approach for determining the alarm setpoint for the CWR Decant Line Radiation Monitor is the same as presented in Section 6.3.1. However, the CWR Decant Line Radiation Monitor setpoint need not be changed prior to each release. Equation (6-1) remains valid, except that, for the CWR Decant Line Monitor, the dilution flow previously assumed for diluting the BATCH liquid radwaste effluents is now the release rate. There is no additional dilution prior to discharge to Lake Erie. Thus, Equation (6-1) simplifies to:

$$SP \leq CL \tag{6-6}$$

Substituting Equation (6-4) for CL and introducing a safety factor, sensitivity factors, and monitor background, the D11-N402 alarm setpoint can be calculated by the equation:

$$SP \leq \frac{\sum (C_i * SEN_i) * SF}{MPCF} + Bkg \tag{6-7}$$

Where:

SP = setpoint in counts per minute (cpm)

C_i = concentration of each radionuclide i in the CWR decant line effluent (µCi/ml)

SEN_i = monitor sensitivity for nuclide i based on calibration curve (cpm/(µCi/ml))

MPCF = MPC fraction as determined by Equation (6-2) with C_i defined as for Equation (6-7)

SF = 0.5, administrative safety factor

Bkg = background reading of monitor (cpm)

Normally, only during periods of batch liquid radwaste discharges will there exist any plant-related radioactive material in the CWR decant line.

6.3.3 Generic, Conservative Alarm Setpoint for D11-N402

The D11-N402 setpoint could be adjusted for each BATCH release as is done for the liquid radwaste effluent line monitor. Based on the measured levels of radioactive material in a BATCH liquid release, the alarm setpoint for D11-N402 could be calculated using Equation (6-7). However, during these planned releases, the concentrations will almost always be so low (due to dilution) that the D11-N402 Monitor will not indicate measurable levels. The CWR decant line design flow is 10,000 gpm; and the maximum liquid radwaste release rate is 50 gpm, providing a 200:1 dilution. The radioactive material concentration of BATCH liquid releases is typically in the range of 1×10^{-7} to 1×10^{-4} µCi/ml. With a nominal 200:1 dilution (actual dilution has been greater since in actual releases the decant line flow rate has been about 18,000 gpm), the CWR decant line monitor would monitor diluted activity in the range of 5×10^{-10} to 5×10^{-7} µCi/ml. D11-N402 Monitor response at these levels would be 0.1 to 100 cpm, depending on the particular radionuclide mixture and corresponding instrument response. These response levels are less than the monitor background levels.

In lieu of routinely adjusting the D11-N402 setpoints, generic, conservative setpoints have been established based on an analysis of nuclides seen in actual liquid discharges and on the primary calibration sensitivity curve.

6.3.4 Alarm Setpoint for GSW and RHR System Radiation Monitors

Levels of radioactive material detectable above background at Radiation Monitor D11-N008 would be one of the first indicators of contamination of the General Service Water (GSW) System and the CWR. Likewise, for the Residual Heat Removal (RHR) System, the D11-N401 A and B Monitors would be one of the first indicators of contamination and subsequent contamination of the CWR. Therefore, to provide early indication and assure prompt attention, the alarm setpoints for these monitors should be established as close to background as possible without incurring a spurious alarm due to background fluctuations. This level is typically around three times background.

If the GSW System or RHR System becomes contaminated, it may become necessary to raise the radiation monitor setpoints. The alarm setpoints should be re-evaluated to provide the CR operator a timely indication of further increasing activity levels in the GSW or RHR System without spurious alarms. The method for this re-evaluation is the same as described above - the alarm setpoint established at three times its current reading. No regulatory limits apply for establishing a maximum value for these alarm setpoints since these monitors are located on plant systems and do not monitor final release points to the environment. However, as a practical matter, upper limits on the alarm setpoints can be evaluated using the methods of ODCM Section 6.3.1 based on the actual system flows, dilution and release paths in effect at the time.

6.3.5 Alarm Response - Evaluating Actual Release Conditions

Normally, liquid release rates are controlled and alarm setpoints are established to ensure that the release does not exceed the concentration limits of ODCM 3.11.1.1 at the discharge to Lake Erie. However, if either Monitor D11-N007 or D11-N402 alarms during a liquid release, it becomes necessary to re-evaluate the release conditions to determine compliance with ODCM 3.11.1.1. Following an alarm, the actual release conditions should be determined. Radioactive material concentrations should be evaluated by sampling the effluent stream or resampling the waste tank. Discharge flow and dilution water flow should be redetermined.

To perform this evaluation, the following equation may be used for all nuclides, or dissolved and entrained noble gases may be evaluated separately from other nuclides using this equation:

$$\left[\sum\left(\frac{C_i}{MPC_i}\right) * \frac{RR}{DF + RR} * \frac{(1 + BF)}{H3F}\right] \leq 1$$

(6-8)

Where:

C_i = measured concentration of radionuclide i in the effluent stream (µCi/ml)

MPC_i = the MPC value for radionuclide i: ten times the 10 CFR 20, Appendix B, Table 2, Column 2 value (µCi/ml); 2 E-04 µCi/ml for dissolved or entrained noble gases

RR = actual release rate of the liquid effluent at the time of the alarm, gpm

DF = actual dilution circulating water flow at the time of the release alarm, gpm

H3F,BF = as previously defined

NOTE: For alarm on D11-N402 (CWR decant line), the Release Rate RR is the Dilution Water Flow DF and the DF term drops out of the equation.

6.3.6 Liquid Radwaste Monitor Setpoint Determination with Contaminated Circulating Water Reservoir

In the event the CWR is determined to contain radioactive material, the effective dilution capacity of the CWR is reduced as a function of the MPCF. To determine the available dilution flow capacity the MPCF for the CWR is determined using equation (6-2). The MPCF of the CWR (CWRMPCF in equation 6-9) is used to determine the available dilution flow as follows:

$$\text{CWR Dilution Flow} = \text{CWR Decant Flow Rate (GPM)} * (1\text{-CWRMPCF}) \qquad (6\text{-}9)$$

The resulting dilution flow rate is substituted in equation (6-3) to determine the maximum allowable release rate for discharges from the radwaste system. Substituting the available CWR dilution flow from equation (6-9), the Liquid Radwaste Monitor maximum release rate can be determined using equation (6-3).

Once the available dilution flow and maximum allowable release rate have been determined the radwaste monitor setpoint can be determined using equation (6-5).

6.4 Contaminated GSW or RHR System - Quantifying and Controlling Releases

The GSW Radiation Monitor (D11-N008) provides an indication of contamination of this system. The Monitors D11-N401 A and B perform this function for the RHR System. Also, the CWR Decant Line Radiation Monitor monitors all liquid releases from the plant and would record any release to Lake Erie from either of these systems if contaminated. As discussed in ODCM Section 6.2.2, sampling and analysis of the CWR System is required only if this system is contaminated, as would be indicated by D11-N402 or D11-N008. Nonetheless, periodic samples are collected from the CWR System to verify absence of contamination. Although not required by the ODCM, periodic sampling and analysis of the RHR System is also performed since it also is a potential source of contamination of the CWR and subsequent releases to Lake Erie. If contamination is found, further releases from the applicable system (GSW or RHR) via the CWR decant line must be evaluated and controlled to ensure that releases are maintained ALARA. The following actions will be considered for controlling releases.

- Sampling frequency of the applicable source (GSW or RHR System) and the CWR will be increased until the source of the contamination is found and controlled. This frequency may be relaxed after the source of contamination has been identified and isolated.

- Gamma spectral analysis will be performed on each sample.

- The measured radionuclide concentrations from the gamma spectral analysis will be compared with MPC (Equation 6-2) to ensure releases are within the limits of ODCM 3.11.1.1.

- Based on the measured concentrations, the setpoint for the CWR Decant Line Radiation Monitor (D11-N402) will be determined as specified in Section 6.3.2. If the calculated setpoint based on the measured distribution is greater than the current setpoint (see ODCM Section 6.3.3) no adjustment to the setpoint is required.

- Samples will be composited in accordance with ODCM Table 4.11.1.1.1-1 for monthly analysis for H-3 and gross alpha and for quarterly analysis for Sr-89, Sr-90 and Fe-55.

- Each sample will be considered representative of the releases that have occurred since the previous sample. For each sample (and corresponding release period), the volume of liquid released to the lake will be determined based on the measured CWR decant line cumulative flow.

- From the sample analysis and the calculated volume released, the total radioactive material released will be determined and considered representative of the release period. Cumulative doses will be determined in accordance with ODCM Section 6.5.

6.5 Liquid Effluent Dose Calculation - 10 CFR 50

The parameters of the liquid release (or estimated parameters, for a pre-release calculation) may be used to calculate the potential dose to the public from the release (or planned release). The dose calculation provides a conservative method for estimating the impact of radioactive effluents released by Fermi 2 and for comparing that impact against limits set by the NRC in the Fermi 2 ODCM. The limits in the Fermi 2 ODCM are specified as quarterly and calendar year limits. This assures that the average over the year is kept as low as reasonably achievable.

6.5.1 MEMBER OF THE PUBLIC Dose - Liquid Effluents

ODCM 3.11.1.2 limits the dose or dose commitment to MEMBERS OF THE PUBLIC from radioactive materials in liquid effluents from Fermi 2 to:

- during any calendar quarter;
  $\leq$ 1.5 mrem to total body
  $\leq$ 5.0 mrem to any organ

- during any calendar year;
  $\leq$ 3.0 mrem to total body
  $\leq$ 10.0 mrem to any organ

ODCM 4.11.1.2 requires that quarterly and annual cumulative dose due to liquid effluents be determined at least once per 31 days. The calculation of the potential doses to MEMBERS OF THE PUBLIC is a function of the radioactive material releases to the lake, the subsequent transport and dilution in the exposure pathways, and the resultant individual uptake. At Fermi 2, pre-operational evaluation of radiation exposure pathways indicated that doses from consumption of fish from Lake Erie provided the most conservative estimate of doses from releases of radioactive liquids. However, with the proximity of the water intakes for the City of Monroe and Frenchtown Township, it must be assumed that individuals will consume drinking water as well as fish that might contain radioactivity from discharges into Lake Erie.

Study of the currents in Lake Erie indicates that the current in the Lagoona Beach embayment carries liquid effluents from Fermi 2 north along the coast part of the time and south along the coast part of the time. When the current flows north, liquid effluents are carried away from the drinking water Intakes, so only the fish consumption exposure pathway must be considered. When the current flows south, toward the drinking water Intakes, both fish consumption and drinking water consumption exposure pathways must be considered. To ensure conservatism in the dose modeling, the combined fish and drinking water pathway is used for evaluating the maximum hypothetical dose to a MEMBER OF THE PUBLIC from liquid radioactive effluents. The following calculational methods may be used for determining the dose or dose commitment due to the liquid radioactive effluents from Fermi 2:

$$D_o = \frac{1.67\ E-02 * VOL}{DF * Z} * \sum (C_i * A_{io})$$

(6-10)

Where:

D_o = dose or dose commitment to organ o or total body (mrem) due to release of a single tank

A_{io} = site-specific ingestion dose commitment factor to the total body or any organ o for radionuclide i (mrem/hr per µCi/ml)

C_i = concentration of radionuclide i in undiluted liquid effluent representative of the volume VOL (µCi/ml)

VOL = total volume of liquid effluent released (gal)

DF = average dilution water flow (CWR decant line) during tank release (gal/min)

Z = 5, near field dilution factor
(Derived from Regulatory Guide 1.109, Rev 0)

1.67 E-02 = 1 hr/60 min

The site-specific ingestion dose/dose commitment factors (A_{io}) represents a composite dose factor for the fish and drinking water pathway. The site-specific dose factor is based on the NRC's generic maximum individual consumption rates. Values of A_{io} are presented in Table 6.0-1. They were derived in accordance with guidance of NUREG-0133 from the following equation:

$$A_{io} = 1.14\ E+05\ \left[(U_W / D_W) + (U_F * BF_i) \right] DF_i$$

(6-11)

Where:

U_F = 21 kg/yr adult fish consumption

U_W = 730 liters/yr adult water consumption

D_W = 13.4, additional dilution from the near field to the water intake for Frenchtown Township (Net dilution factor of 67 from discharge point to a point documented in Fermi 2 UFSAR, Chapter 11, which is closer to the discharge point than this drinking water intake)

BF_i = Bioaccumulation factor for radionuclide i in fish from Table 6.0-2 (pCi/kg per pCi/liter)

DF_i = dose conversion factor for nuclide i for adults in organ o from Table E-11 of Regulatory Guide 1.109 (mrem/pCi)

$$1.14\,\mathrm{E} + 05 = \frac{10^6 (pCi / uCi)\ * 10^3 (ml / kg)}{8760\ (hr / yr)}$$

The radionuclides included in the periodic dose assessment required by ODCM 3.11.1.2 are those identified by gamma spectral analysis of the liquid waste samples collected and analyzed per the requirements of ODCM Table 4.11.1.1.1-1. In keeping with the NUREG-0133 guidance, the adult age group represents the maximum exposed individual age group. Evaluation of doses for other age groups is not required for demonstrating compliance with the dose criteria of ODCM 3.11.1.2. The dose analysis for radionuclides requiring radiochemical analysis will be performed after receipt of results of the analysis of the composite samples. In keeping with the required analytical frequencies of ODCM Table 4.11.1.1.1-1, tritium dose analyses will be performed at least monthly; Sr-89, Sr-90 and Fe-55 dose analyses will be performed at least quarterly.

6.5.2 Contaminated CWR System - Dose Calculation

If the CWR System becomes contaminated, releases via the CWR System to Lake Erie must be included in the evaluation of the cumulative dose to a MEMBER OF THE PUBLIC as required by ODCM 3.11.1.2. ODCM Section 6.4 described the methods for quantifying and controlling releases from the CWR System.

For calculating the dose to a MEMBER OF THE PUBLIC, Equation (6-10) remains applicable for releases from the GSW System with the following assumptions:

- DF, Dilution Flow, is set equal to the average CWR decant line flow rate over the release period.
- C_i, Radionuclide Concentration, is determined as specified in ODCM Section 6.4.
- VOL, Volume Released, is set equal to the total volume of the discharges to Lake Erie via the CWR decant line as specified in Section 6.4.

6.6 Liquid Effluent Dose Projections

10 CFR 50.36a requires licensees to maintain and operate the Radwaste System to ensure releases are maintained ALARA. This requirement is implemented through ODCM 3.11.1.3. This section requires that the Liquid Radioactive Waste Processing System be used to reduce the radioactive material levels in the liquid waste prior to release when the projected dose in any 31 day period would exceed:

- 0.06 mrem to the total body, or
- 0.2 mrem to any organ

When the projected doses exceed either of the above limits, the waste must be processed by the Liquid Radwaste System prior to release. This dose criteria for processing is established at one forty eighth of the design objective rate (3 mrem/yr, total body or 10 mrem/yr any organ) in any 31 day period.

The applicable Liquid Waste Processing System for maintaining radioactive material releases ALARA is the Mixed Bed Demineralizers as delineated in Figure 6.0-1. Alternately, the Waste Evaporator (presented in the Fermi 2 UFSAR, Section 11.2) can be used to meet the NRC ALARA design requirements. It may be used in conjunction with or in lieu of the Mixed Bed Demineralizers to meet the waste processing requirements of ODCM 3.11.1.3.

Each BATCH release of liquid radwaste is evaluated to ensure that cumulative doses are maintained ALARA. In keeping with the requirements of ODCM 3.11.1.3, dose projections are made at least once per 31 days to evaluate the need for additional radwaste processing to ensure future releases are maintained ALARA.

The following equations may be used for the dose projection calculation:

$$D_{tbp} = D_{tb}(31 / d) \tag{6-14}$$

$$D_{\max p} = D_{\max}(31 / d) \tag{6-15}$$

Where:

D_{tbp} = the total body dose projection for the next 31 day period (mrem)

NOTE: The reference calendar quarter is normally the current calendar quarter. If there have been liquid releases in the previous quarter but not in the current quarter, the previous quarter should be used as the reference calendar quarter.

D_{tb} = the cumulative total body dose for all releases to date in the reference calendar quarter (normally the current quarter) as determined by equation (6-10) (mrem)

D_{maxp} = the maximum organ dose projection for the next 31 day period (mrem)

D_{max} = the cumulative maximum organ dose for all releases to date in the reference calendar quarter as determined by Equation (6-10) (mrem)

d = the number of days from the beginning of the reference calendar quarter to the date of the dose projection evaluation.

31 = the number of days in projection

TABLE 6.0-1

Fermi 2 Site Specific Liquid Ingestion Dose Commitment Factors
A_{io} (mrem/hr per uCi/ml)

Nuclide	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI−LLI
H-3	−	8.78E-1	8.78E-1	8.78E-1	8.78E-1	8.78E-1	8.78E-1
C-14	3.13E+4	6.26E+3	6.26E+3	6.26E+3	6.26E+3	6.26E+3	6.26E+3
Na-24	4.18E+2	4.18E+2	4.18E+2	4.18E+2	4.18E+2	4.18E+2	4.18E+2
P-32	1.39E+6	8.63E+4	5.36E+4	−	−	−	1.56E+5
Cr-51	−	−	1.29E+0	7.70E-1	2.84E-1	1.71E+0	3.24E+2
Mn-54	−	4.40E+3	8.40E+2	−	1.31E+3	−	1.35E+4
Mn-56	−	1.11E+2	1.97E+1	−	1.41E+2	−	3.54E+3
Fe-55	6.75E+2	4.67E+2	1.09E+2	−	−	2.60E+2	2.68E+2
Fe-59	1.07E+3	2.51E+3	9.60E+2	−	−	7.00E+2	8.35E+3
Co-57	−	2.20E+1	3.66E+1	−	−	−	5.59E+2
Co-58	−	9.38E+1	2.10E+2	−	−	−	1.90E+3
Co-60	−	2.69E+2	5.94E+2	−	−	−	5.06E+3
Ni-63	3.19E+4	2.21E+3	1.07E+3	−	−	−	4.62E+2
Ni-65	1.30E+2	1.68E+1	7.69E+0	−	−	−	4.27E+2
Cu-64	−	1.05E+1	4.92E+0	−	2.64E+1	−	8.94E+2
Zn-65	2.32E+4	7.38E+4	3.34E+4	−	4.94E+4	−	4.65E+4
Zn-69	4.94E+1	9.44E+1	6.57E+0	−	6.14E+1	−	1.42E+1
Br-82	−	−	2.28E+3	−	−	−	2.62E+3
Br-83	−	−	4.07E+1	−	−	−	5.86E+1
Br-84	−	−	5.27E+1	−	−	−	4.14E-4
Br-85	−	−	2.17E+0	−	−	−	1.01E-15
Rb-86	−	1.01E+5	4.71E+4	−	−	−	1.99E+4
Rb-88	−	2.90E+2	1.54E+2	−	−	−	4.01E-9
Rb-89	−	1.92E+2	1.35E+2	−	−	−	1.12E-11
Sr-89	2.40E+4	−	6.90E+2	−	−	−	3.85E+3
Sr-90	5.91E+5	−	1.45E+5	−	−	−	1.71E+4
Sr-91	4.42E+2	−	1.79E+1	−	−	−	2.11E+3
Sr-92	1.68E+2	−	7.26E+0	−	−	−	3.32E+3
Y-90	6.36E-1	−	1.70E-2	−	−	−	6.74E+3
Y-91m	6.00E-3	−	2.33E-4	−	−	−	1.76E-2
Y-91	9.31E+0	−	2.49E-1	−	−	−	5.13E+3
Y-92	5.58E-2	−	1.63E-3	−	−	−	9.78E+2
Y-93	1.77E-1	−	4.89E-3	−	−	−	5.62E+3
Zr-95	4.29E-1	1.38E-1	9.31E-2	−	2.16E-1	−	5.50E+2
Zr-97	2.37E-2	4.78E-3	2.19E-3	−	7.22E-3	−	1.48E+3
Nb-95	4.47E+2	2.49E+2	1.34E+2	−	2.46E+2	−	1.51E+6
Nb-97	3.75E+0	9.48E-1	3.46E-1	−	1.11E+0	−	3.50E+3
Mo-99	−	1.30E+2	2.47E+1	−	2.94E+2	−	3.01E+2
Tc-99m	1.04E-2	2.94E-2	3.74E-1	−	4.46E-1	1.44E-2	1.74E+1
Tc-101	1.07E-2	1.54E-2	1.51E-1	−	2.78E-1	7.88E-3	4.63E-14

TABLE 6.0-1

Fermi 2 Site Specific Liquid Ingestion Dose Commitment Factors
A_{io} (mrem/hr per uCi/ml)

Nuclide	Bone	Liver	T. Body	Thyroid	Kidney	Lung	GI−LLI
Ru-103	5.58E+00	-	2.40E+00	-	2.13E+01	-	6.51E+02
Ru-105	4.64E-01	-	1.83E-01	-	6.00E+00	-	2.84E+02
Ru-106	8.29E+01	-	1.05E+01	-	1.60E+02	-	5.37E+03
Rh-103m	-	-	-	-	-	-	-
Rh-106	-	-	-	-	-	-	-
Ag-110m	1.87E+00	1.73E+00	1.03E+00	-	3.41E+00	-	7.08E+02
Sb-124	2.41E+01	4.56E-01	9.56E+00	5.84E-02	-	1.88E+01	6.84E+02
Sb-125	1.54E+01	1.72E-01	3.66E+00	1.57E-02	-	1.19E+01	1.70E+02
Te-125m	2.58E+03	9.36E+02	3.46E+02	7.77E+02	1.05E+04	-	1.03E+04
Te-127m	6.52E+03	2.33E+03	7.95E+02	1.67E+03	2.65E+04	-	2.19E+04
Te-127	1.06E+02	3.81E+01	2.29E+01	7.86E+01	4.32E+02	-	8.37E+03
Te-129m	1.11E+04	4.13E+03	1.75E+03	3.81E+03	4.63E+04	-	5.58E+04
Te-129	3.03E+01	1.14E+01	7.37E+00	2.32E+01	1.27E+02	-	2.28E+01
Te-131m	1.67E+03	8.15E+02	6.79E+02	1.29E+03	8.26E+03	-	8.10E+04
Te-131	1.90E+01	7.93E+00	5.99E+00	1.56E+01	8.32E+01	-	2.69E+00
Te-132	2.43E+03	1.57E+03	1.47E+03	1.73E+03	1.51E+04	-	7.43E+04
I-130	3.18E+01	9.39E+01	3.71E+01	7.96E+03	1.47E+02	-	8.09E+01
I-131	1.75E+02	2.51E+02	1.44E+02	8.21E+04	4.30E+02	-	6.61E+01
I-132	8.55E+00	2.29E+01	8.00E+00	8.00E+02	3.64E+01	-	4.30E+00
I-133	5.98E+01	1.04E+02	3.17E+01	1.53E+04	1.82E+02	-	9.35E+01
I-134	4.46E+00	1.21E+01	4.34E+00	2.10E+02	1.93E+01	-	1.06E-02
I-135	1.87E+01	4.89E+01	1.81E+01	3.22E+03	7.83E+01	-	5.52E+01
Cs-134	2.98E+05	7.10E+05	5.80E+05	-	2.30E+05	7.62E+04	1.24E+04
Cs-136	3.12E+04	1.23E+05	8.87E+04	-	6.86E+04	9.40E+03	1.40E+04
Cs-137	3.82E+05	5.23E+05	3.42E+05	-	1.77E+05	5.90E+04	1.01E+04
Cs-138	2.65E+02	5.23E+02	2.59E+02	-	3.84E+02	3.79E+01	2.23E-03
Ba-139	1.53E+00	1.09E-03	4.48E-02	-	1.02E-03	6.19E-04	2.72E+00
Ba-140	3.20E+02	4.03E-01	2.10E+01	-	1.37E-01	2.30E-01	6.60E+02
Ba-141	7.44E-01	5.62E-04	2.51E-02	-	5.23E-04	3.19E-04	3.50E-10
Ba-142	3.36E-01	3.46E-04	2.12E-02	-	2.92E-04	1.96E-04	4.74E-19
La-140	1.65E-01	8.32E-02	2.23E-02	-	-	-	6.11E+03
La-142	8.46E-03	3.84E-03	9.58E-04	-	-	-	2.81E+01
Ce-141	8.05E-02	5.45E-02	6.18E-03	-	2.53E-02	-	2.08E+02
Ce-143	1.42E-02	1.05E+01	1.16E-03	-	4.62E-03	-	3.92E+02
Ce-144	4.20E+00	1.76E+00	2.25E-01	-	1.04E+00	-	1.42E+03
Pr-143	6.08E-01	2.44E-01	3.01E-02	-	1.41E-01	-	2.66E+03
Pr-144	1.99E-03	8.26E-04	1.01E-04	-	4.66E-04	-	2.86E-10
Nd-147	4.16E-01	4.80E-01	2.87E-02	-	2.81E-01	-	2.31E+03
W-187	2.97E+02	2.48E+02	8.67E+01	-	-	-	8.12E+04
Np-239	3.59E-02	3.53E-03	1.94E-03	-	1.10E-02	-	7.24E+02

TABLE 6.0-2

Bioaccumulation Factors (BF_i)
(pCi/kg per pCi/liter)*

Element	Freshwater Fish
H	9.00E-01
C	4.60E+03
Na	1.00E+02
P	3.00E+03
Cr	2.00E+02
Mn	4.00E+02
Fe	1.00E+02
Co	5.00E+01
Ni	1.00E+02
Cu	5.00E+01
Zn	2.00E+03
Br	4.20E+02
Rb	2.00E+03
Sr	3.00E+01
Y	2.50E+01
Zr	3.30E+00
Nb	3.00E+04
Mo	1.00E+01
Tc	1.50E+01
Ru	1.00E+01
Rh	1.00E+01
Ag	2.30E+00
Sb	1.00E+00
Te	4.00E+02
I	1.50E+01
Cs	2.00E+03
Ba	4.00E+00
La	2.50E+01
Ce	1.00E+00
Pr	2.50E+01
Nd	2.50E+01
W	1.20E+03
Np	1.00E+01

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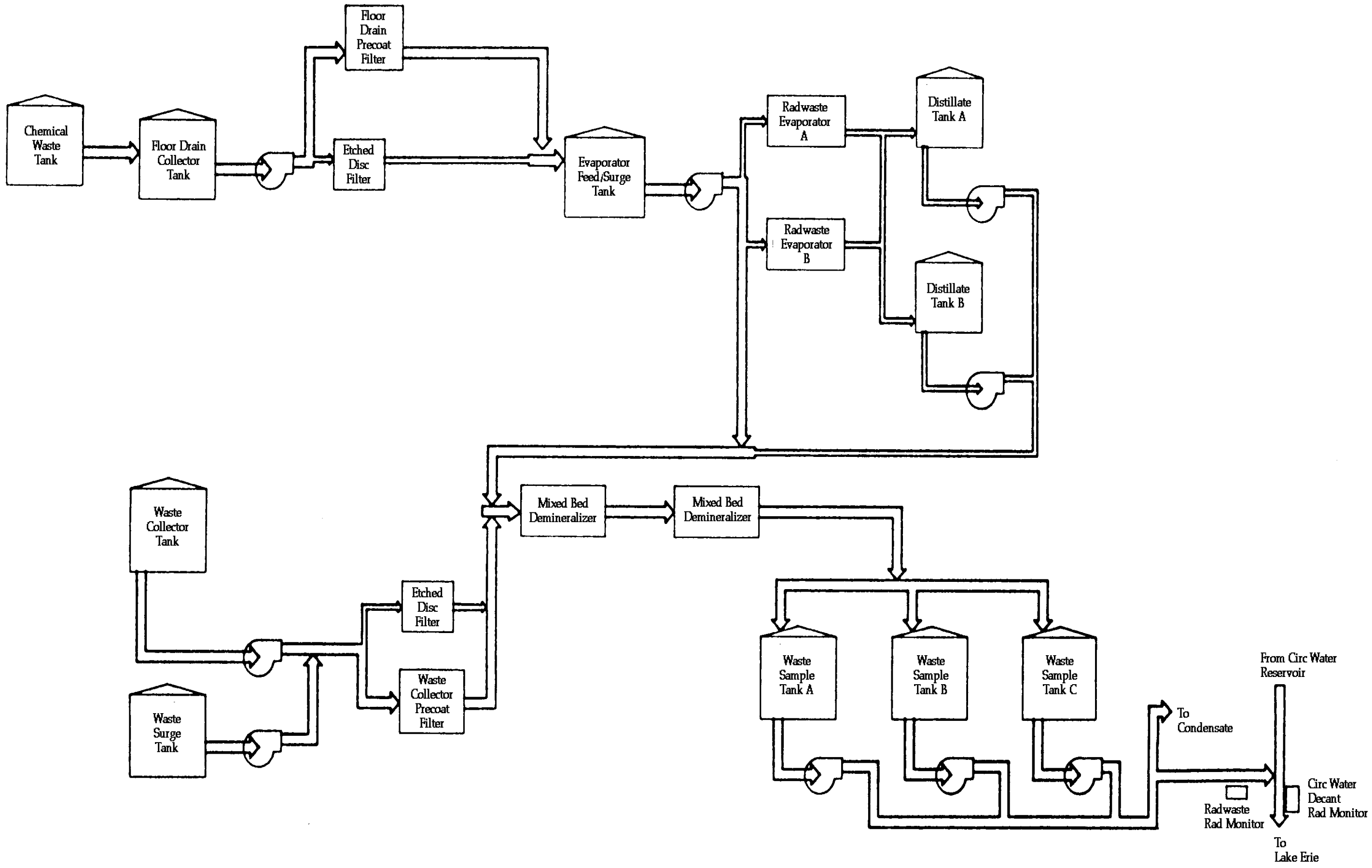
* Values in this table are taken from Regulatory Guide 1.109 except for phosphorus, which is adapted from NUREG/CR-1336, and silver and antimony, which are taken from UCRL 50564, Rev 1, October 1972.

FIGURE 6.0-1

Liquid Radioactive Effluent Monitoring and Processing Diagram



END OF SECTION 6.0

SECTION 7.0

GASEOUS EFFLUENTS

7.0 GASEOUS EFFLUENTS

7.1 Radiation Monitoring Instrumentation and Controls

7.1.1 Effluent Monitoring - Ventilation System Releases

The gaseous effluent monitoring instrumentation required at Fermi 2 for controlling and monitoring radioactive effluents are specified in ODCM 3.3.7.12. The monitoring of each identified gaseous effluent release point must include the following:

- Noble Gas Activity Monitor
- Iodine Sampler (sample cartridge containing charcoal or silver zeolite)
- Particulate Sampler (filter paper)
- Sampler Flow Rate Monitor

Meeting these requirements, a total of six Eberline SPING Monitoring Systems are installed on the five gaseous release points (Onsite Storage Facility, Radwaste Building, Turbine Building, Reactor Building Exhaust Plenum, and Standby Gas Treatment System Division 1 and Division 2). The SPING Monitor outputs are recorded electronically in the SS-1 Control Terminal in the Main Control Room.

In general, a reading exceeding the High alarm setpoint of the SPING Monitors causes an alarm in the Control Room. Fermi 2 ODCM Table 3.3.7.12-1 identifies these alarm functions.

7.1.2 Main Condenser Offgas Monitoring

ODCM Table 3.3.7.12-1 and Technical Requirements Manual Volume 1, section TR 3.3.12, specify monitoring requirements for the Offgas System at the 2.2 minute delay line. The following monitors are required:

- Hydrogen Monitor - used to ensure the hydrogen concentration in the Offgas Treatment System is maintained less than or equal to 4% by volume as required by Technical Requirements Manual Volume 1, section TRLCO 3.3.12.
- Noble Gas Activity Monitor - used to ensure the gross activity release rate is maintained within 340 millicuries per second after 30 minute decay as required by Technical Specification 3.7.5.

  These two monitors perform safety functions. The Hydrogen Monitor monitors the potential explosive mixtures in the Offgas System. The Noble Gas Monitor monitors the release rate from the main condenser ensuring doses at the exclusion area boundary will not exceed a small fraction of the limits of 10 CFR 100 in the event this effluent is inadvertently discharged directly to the environment bypassing the Offgas Treatment System.

7.1.3 Reactor Building Ventilation Monitors

The radiation monitors (D11-N408 and N410) on the Reactor Building Ventilation System provide on high radiation levels (above alarm setpoint) initiation of SGTS, isolation of drywell vent/purge, isolation of the RB and Control Center Ventilation Systems and initiation of Control Center recirculation mode ventilation. These monitors and functions are not required by Fermi 2 ODCM but are important in controlling containment venting/purging.

7.2 Sampling and Analysis of Gaseous Effluents

The program for sampling and analysis of gaseous waste is prescribed in Fermi 2 ODCM Table 4.11.2.1.2-1. This table distinguishes two types of gaseous releases: (1) containment PURGE, treated as BATCH releases, and (2) discharges from the Reactor Building Exhaust Plenum (including Standby Gas Treatment System (SGTS) when operating), and other building ventilation exhausts, treated as CONTINUOUS releases.

7.2.1 Containment PURGE

ODCM Table 4.11.2.1.2-1 requires that samples be collected and analyzed before each primary containment PURGE. Sampling and analysis is required within eight hours before starting a PURGE. ODCM Table 4.11.2.1.2-1 Footnote j and ODCM 4.11.2.8.2 also require that if the purging or venting is through the Reactor Building ventilation, rather than through SGTS, and if the primary containment radiation monitoring system is not FUNCTIONALLY CAPABLE or in alarm condition, sampling and analysis is required within 8 hours prior to and at least once per 12 hours during venting or purging of the primary containment. The required analyses must include principal gamma emitters and, if a pre-vent or pre-purge sample, tritium.

For a planned containment PURGE, the results of the samples and analyses may be used to establish the acceptable release rate and radiation monitor alarm setpoint in accordance with ODCM Sections 7.3 and 7.4. This evaluation may be necessary to ensure compliance with the dose rate limits of ODCM 3.11.2.1. In practice, release flow rates are fairly constant and these calculations are necessary only if a threshold value of nuclide concentration in the primary containment atmosphere is reached. The alarm setpoints of the primary containment atmosphere monitor, the Reactor Building ventilation exhaust monitors, and the Reactor Building and SGTS SPING monitors are set to ensure that release routes are continuously monitored and controlled in accordance with 10 CFR 20 or limits specified in the ODCM.

7.2.2 Ventilation System Releases

ODCM Table 4.11.2.1.2-1 requires continuous samples of releases from the RB Exhaust Plenum, Standby Gas Treatment System, Radwaste Building, Turbine Building, and Onsite Storage Facility. The table specifies the following program:

- Once per week, analysis of an adsorbent sample of I-131 and I-133, plus analysis of a particulate sample for principal gamma emitters.
- Once per month, analysis of a composite particulate sample of all releases (by release point) that month for gross alpha activity.
- Once per quarter, analysis of a composite particulate sample of all releases that quarter for Sr-89 and Sr-90.
- Once per month, analysis of a grab sample for principal gamma emitters (noble gases and tritium).
- Analysis of a grab sample for principal gamma emitters (noble gases) from the Offgas Vent Pipe sample lines, as needed to supplement RB Exhaust Plenum sampling. Normally performed monthly in conjunction with RB Exhaust Plenum grab sampling.

ODCM Table 4.11.2.1.2-1 also requires continuous monitoring for noble gases. This requirement is met by the SPING Monitors on each of the plant gaseous release points.

The ODCM requires more frequent sampling and analysis following reactor startup, shutdown, or change in thermal power exceeding 15% within one hour. The ODCM allows an exception to this increased sampling schedule when the applicable SPING noble gas monitor has not increased more than a factor of three.

Grab samples of the Fuel Pool Ventilation Exhaust are required tritium analysis once per seven days whenever spent fuel is in the Spent Fuel Pool. Also, grab samples for tritium are required when either the reactor well or the dryer separator pool is filled. These samples are taken at the Reactor Building Exhaust Plenum and Standby Gas Treatment System (SGTS) when operating.

Gaseous releases of Carbon-14 may be determined by calculation, without the use of sampling. An acceptable calculational method is to determine monthly capacity factor data in units of GWth-month from Reactor Engineering data, then multiply by the ratio of days in the month to days in the year and by the value 5.1 Ci per GWth-year (given in EPRI report 1021106, December 2010) to obtain monthly C-14 releases. Other methods may be used if approved by Radiation Protection Management.

7.3 Gaseous Effluent Monitor Setpoint Determination

7.3.1 Ventilation System Monitors

Per the requirements of ODCM 3.3.7.12, alarm setpoints shall be established for the gaseous effluent monitoring instrumentation to ensure that the release rate of noble gases does not exceed the limits of ODCM 3.11.2.1. This section limits releases to a dose rate at the SITE BOUNDARY of 500 mrem/year to the total body or 3000 mrem/year to the skin. From a grab sample analysis of the applicable release (i.e., grab sample of the primary containment or Ventilation System release), the radiation monitoring alarm setpoints may be established by the following calculational method. The measured radionuclide concentrations and release rate are used to calculate the fraction of the allowable release rate, limited by ODCM 3.11.2.1, by the equation:

$$FRAC = \frac{1.67E+01 * \chi / Q * VF * \sum\left(C_i * K_i\right)}{500} \tag{7-1}$$

$$FRAC = \frac{1.67E+01 * \chi / Q * VF * \sum\left(C_i * \left[L_i + 1.1M_i\right]\right)}{3000} \tag{7-2}$$

Where:

FRAC	=	fraction of the allowable release rate based on the identified radionuclide concentrations and the release flow rate
χ/Q	=	atmospheric dispersion factor based on 5-year historical meteorological data to the controlling site boundary location from Table 7.0-3 (sec/m^3) or plant procedures
VF	=	Ventilation System flow rate for the applicable release point and monitor (liters/minute)
C_i	=	concentration of noble gas radionuclide i at release point as determined by gamma spectral analysis of grab sample (μCi/cc).
K_i	=	total body dose conversion factor for noble gas radionuclide i (mrem/yr per μCi/m^3, from Table 7.0-2)
L_i	=	beta skin dose conversion factor for noble gas radionuclide i (mrem/yr per μCi/m^3, from Table 7.0-2)

M_i = gamma air dose conversion factor for noble gas radionuclide i (mrad/yr per µCi/m^3, from Table 7.0-2)

1.1 = mrem skin dose per mrad gamma air dose (mrem/mrad)

500 = total body dose rate limit (mrem/yr)

3000 = skin dose rate limit (mrem/yr)

1.67 E + 01 = 1 E + 03 (cc/liter) * (1/60) (min/sec)

Based on the more limiting (i.e., higher) value of FRAC as determined above, the alarm setpoints for the applicable monitors may be calculated by the equation:

$$SP \leq \frac{\left(AF * \sum C_i\right)}{FRAC} + Bkg \tag{7-3}$$

Where:

SP = alarm setpoint corresponding to the maximum allowable release rate (µCi/cc)

Bkg = background of the monitor (µCi/cc)

AF = administrative allocation factor (Table 7.0-1) for the specific monitor and type release, which corresponds to the fraction of the total allowable release rate that is administratively allocated to the individual release points.

C_i = concentration of Noble Gas Radionuclide i as determined by gamma spectral analysis of grab sample (µCi/cc). Note: If the monitor channel in question was showing a response to the effluent at the time of the grab sample, this response minus background may be used in lieu of the summed grab sample concentrations.

The Allocation Factor (AF) is an administrative control imposed to ensure that combined releases from all release points at Fermi 2 will not exceed the regulatory limits on release rate from the site (i.e., the release rate limits of ODCM 3.11.2.1). From the Fermi 2 design evaluation of gaseous effluents presented in the UFSAR Section 11.3, representative values have been determined for AF. These values are presented in Table 7.0-1. These values may be changed in the future as warranted by operational experience, provided the site releases comply with ODCM 3.11.2.1. In addition to the allocation factor, safety factors which have the effect of lowering the calculated setpoints may be applied. When determining the Noble Gas Monitor calibration constant, the monitor sensitivity for Xe-133 may be used in lieu of the sensitivity values for the individual radionuclides. Because of its lower gamma energy and corresponding monitor response, the Xe-133 sensitivity provides a conservative value for alarm setpoint determination. Alternatively, if the monitor channel in question frequently shows a response to a mix of isotopes whose concentrations can be determined, the calibration constant may be determined from this type of data without reference to primary calibration data.

7.3.2 Setpoint Determination with No Nuclides Detected

When noble gas concentrations for a release point cannot be determined from grab samples, there are two options for setpoint determination. First, the setpoint may be set slightly above monitor background (e.g. 2 to 3 times background). This approach may be used when releases are not expected from a particular release point. Second, the equations of Section 7.3.1 may be used with noble gas concentration values based either on UFSAR tables or on values from a release point for which concentrations have been determined (e.g. reactor building exhaust plenum). When this method is used, a safety factor should be used in the setpoint calculation.

7.3.3 Gaseous Effluent Alarm Response - Evaluating Actual Release Conditions

The monitor alarm setpoint is used as the primary method for ensuring and demonstrating compliance with the release rate limits of ODCM 3.11.2.1. Not exceeding alarm setpoints constitutes a demonstration that release rates have been maintained within the ODCM limits. When an effluent Noble Gas Monitor exceeds the alarm setpoint, an evaluation of compliance with the release rate limits must be performed using actual release conditions. This evaluation requires collecting a sample of the effluent to establish actual radionuclide concentrations and permit evaluating the monitor response. The following equations may be used for evaluating compliance with the release rate limit of ODCM 3.11.2.1a:

$$D_{tb} = 1.67E + 01 * \chi / Q * VF * \sum\left(K_i * C_i\right) \tag{7-4}$$

$$D_s = 1.67E + 01 * \chi / Q * VF * \sum\left(\left[L_i + 1.1M_i\right] * C_i\right) \tag{7-5}$$

Where:

D_{tb} = total body dose rate (mrem/yr)

D_s = skin dose rate (mrem/yr)

χ / Q = atmospheric dispersion factor for the controlling SITE BOUNDARY location (sec/m^3)

VF = Ventilation System release rate (liters/min)

C_i = concentration of radionuclide i as measured in the grab sample or as correlated from the SPING Noble Gas Monitor reading (μCi/cc)

K_i = total body dose conversion factor for noble gas radionuclide i (mrem/yr per μCi/m^3, from Table 7.0-2)

L_i = beta skin dose conversion factor for noble gas radionuclide i (mrem/yr per μCi/m^3, from Table 7.0-2)

M_i = gamma air dose conversion factor for noble gas radionuclide i (mrad/yr per μCi/m^3, from Table 7.0-2)

1.1 = mrem skin dose per mrad gamma air dose (mrem/mrad)

1.67 E + 01 = 1 E + 03 (cc/liter) * (1/60) (min/sec)

The above equations may also be used to verify compliance with ODCM 3.11.2.1.a when noble gases are detected in periodic (e.g. monthly) effluent noble gas samples.

7.4 Primary Containment VENTING and PURGING

7.4.1 Release Rate Evaluation

For primary containment VENTING or PURGING, an evaluation of acceptable release rate may be performed prior to the release. Based on the measured noble gas concentration in the grab sample collected per the requirements of ODCM Table 4.11.2.1.2-1, the allowable release rate from primary containment can be calculated by the following equation:

$$RR_{tb} = \frac{500 * AF}{1.67 + 01 * \chi / Q * \sum \left(K_i * C_i \right)} \tag{7-6}$$

or

$$RR_s = \frac{3000 * AF}{1.67E + 01 * \chi / Q * \sum \left(\left[L_i + 1.1 M_i \right] * C_i \right)} \tag{7-7}$$

Where:

RR_{tb} = allowable release rate so as not to exceed a dose rate of 500 mrem/yr, total body (liters/minute)

RR_s = allowable release rate so as not to exceed a dose rate of 3000 mrem/yr, skin (liters/minute)

AF = allocation factor for the applicable release point from Table 7.0-1 (default value is 0.5 for Reactor Building Exhaust Plenum)

500 = total body dose rate limit (mrem/yr)

3000 = skin dose rate limit (mrem/yr)

The lesser value (RR_{tb} or RR_s) as calculated above may be used for establishing the allowable release rate for primary containment PURGING or VENTING, taking into account the fraction of the allocated release limit already accounted for by continuous releases from the proposed release point. As discussed in section 7.2.1, this evaluation is rarely necessary.

7.4.2 Alarm Setpoint Evaluation

For a primary containment VENTING or PURGING, a re-evaluation of the alarm setpoint may be needed to ensure compliance with the requirements of ODCM 3.3.7.12. For the identified release path (RB Exhaust Plenum or SGTS) and associated effluent Radiation Monitor, the alarm setpoint should be calculated using Equations (7-1), (7-2) and (7-3). In Equations (7-1) and (7-2), the value of the Ventilation Flow VF should be established at the total release flow rate, including the contribution from the PURGE or VENT. If the calculated alarm setpoint is greater than the current setpoint, no adjustments are necessary. As discussed in section 7.2.1, this setpoint evaluation is rarely necessary.

7.5 Quantifying Releases - Noble Gases

The determination of doses in the environment from releases is dependent on the mixture of the radioactive material. Also, NRC Regulatory Guide 1.21 requires reporting of individual radionuclides released in gaseous effluents. Therefore, DTE Energy must determine the quantities of the individual radionuclides released. For noble gases, these quantities must be based on actual noble gas grab samples.

7.5.1 Sampling Protocol

As required by ODCM 3.11.2.1, a gas sample is collected at least monthly from each of the five gaseous release points (Reactor Building Exhaust Plenum, Standby Gas Treatment System, Radwaste Building, Turbine Building, and Onsite Storage Facility). As discussed in ODCM Section 7.2.2, this gas sample is analyzed by gamma spectroscopy to identify individual radionuclides (noble gases). Noble gases have been detected almost exclusively in the reactor building effluent.

As necessary to supplement grab sampling at the Reactor Building Exhaust Plenum, samples are taken from the Offgas Vent Pipe sample lines, normally on the same frequency as RB Exhaust Plenum samples. The Offgas Vent Pipe sample point is upstream of the RB Exhaust Plenum and noble gases are more concentrated at this point. Dilution factors are applied to Offgas Vent Pipe noble gas sample concentrations when the same nuclides are detected in both locations so that concentrations detected in RB Exhaust Plenum samples may be compared to concentrations based on Offgas Vent Pipe samples; the more conservative concentration values are used in release calculations.

For containment purges and containment ventings when monitoring is alarming or not FUNCTIONALLY CAPABLE, samples are collected prior to the initiation of the release and, for long releases, periodically throughout the release (see ODCM Section 7.2.1). When detected activity concentrations are above a pre-determined threshold, these samples are evaluated using Equations (7-4) and (7-5), using release rates applicable to the vent/purge condition and taking continuous releases into account, to ensure that the site boundary dose rate limits of ODCM 3.11.2.1 are not exceeded. If the primary containment atmosphere has equilibrated with the reactor building atmosphere, vent/purge sampling and analysis is not required. Such equilibrium with the drywell atmosphere may be considered to be established after at least one of the drywell equipment hatches has been open for 8 hours, and equilibrium with the torus atmosphere may be assumed after at least one torus hatch has been open for 8 hours.

As required by ODCM Table 4.11.2.1.2-1, special samples are required of the RB Exhaust Plenum and SGTS following shutdown, startup or a THERMAL POWER change exceeding 15% within a 1 hour period. Exceptions to this special sampling are allowed as noted previously in ODCM Section 7.2.2.

7.6 Calculation of Activity Released

The following equation may be used for determining the release quantities from any release point based on the sample analysis:

$$Q_i = 1.0E + 03 * VF * T * C_i \tag{7-8}$$

Where:

Q_i = total activity released of radionuclide i (μCi)

VF = Ventilation System release rate (liters/min) -- nominal values are shown in Table 7.0-1. If available, more accurate values, for example reflecting a reduced number of exhaust fans in service, may be used.

T = total time of release period (min)

1.0 E + 03 = milliliters per liter

C_i = concentration of radionuclide i as determined by analysis of the sample (μCi/cc). For noble gas grab samples, this value may be corrected for variations during the release period by multiplying by the ratio of the average noble gas monitor reading during the release period to the reading at the time the sample was taken. For iodine and particulate samples, this value should be corrected for decay during the sampling period, for sample line loss if adequate data are available, and for collection efficiency if a significant fraction of the material to be collected passes through the collection media. For all samples, this value should be corrected for decay between sample collection and counting and for decay during counting.

7.7 Site Boundary Dose Rate - Radioiodine and Particulates

ODCM 3.11.2.1.b limits the dose rate to ≤1500 mrem/yr to any organ for I-131, I-133, tritium and particulates with half lives greater than 8 days. To demonstrate compliance with this limit, an evaluation is performed at a frequency no greater than that corresponding to the sampling and analysis time period (nominally once per 7 days). The following equation may be used in the dose rate evaluation for I-131, I-133, and particulates with half lives greater than 8 days:

$$DR = \sum_r \left(\chi / Q_r * R_{I-131} * VF_r * 16.7 * \sum_i C_{ir} \right) \tag{7-9}$$

Where:

DR = total maximum organ dose rate for all release points (mrem/yr)

χ / Q_r = atmospheric dispersion factor for release point r to the controlling SITE BOUNDARY location (sec/m^3) from Table 7.0-3 or plant procedures

R_{I-131} = I-131 child thyroid inhalation pathway dose factor (mrem/yr per µCi/m^3) from Table 7.0-4

VF_r = Average ventilation flow for release point r during release period (liters/min)

C_{ir} = Concentration of radionuclide i (I-131, I-133, or particulate with half life greater than 8 days) released from release point r during the appropriate release period (µCi/cc)--usually determined by gamma spectral analysis of effluent sample and corrected as described in definition of C_i in section 7.6

16.7 = 1000 cc/liter * 0.0167 min/sec

Release periods used in Equation (7-9) are the most recent periods evaluated for the different release points, and these periods may not be identical.

Alternatively, the site boundary dose rate may be evaluated using the highest individual isotopic dose factors for all age groups to calculate inhalation and ground plane exposure at the highest dispersion factor location at or beyond the site boundary, as well as vegetation, milk, and meat exposure at the garden, milk, and meat locations with the highest deposition factors. Dose rate due to tritium is currently evaluated by this method, and when tritium has been detected in gaseous effluents during the most recent release period, the tritium dose rate must be added to the result from Equation (7-9) to evaluate compliance with ODCM 3.11.2.1.b.

The dose rate evaluation described above may have to be performed more frequently than once per week in order to meet the requirements of ODCM Table 4.11.2.1.2-1, footnote g: Daily sampling is required following startup, shutdown, or thermal power changes exceeding 15% in one hour if the applicable noble gas effluent monitor reading has increased by a factor of 3.

7.8 Noble Gas Effluent Dose Calculations - 10 CFR 50

7.8.1 UNRESTRICTED AREA Dose - Noble Gases

ODCM 4.11.2.2 requires that an assessment of releases of noble gases be performed at least once per 31 days to evaluate compliance with the quarterly dose limits of 5 mrad, gamma-air and 10 mrad, beta-air and the calendar year limits 10 mrad, gamma-air and 20 mrad, beta-air. The following equations may be used to calculate the gamma-air and beta-air doses. If noble gases are detected at multiple release points, these equations must be performed for each such release point, and the calculated air doses must be summed.

$$D_\gamma = 3.17E-08 * \chi / Q * \sum\left(M_i * Q_i\right) \qquad (7\text{-}10)$$

and

$$D_\beta = 3.17E-08 * \chi / Q * \sum\left(N_i * Q_i\right) \qquad (7\text{-}11)$$

Where:

D_γ = air dose due to gamma emissions for noble gas radionuclides (mrad)

D_β = air dose due to beta emissions for noble gas radionuclides (mrad)

χ / Q = atmospheric dispersion factor to the controlling SITE BOUNDARY location (sec/m^3)

Q_i = cumulative release of noble gas radionuclide i over the period of interest (μCi)

M_i = air dose factor due to gamma emissions from noble gas radionuclide i (mrad/yr per μCi/m^3, from Table 7.0-2)

N_i = air dose factor due to beta emissions from noble gas radionuclide i (mrad/yr per μCi/m^3, Table 7.0-2)

3.17 E - 08 = 1 / 3.15 E + 07 (year/sec)

7.9 Radioiodine and Particulate Dose Calculations - 10 CFR 50

7.9.1 UNRESTRICTED AREA Dose - Radioiodine, Particulates, and Tritium

In accordance with requirements of ODCM 4.11.2.3, a periodic assessment (at least once per 31 days) is required to evaluate compliance with the quarterly dose limit of 7.5 mrem and the calendar year limit of 15 mrem to any organ. The following equation may be used to evaluate the maximum organ dose due to releases of I-131, I-133, tritium, and particulates with half-lives greater than 8 days:

$$D_{ao} = \sum_{p}\sum_{r}\sum_{i}\left(W_r * SF_p * 3.17E-8 * R_{aipo} * Q_{ir}\right) \tag{7-14}$$

Where:

D_{ao} = dose or dose commitment to Organ o of age group a (normally identified in Table 7.0-3)

W_r = atmospheric dispersion parameter for release point r and the residence location of interest—normally identified in Table 7.0-3. Either:

a) χ/Q, atmospheric dispersion factor for inhalation pathway and H-3 and C-14 dose contribution via other pathways (sec/m^3), or

b) D/Q, atmospheric area deposition factor for vegetation, milk and ground plane exposure pathways (m^{-2})

R_{aipo} = dose factor (mrem/yr per µCi/m^3) or (m^2 - mrem/yr per µCi/sec) from Table 7.0-4 for radionuclide i, age group a, pathway p, and organ o, normally as identified in Table 7.0-3. Values for R_{aipo} were derived in accordance with the methods described in NUREG-0133. As noted in NUREG-0133 section 5.3.1.3, in the case that the milk animal is a goat, parameter values from Reg Guide 1.109 should be used. For I-131, for example, use of the goat feed/forage consumption rate given in Table E-3 and the stable element transfer factor given in Table E-2 of Reg Guide 1.109 results in grass-goat-milk dose factors which are equivalent to the grass-cow-milk dose factors in Table 7.0-4 multiplied by 1.2.

Q_{ir} = cumulative release from release point r over the period of interest (normally one month) for radionuclide i -- I-131, I-133, tritium or radioactive material in particulate form with half-life greater than 8 days (µCi).

SF_p = annual seasonal correction factor to account for the fraction of the year that the applicable exposure pathway does not exist:

1) For milk and vegetation exposure pathways:

= 0.5 (derived from Reg Guide 1.109, Rev 1. A six month fresh vegetation and grazing season (May through October) limits exposure through this pathway to half the year.

2) For inhalation and ground plane exposure pathways:

= 1.0 (derived from Reg Guide 1.109, Rev 1)

3.17 E-8 = 1 / 3.15 E+07 (year/sec)

This equation should be used to evaluate organ doses for the individual with the highest potential offsite dose. This calculation is performed monthly and is added to previous results for the quarter and year. The highest quarterly and annual cumulative organ dose totals for this individual should be compared with the limits of ODCM 3.11.2.3.

To determine regulatory compliance, the residence and the corresponding age group and exposure pathways listed in Table 7.0-3 are used. Some pathways listed for this residence, e.g. the vegetation pathway, may be hypothetical in a given year. Also, an individual in the age group indicated in Table 7.0-3 may not be living at this residence in a given year. These pathway and age group assumptions are designed to ensure conservative dose results, i.e. that no other offsite receptor will have a higher actual dose. If the Land Use Census indicates that there may be another individual who may have higher actual doses in a given year than the doses calculated using the parameters listed for the residence in Table 7.0-3, doses to this individual may also be reported in the Annual Radioactive Effluent Release Report and a revision of Table 7.0-3 should be considered.

7.10 Gaseous Effluent Dose Projection

As with liquid effluents, the Fermi 2 ODCM controls on gaseous effluents require "processing" of gaseous effluents if the projected dose exceeds specified limits. These controls implement the requirements of 10 CFR 50.36a on maintaining and using the appropriate radwaste processing equipment to keep releases ALARA.

ODCM 3.11.2.5 requires that the VENTILATION EXHAUST TREATMENT SYSTEM be used to reduce radioactive material levels prior to discharge when the projected dose exceeds 0.3 mrem to any organ in any 31 day period (i.e., one-quarter of the design objective rate). Figure 7.0-1 presents the gaseous effluent release points and the VENTILATION EXHAUST TREATMENT SYSTEMS applicable for reducing effluents prior to release.

Dose projection is performed at least once per 31 days using the following equation:

$$D_{\max p} = D_{\max} * (31 / d) \tag{7-16}$$

Where:

D_{maxp} = maximum organ dose projection for the next 31 day period (mrem)

NOTE: The reference calendar quarter is normally the current calendar quarter. If the dose projection is done in the first month of the quarter and is to be based on dose calculated for the previous quarter, the reference calendar quarter is the previous quarter.

D_{max} = the cumulative maximum organ dose from the beginning of the reference calendar quarter (normally the current quarter) to the end of the most recently evaluated release period as determined by Equation (7-14) (mrem)

d = number of days from the beginning of the reference calendar quarter to the end of the most recently evaluated release period.

31 = number of days in projection

TABLE 7.0-1

Values for Evaluating Gaseous Release Rates and Alarm Setpoints

Release Point	Flow Rate (liter/min)	Allocation Factor (AF)	Allocated Dose Rate Limit (mrem/year)
Reactor Building Exhaust Plenum D11-P280	2.89E6	0.50	T Body = 250 Skin = 1500 Organ = 750
Standby Gas Treatment System Div I D11-P275	1.07E5	0.10	T Body = 50 Skin = 300 Organ = 150
Standby Gas Treatment System Div II D11-P276	1.12E5	0.10	T Body = 50 Skin = 300 Organ = 150
Turbine Building Ventilation D11-P279	8.98E6	0.20	T Body = 100 Skin = 600 Organ = 300
Radwaste Building Ventilation D11-P281	1.01E6	0.02	T Body = 10 Skin = 60 Organ = 30
Onsite Storage Building Ventilation D11-P299	3.06E5	0.02	T Body = 10 Skin = 60 Organ = 30
Reactor Building Ventilation* Gulf Atomic Monitors D11-N408, N410	2.57E6	0.50	T Body = 125 Skin = 750 Organ = 375

* D11-N408 and N410 will start the SGTS, close the Drywell Purge/Vent Valves, isolate Rx Building Ventilation System, isolate Control Center, and initiate emergency recirculation mode.

TABLE 7.0-2

Dose Factors for Noble Gases*

Nuclide	Total Body Gamma Dose Factor K_i (mrem/yr per µCi/m^3)	Skin Beta Dose Factor L_i (mrem/yr per µCi/m^3)	Gamma Air Dose Factor M_i (mrad/yr per µCi/m^3)	Beta Air Dose Factor N_i (mrad/yr per µCi/m^3)
Kr-83m	7.56E-02	-----	1.93E+01	2.88E+02
Kr-85m	1.17E+03	1.46E+03	1.23E+03	1.97E+03
Kr-85	1.61E+01	1.34E+03	1.72E+01	1.95E+03
Kr-87	5.92E+03	9.73E+03	6.17E+03	1.03E+04
Kr-88	1.47E+04	2.37E+03	1.52E+04	2.93E+03
Kr-89	1.66E+04	1.01E+04	1.73E+04	1.06E+04
Kr-90	1.56E+04	7.29E+03	1.63E+04	7.83E+03
Xe-131m	9.15E+01	4.76E+02	1.56E+02	1.11E+03
Xe-133m	2.51E+02	9.94E+02	3.27E+02	1.48E+03
Xe-133	2.94E+02	3.06E+02	3.53E+02	1.05E+03
Xe-135m	3.12E+03	7.11E+02	3.36E+03	7.39E+02
Xe-135	1.81E+03	1.86E+03	1.92E+03	2.46E+03
Xe-137	1.42E+03	1.22E+04	1.51E+03	1.27E+04
Xe-138	8.83E+03	4.13E+03	9.21E+03	4.75E+03
Ar-41	8.84E+03	2.69E+03	9.30E+03	3.28E+03

NOTE:

* Dose factors taken from NRC Regulatory Guide 1.109

TABLE 7.0-3

Controlling Locations, Pathways, and Atmospheric Dispersion for Dose Calculations

ODCM Control	Location	Pathway(s)	Controlling Age Group	χ/Q (sec/m^3)	D/Q (1/m^2)
3.11.2.1a	site boundary (0.57 mi, NW)	noble gases direct exposure	N/A	RB: 7.9E-7 TB: 3.6E-6 RW: 1.1E-6 SGTS 7.3E-7	N/A
3.11.2.1b	site boundary (0.57 mi, NW)	inhalation	child	RB: 7.9E-7 TB: 3.6E-6 RW: 1.1E-6 SGTS 7.3E-7	N/A
3.11.2.2	site boundary (0.57 mi, NW)	gamma-air beta-air	N/A	RB: 7.9E-7 TB: 3.6E-6 RW: 1.1E-6 SGTS 7.3E-7	N/A
3.11.2.3	residence (0.71 mi, WNW)	vegetation inhalation, and ground plane	child	RB: 6.6E-7 TB: 2.8E-6 RW: 9.1E-7 SGTS 6.5E-7	1.4E-8 2.5E-8 1.5E-8 1.3E-8

NOTE (1): The identified controlling locations and pathways listed above are derived from Land Use Census data and dispersion and deposition factor data tables. The dispersion and deposition factor values listed are five year averages for the years 2009 - 2013.

NOTE (2): The controlling residence location listed above is the closest residence to the plant and has the highest χ/Q and D/Q factors of any residence. A child in residence and a vegetation pathway is assumed for the purposes of calculating a conservative offsite dose at this location. It has been determined that dose calculated for the assumed receptor and pathways at this location is conservative, i.e. that there is no other location at which a higher realistic dose will be calculated. However, if it is ever determined by the Land Use Census that there is another location at which higher doses are calculated, this table will be revised to use that location as the new controlling location.

Table 7.0−4
Gaseous Effluent Pathway Dose Commitment Factors
$R_{aipo,}$ Inhalation Pathway Dose Factors − ADULT

(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.26E+3	1.26E+3	1.26E+3	1.26E+3	1.26E+3	1.26E+3
C-14	1.82E+4	3.41E+3	3.41E+3	3.41E+3	3.41E+3	3.41E+3	3.41E+3
Na-24	1.02E+4	1.02E+4	1.02E+4	1.02E+4	1.02E+4	1.02E+4	1.02E+4
P-32	1.32E+6	7.71E+4	−	−	−	8.64E+4	5.01E+4
Cr-51	−	−	5.95E+1	2.28E+1	1.44E+4	3.32E+3	1.00E+2
Mn-54	−	3.96E+4	−	9.84E+3	1.40E+6	7.74E+4	6.30E+3
Mn-56	−	1.24E+0	−	1.30E+0	9.44E+3	2.02E+4	1.83E−1
Fe-55	2.46E+4	1.70E+4	−	−	7.21E+4	6.03E+3	3.94E+3
Fe-59	1.18E+4	2.78E+4	−	−	1.02E+6	1.88E+5	1.06E+4
Co-57	−	6.92E+2	−	−	3.70E+5	3.14E+4	6.71E+2
Co-58	−	1.58E+3	−	−	9.28E+5	1.06E+5	2.07E+3
Co-60	−	1.15E+4	−	−	5.97E+6	2.85E+5	1.48E+4
Ni-63	4.32E+5	3.14E+4	−	−	1.78E+5	1.34E+4	1.45E+4
Ni-65	1.54E+0	2.10E−1	−	−	5.60E+3	1.23E+4	9.12E−2
C-64	−	1.46E+0	−	4.62E+0	6.78E+3	4.90E+4	6.15E−1
Zn-65	3.24E+4	1.03E+5	−	6.90E+4	8.64E+5	5.34E+4	4.66E+4
Zn-69	3.38E−2	6.51E−2	−	4.22E−2	9.20E+2	1.63E+1	4.52E−3
Br-82	−	−	−	−	−	1.04E+4	1.35E+4
Br-83	−	−	−	−	−	2.32E+2	2.41E+2
Br-84	−	−	−	−	−	1.64E−3	3.13E+2
Br-85	−	−	−	−	−	−	1.28E+1
Rb-86	−	1.35E+5	−	−	−	1.66E+4	5.90E+4
Rb-88	−	3.87E+2	−	−	−	3.34E−9	1.93E+2
Rb-89	−	2.56E+2	−	−	−	−	1.70E+2
Sr-89	3.04E+5	−	−	−	1.40E+6	3.50E+5	8.72E+3
Sr-90	9.92E+7	−	−	−	9.60E+6	7.22E+5	6.10E+6
Sr-91	6.19E+1	−	−	−	3.65E+4	1.91E+5	2.50E+0
Sr-92	6.74E+0	−	−	−	1.65E+4	4.30E+4	2.91E−1
Y-90	2.09E+3	−	−	−	1.70E+5	5.06E+5	5.61E+1
Y-91m	2.61E−1	−	−	−	1.92E+3	1.33E+0	1.02E−2
Y-91	4.62E+5	−	−	−	1.70E+6	3.85E+5	1.24E+4
Y-92	1.03E+1	−	−	−	1.57E+4	7.35E+4	3.02E−1
Y-93	9.44E+1	−	−	−	4.85E+4	4.22E+5	2.61E+0
Zr-95	1.07E+5	3.44E+4	−	5.42E+4	1.77E+6	1.50E+5	2.33E+4
Zr-97	9.68E+1	1.96E+1	−	2.97E+1	7.87E+4	5.23E+5	9.04E+0
Nb-95	1.41E+4	7.82E+3	−	7.74E+3	5.05E+5	1.04E+5	4.21E+3
Nb-97	2.22E−1	5.62E−2	−	6.54E−2	2.40E+3	2.42E+2	2.05E−2
Mo-99	−	1.21E+2	−	2.91E+2	9.12E+4	2.48E+5	2.30E+1
Tc-99m	1.03E−3	2.91E−3	−	4.42E−2	7.64E+2	4.16E+3	3.70E−2
Tc-101	4.18E−5	6.02E−5	−	1.08E−3	3.99E+2	−	5.90E−4
Ru-103	1.53E+3	−	−	5.83E+3	5.05E+5	1.10E+5	6.58E+2
Ru-105	7.90E−1	−	−	1.02E+0	1.10E+4	4.82E+4	3.11E−1
Ru-106	6.91E+4	−	−	1.34E+5	9.36E+6	9.12E+5	8.72E+3
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
Gaseous Effluent Pathway Dose Commitment Factors
R_{aipo}, Inhalation Pathway Dose Factors − ADULT (cont.)

(mrem/yr per $\mu Ci/m^3$)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.08E+4	1.00E+4	−	1.97E+4	4.63E+6	3.02E+5	5.94E+3
Sb-124	3.12E+4	5.89E+2	7.55E+1	−	2.48E+6	4.06E+5	1.24E+4
Sb-125	5.34E+4	5.95E+2	5.40E+1	−	1.74E+6	1.01E+5	1.26E+4
Te-125m	3.42E+3	1.58E+3	1.05E+3	1.24E+4	3.14E+5	7.06E+4	4.67E+2
Te-127m	1.26E+4	5.77E+3	3.29E+3	4.58E+4	9.60E+5	1.50E+5	1.57E+3
Te-127	1.40E+0	6.42E−1	1.06E+0	5.10E+0	6.51E+3	5.74E+4	3.10E−1
Te-129m	9.76E+3	4.67E+3	3.44E+3	3.66E+4	1.16E+6	3.83E+5	1.58E+3
Te-129	4.98E−2	2.39E−2	3.90E−2	1.87E−1	1.94E+3	1.57E+2	1.24E−2
Te-131m	6.99E+1	4.36E+1	5.50E+1	3.09E+2	1.46E+5	5.56E+5	2.90E+1
Te-131	1.11E−2	5.95E−3	9.36E−3	4.37E−2	1.39E+3	1.84E+1	3.59E−3
Te-132	2.60E+2	2.15E+2	1.90E+2	1.46E+3	2.88E+5	5.10E+5	1.62E+2
I-130	4.58E+3	1.34E+4	1.14E+6	2.09E+4	−	7.69E+3	5.28E+3
I-131	2.52E+4	3.58E+4	1.19E+7	6.13E+4	−	6.28E+3	2.05E+4
I-132	1.16E+3	3.26E+3	1.14E+5	5.18E+3	−	4.06E+2	1.16E+3
I-133	8.64E+3	1.48E+4	2.15E+6	2.58E+4	−	8.88E+3	4.52E+3
I-134	6.44E+2	1.73E+3	2.98E+4	2.75E+3	−	1.01E+0	6.15E+2
I-135	2.68E+3	6.98E+3	4.48E+5	1.11E+4	−	5.25E+3	2.57E+3
Cs-134	3.73E+5	8.48E+5	−	2.87E+5	9.76E+4	1.04E+4	7.28E+5
Cs-136	3.90E+4	1.46E+5	−	8.56E+4	1.20E+4	1.17E+4	1.10E+5
Cs-137	4.78E+5	6.21E+5	−	2.22E+5	7.52E+4	8.40E+3	4.28E+5
Cs-138	3.31E+2	6.21E+2	−	4.80E+2	4.86E+1	1.86E−3	3.24E+2
Ba-139	9.36E−1	6.66E−4	−	6.22E−4	3.76E+3	8.96E+2	2.74E−2
Ba-140	3.90E+4	4.90E+1	−	1.67E+1	1.27E+6	2.18E+5	2.57E+3
Ba-141	1.00E−1	7.53E−5	−	7.00E−5	1.94E+3	1.16E−7	3.36E−3
Ba-142	2.63E−2	2.70E−5	−	2.29E−5	1.19E+3	−	1.66E−3
La-140	3.44E+2	1.74E+2	−	−	1.36E+5	4.58E+5	4.58E+1
La-142	6.83E−1	3.10E−1	−	−	6.33E+3	2.11E+3	7.72E−2
Ce-141	1.99E+4	1.35E+4	−	6.26E+3	3.62E+5	1.20E+5	1.53E+3
Ce-143	1.86E+2	1.38E+2	−	6.08E+1	7.98E+4	2.26E+5	1.53E+1
Ce-144	3.43E+6	1.43E+6	−	8.48E+5	7.78E+6	8.16E+5	1.84E+5
Pr-143	9.36E+3	3.75E+3	−	2.16E+3	2.81E+5	2.00E+5	4.64E+2
Pr-144	3.01E−2	1.25E−2	−	7.05E−3	1.02E+3	2.15E−8	1.53E−3
Nd-147	5.27E+3	6.10E+3	−	3.56E+3	2.21E+5	1.73E+5	3.65E+2
W-187	8.48E+0	7.08E+0	−	−	2.90E+4	1.55E+5	2.48E+0
Np-239	2.30E+2	2.26E+1	−	7.00E+1	3.76E+4	1.19E+5	1.24E+1

Table 7.0−4

$R_{aipo,}$ Inhalation Pathway Dose Factors − TEENAGER

(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.27E+3	1.27E+3	1.27E+3	1.27E+3	1.27E+3	1.27E+3
C-14	2.60E+4	4.87E+3	4.87E+3	4.87E+3	4.87E+3	4.87E+3	4.87E+3
Na-24	1.38E+4	1.38E+4	1.38E+4	1.38E+4	1.38E+4	1.38E+4	1.38E+4
P-32	1.89E+6	1.10E+5	−	−	−	9.28E+4	7.16E+4
Cr-51	−	−	7.50E+1	3.07E+1	2.10E+4	3.00E+3	1.35E+2
Mn-54	−	5.11E+4	−	1.27E+4	1.98E+6	6.68E+4	8.40E+3
Mn-56	−	1.70E+0	−	1.79E+0	1.52E+4	5.74E+4	2.52E−1
Fe-55	3.34E+4	2.38E+4	−	−	1.24E+5	6.39E+3	5.54E+3
Fe-59	1.59E+4	3.70E+4	−	−	1.53E+6	1.78E+5	1.43E+4
Co-57	−	6.92E+2	−	−	5.86E+5	3.14E+4	9.20E+2
Co-58	−	2.07E+3	−	−	1.34E+6	9.52E+4	2.78E+3
Co-60	−	1.51E+4	−	−	8.72E+6	2.59E+5	1.98E+4
Ni-63	5.80E+5	4.34E+4	−	−	3.07E+5	1.42E+4	1.98E+4
Ni-65	2.18E+0	2.93E−1	−	−	9.36E+3	3.67E+4	1.27E−1
Cu-64	−	2.03E+0	−	6.41E+0	1.11E+4	6.14E+4	8.48E−1
Zn-65	3.86E+4	1.34E+5	−	8.64E+4	1.24E+6	4.66E+4	6.24E+4
Zn-69	4.83E−2	9.20E−2	−	6.02E−2	1.58E+3	2.85E+2	6.46E−3
Br-82	−	−	−	−	−	−	1.82E+4
Br-83	−	−	−	−	−	−	3.44E+2
Br-84	−	−	−	−	−	−	4.33E+2
Br-85	−	−	−	−	−	−	1.83E+1
Rb-86	−	1.90E+5	−	−	−	1.77E+4	8.40E+4
Rb-88	−	5.46E+2	−	−	−	2.92E−5	2.72E+2
Rb-89	−	3.52E+2	−	−	−	3.38E−7	2.33E+2
Sr-89	4.34E+5	−	−	−	2.42E+6	3.71E+5	1.25E+4
Sr-90	1.08E+8	−	−	−	1.65E+7	7.65E+5	6.68E+6
Sr-91	8.80E+1	−	−	−	6.07E+4	2.59E+5	3.51E+0
Sr-92	9.52E+0	−	−	−	2.74E+4	1.19E+5	4.06E−1
Y-90	2.98E+3	−	−	−	2.93E+5	5.59E+5	8.00E+1
Y-91m	3.70E−1	−	−	−	3.20E+3	3.02E+1	1.42E−2
Y-91	6.61E+5	−	−	−	2.94E+6	4.09E+5	1.77E+4
Y-92	1.47E+1	−	−	−	2.68E+4	1.65E+5	4.29E−1
Y-93	1.35E+2	−	−	−	8.32E+4	5.79E+5	3.72E+0
Zr-95	1.46E+5	4.58E+4	−	6.74E+4	2.69E+6	1.49E+5	3.15E+4
Zr-97	1.38E+2	2.72E+1	−	4.12E+1	1.30E+5	6.30E+5	1.26E+1
Nb-95	1.86E+4	1.03E+4	−	1.00E+4	7.51E+5	9.68E+4	5.66E+3
Nb-97	3.14E−1	7.78E−2	−	9.12E−2	3.93E+3	2.17E+3	2.84E−2
Mo-99	−	1.69E+2	−	4.11E+2	1.54E+5	2.69E+5	3.22E+1
Tc-99m	1.38E−3	3.86E−3	−	5.76E−2	1.15E+3	6.13E+3	4.99E−2
Tc-101	5.92E−5	8.40E−5	−	1.52E−3	6.67E+2	8.72E−7	8.24E−4
Ru-103	2.10E+3	−	−	7.43E+3	7.83E+5	1.09E+5	8.96E+2
Ru-105	1.12E+0	−	−	1.41E+0	1.82E+4	9.04E+4	4.34E−1
Ru-106	9.84E+4	−	−	1.90E+5	1.61E+7	9.60E+5	1.24E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − TEENAGER (cont.)

(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.38E+4	1.31E+4	−	2.50E+4	6.75E+6	2.73E+5	7.99E+3
Sb-124	4.30E+4	7.94E+2	9.76E+1	−	3.85E+6	3.98E+5	1.68E+4
Sb-125	7.38E+4	8.08E+2	7.04E+1	−	2.74E+6	9.92E+4	1.72E+4
Te-125m	4.88E+3	2.24E+3	1.40E+3	−	5.36E+5	7.50E+4	6.67E+2
Te-127m	1.80E+4	8.16E+3	4.38E+3	6.54E+4	1.66E+6	1.59E+5	2.18E+3
Te-127	2.01E+0	9.12E−1	1.42E+0	7.28E+0	1.12E+4	8.08E+4	4.42E−1
Te-129m	1.39E+4	6.58E+3	4.58E+3	5.19E+4	1.98E+6	4.05E+5	2.25E+3
Te-129	7.10E−2	3.38E−2	5.18E−2	2.66E−1	3.30E+3	1.62E+3	1.76E−2
Te-131m	9.84E+1	6.01E+1	7.25E+1	4.39E+2	2.38E+5	6.21E+5	4.02E+1
Te-131	1.58E−2	8.32E−3	1.24E−2	6.18E−2	2.34E+3	1.51E+1	5.04E−3
Te-132	3.60E+2	2.90E+2	2.46E+2	1.95E+3	4.49E+5	4.63E+5	2.19E+2
I-130	6.24E+3	1.79E+4	1.49E+6	2.75E+4	−	9.12E+3	7.17E+3
I-131	3.54E+4	4.91E+4	1.46E+7	8.40E+4	−	6.49E+3	2.64E+4
I-132	1.59E+3	4.38E+3	1.51E+5	6.92E+3	−	1.27E+3	1.58E+3
I-133	1.22E+4	2.05E+4	2.92E+6	3.59E+4	−	1.03E+4	6.22E+3
I-134	8.88E+2	2.32E+3	3.95E+4	3.66E+3	−	2.04E+1	8.40E+2
I-135	3.70E+3	9.44E+3	6.21E+5	1.49E+4	−	6.95E+3	3.49E+3
Cs-134	5.02E+5	1.13E+6	−	3.75E+5	1.46E+5	9.76E+3	5.49E+5
Cs-136	5.15E+4	1.94E+5	−	1.10E+5	1.78E+4	1.09E+4	1.37E+5
Cs-137	6.70E+5	8.48E+5	−	3.04E+5	1.21E+5	8.48E+3	3.11E+5
Cs-138	4.66E+2	8.56E+2	−	6.62E+2	7.87E+1	2.70E−1	4.46E+2
Ba-139	1.34E+0	9.44E−4	−	8.88E−4	6.46E+3	6.45E+3	3.90E−2
Ba-140	5.47E+4	6.70E+1	−	2.28E+1	2.03E+6	2.29E+5	3.52E+3
Ba-141	1.42E−1	1.06E−4	−	9.84E−5	3.29E+3	7.46E−4	4.74E−3
Ba-142	3.70E−2	3.70E−5	−	3.14E−5	1.91E+3	−	2.27E−3
La-140	4.79E+2	2.36E+2	−	−	2.14E+5	4.87E+5	6.26E+1
La-142	9.60E−1	4.25E−1	−	−	1.02E+4	1.20E+4	1.06E−1
Ce-141	2.84E+4	1.90E+4	−	8.88E+3	6.14E+5	1.26E+5	2.17E+3
Ce-143	2.66E+2	1.94E+2	−	8.64E+1	1.30E+5	2.55E+5	2.16E+1
Ce-144	4.89E+6	2.02E+6	−	1.21E+6	1.34E+7	8.64E+5	2.62E+5
Pr-143	1.34E+4	5.31E+3	−	3.09E+3	4.83E+5	2.14E+5	6.62E+2
Pr-144	4.30E−2	1.76E−2	−	1.01E−2	1.75E+3	2.35E−4	2.18E−3
Nd-147	7.86E+3	8.56E+3	−	5.02E+3	3.72E+5	1.82E+5	5.13E+2
W-187	1.20E+1	9.76E+0	−	−	4.74E+4	1.77E+5	3.43E+0
Np-239	3.38E+2	3.19E+1	−	1.00E+2	6.49E+4	1.32E+5	1.77E+1

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.12E+3	1.12E+3	1.12E+3	1.12E+3	1.12E+3	1.12E+3
C-14	3.59E+4	6.73E+3	6.73E+3	6.73E+3	6.73E+3	6.73E+3	6.73E+3
Na-24	1.61E+4	1.61E+4	1.61E+4	1.61E+4	1.61E+4	1.61E+4	1.61E+4
P-32	2.60E+6	1.14E+5	−	−	−	4.22E+4	9.88E+4
Cr-51	−	−	8.55E+1	2.43E+1	1.70E+4	1.08E+3	1.54E+2
Mn-54	−	4.29E+4	−	1.00E+4	1.58E+6	2.29E+4	9.51E+3
Mn-56	−	1.66E+0	−	1.67E+0	1.31E+4	1.23E+5	3.12E−1
Fe-55	4.74E+4	2.52E+4	−	−	1.11E+5	2.87E+3	7.77E+3
Fe-59	2.07E+4	3.34E+4	−	−	1.27E+6	7.07E+4	1.67E+4
Co-57	−	9.03E+2	−	−	5.07E+5	1.32E+4	1.07E+3
Co-58	−	1.77E+3	−	−	1.11E+6	3.44E+4	3.16E+3
Co-60	−	1.31E+4	−	−	7.07E+6	9.62E+4	2.26E+4
Ni-63	8.21E+5	4.63E+4	−	−	2.75E+5	6.33E+3	2.80E+4
Ni-65	2.99E+0	2.96E−1	−	−	8.18E+3	8.40E+4	1.64E−1
Cu-64	−	1.99E+0	−	6.03E+0	9.58E+3	3.67E+4	1.07E+0
Zn-65	4.26E+4	1.13E+5	−	7.14E+4	9.95E+5	1.63E+4	7.03E+4
Zn-69	6.70E−2	9.66E−2	−	5.85E−2	1.42E+3	1.02E+4	8.92E−3
Br-82	−	−	−	−	−	−	2.09E+4
Br-83	−	−	−	−	−	−	4.74E+2
Br-84	−	−	−	−	−	−	5.48E+2
Br-85	−	−	−	−	−	−	2.53E+1
Rb-86	−	1.98E+5	−	−	−	7.99E+3	1.14E+5
Rb-88	−	5.62E+2	−	−	−	1.72E+1	3.66E+2
Rb-89	−	3.45E+2	−	−	−	1.89E+0	2.90E+2
Sr-89	5.99E+5	−	−	−	2.16E+6	1.67E+5	1.72E+4
Sr-90	1.01E+8	−	−	−	1.48E+7	3.43E+5	6.44E+6
Sr-91	1.21E+2	−	−	−	5.33E+4	1.74E+5	4.59E+0
Sr-92	1.31E+1	−	−	−	2.40E+4	2.42E+5	5.25E−1
Y-90	4.11E+3	−	−	−	2.62E+5	2.68E+5	1.11E+2
Y-91m	5.07E−1	−	−	−	2.81E+3	1.72E+3	1.84E−2
Y-91	9.14E+5	−	−	−	2.63E+6	1.84E+5	2.44E+4
Y-92	2.04E+1	−	−	−	2.39E+4	2.39E+5	5.81E−1
Y-93	1.86E+2	−	−	−	7.44E+4	3.89E+5	5.11E+0
Zr-95	1.90E+5	4.18E+4	−	5.96E+4	2.23E+6	6.11E+4	3.70E+4
Zr-97	1.88E+2	2.72E+1	−	3.89E+1	1.13E+5	3.51E+5	1.60E+1
Nb-95	2.35E+4	9.18E+3	−	8.62E+3	6.14E+5	3.70E+4	6.55E+3
Nb-97	4.29E−1	7.70E−2	−	8.55E−2	3.42E+3	2.78E+4	3.60E−2
Mo-99	−	1.72E+2	−	3.92E+2	1.35E+5	1.27E+5	4.26E+1
Tc-99m	1.78E−3	3.48E−3	−	5.07E−2	9.51E+2	4.81E+3	5.77E−2
Tc-101	8.10E−5	8.51E−5	−	1.45E−3	5.85E+2	1.63E+1	1.08E−3
Ru-103	2.79E+3	−	−	7.03E+3	6.62E+5	4.48E+4	1.07E+3
Ru-105	1.53E+0	−	−	1.34E+0	1.59E+4	9.95E+4	5.55E−1
Ru-106	1.36E+5	−	−	1.84E+5	1.43E+7	4.29E+5	1.69E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Inhalation Pathway Dose Factors − CHILD (cont.)

(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.69E+4	1.14E+4	−	2.12E+4	5.48E+6	1.00E+5	9.14E+3
Sb-124	5.74E+4	7.40E+2	1.26E+2	−	3.24E+6	1.64E+5	2.00E+4
Sb-125	9.84E+4	7.59E+2	9.10E+1	−	2.32E+6	4.03E+4	2.07E+4
Te-125m	6.73E+3	2.33E+3	1.92E+3	−	4.77E+5	3.38E+4	9.14E+2
Te-127m	2.49E+4	8.55E+3	6.07E+3	6.36E+4	1.48E+6	7.14E+4	3.02E+3
Te-127	2.77E+0	9.51E−1	1.96E+0	7.07E+0	1.00E+4	5.62E+4	6.11E−1
Te-129m	1.92E+4	6.85E+3	6.33E+3	5.03E+4	1.76E+6	1.82E+5	3.04E+3
Te-129	9.77E−2	3.50E−2	7.14E−2	2.57E−1	2.93E+3	2.55E+4	2.38E−2
Te-131m	1.34E+2	5.92E+1	9.77E+1	4.00E+2	2.06E+5	3.08E+5	5.07E+1
Te-131	2.17E−2	8.44E−3	1.70E−2	5.88E−2	2.05E+3	1.33E+3	6.59E−3
Te-132	4.81E+2	2.72E+2	3.17E+2	1.77E+3	3.77E+5	1.38E+5	2.63E+2
I-130	8.18E+3	1.64E+4	1.85E+6	2.45E+4	−	5.11E+3	8.44E+3
I-131	4.81E+4	4.81E+4	1.62E+7	7.88E+4	−	2.84E+3	2.73E+4
I-132	2.12E+3	4.07E+3	1.94E+5	6.25E+3	−	3.20E+3	1.88E+3
I-133	1.66E+4	2.03E+4	3.85E+6	3.38E+4	−	5.48E+3	7.70E+3
I-134	1.17E+3	2.16E+3	5.07E+4	3.30E+3	−	9.55E+2	9.95E+2
I-135	4.92E+3	8.73E+3	7.92E+5	1.34E+4	−	4.44E+3	4.14E+3
Cs-134	6.51E+5	1.01E+6	−	3.30E+5	1.21E+5	3.85E+3	2.25E+5
Cs-136	6.51E+4	1.71E+5	−	9.55E+4	1.45E+4	4.18E+3	1.16E+5
Cs-137	9.07E+5	8.25E+5	−	2.82E+5	1.04E+5	3.62E+3	1.28E+5
Cs-138	6.33E+2	8.40E+2	−	6.22E+2	6.81E+1	2.70E+2	5.55E+2
Ba-139	1.84E+0	9.84E−4	−	8.62E−4	5.77E+3	5.77E+4	5.37E−2
Ba-140	7.40E+4	6.48E+1	−	2.11E+1	1.74E+6	1.02E+5	4.33E+3
Ba-141	1.96E−1	1.09E−4	−	9.47E−5	2.92E+3	2.75E+2	6.36E−3
Ba-142	5.00E−2	3.60E−5	−	2.91E−5	1.64E+3	2.74E+0	2.79E−3
La-140	6.44E+2	2.25E+2	−	−	1.83E+5	2.26E+5	7.55E+1
La-142	1.30E+0	4.11E−1	−	−	8.70E+3	7.59E+4	1.29E−1
Ce-141	3.92E+4	1.95E+4	−	8.55E+3	5.44E+5	5.66E+4	2.90E+3
Ce-143	3.66E+2	1.99E+2	−	8.36E+1	1.15E+5	1.27E+5	2.87E+1
Ce-144	6.77E+6	2.12E+6	−	1.17E+6	1.20E+7	3.89E+5	3.61E+5
Pr-143	1.85E+4	5.55E+3	−	3.00E+3	4.33E+5	9.73E+4	9.14E+2
Pr-144	5.96E−2	1.85E−2	−	9.77E−3	1.57E+3	1.97E+2	3.00E−3
Nd-147	1.08E+4	8.73E+3	−	4.81E+3	3.28E+5	8.21E+4	6.81E+2
W-187	1.63E+1	9.66E+0	−	−	4.11E+4	9.10E+4	4.33E+0
Np-239	4.66E+2	3.34E+1	−	9.73E+1	5.81E+4	6.40E+4	2.35E+1

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − INFANT
(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	6.47E+2	6.47E+2	6.47E+2	6.47E+2	6.47E+2	6.47E+2
C-14	2.65E+4	5.31E+3	5.31E+3	5.31E+3	5.31E+3	5.31E+3	5.31E+3
Na-24	1.06E+4	1.06E+4	1.06E+4	1.06E+4	1.06E+4	1.06E+4	1.06E+4
P-32	2.03E+6	1.12E+5	−	−	−	1.61E+4	7.74E+4
Cr-51	−	−	5.75E+1	1.32E+1	1.28E+4	3.57E+2	8.95E+1
Mn-54	−	2.53E+4	−	4.98E+3	1.00E+6	7.06E+3	4.98E+3
Mn-56	−	1.54E+0	−	1.10E+0	1.25E+4	7.17E+4	2.21E−1
Fe-55	1.97E+4	1.17E+4	−	−	8.69E+4	1.09E+3	3.33E+3
Fe-59	1.36E+4	2.35E+4	−	−	1.02E+6	2.48E+4	9.48E+3
Co-57	−	6.51E+2	−	−	3.79E+5	4.86E+3	6.41E+2
Co-58	−	1.22E+3	−	−	7.77E+5	1.11E+4	1.82E+3
Co-60	−	8.02E+3	−	−	4.51E+6	3.19E+4	1.18E+4
Ni-63	3.39E+5	2.04E+4	−	−	2.09E+5	2.42E+3	1.16E+4
Ni-65	2.39E+0	2.84E−1	−	−	8.12E+3	5.01E+4	1.23E−1
Cu-64	−	1.88E+0	−	3.98E+0	9.30E+3	1.50E+4	7.74E−1
Zn-65	1.93E+4	6.26E+4	−	3.25E+4	6.47E+5	5.14E+4	3.11E+4
Zn-69	5.39E−2	9.67E−2	−	4.02E−2	1.47E+3	1.32E+4	7.18E−3
Br-82	−	−	−	−	−	−	1.33E+4
Br-83	−	−	−	−	−	−	3.81E+2
Br-84	−	−	−	−	−	−	4.00E+2
Br-85	−	−	−	−	−	−	2.04E+1
Rb-86	−	1.90E+5	−	−	−	3.04E+3	8.82E+4
Rb-88	−	5.57E+2	−	−	−	3.39E+2	2.87E+2
Rb-89	−	3.21E+2	−	−	−	6.82E+1	2.06E+2
Sr-89	3.98E+5	−	−	−	2.03E+6	6.40E+4	1.14E+4
Sr-90	4.09E+7	−	−	−	1.12E+7	1.31E+5	2.59E+6
Sr-91	9.56E+1	−	−	−	5.26E+4	7.34E+4	3.46E+0
Sr-92	1.05E+1	−	−	−	2.38E+4	1.40E+5	3.91E−1
Y-90	3.29E+3	−	−	−	2.69E+5	1.04E+5	8.82E+1
Y-91m	4.07E−1	−	−	−	2.79E+3	2.35E+3	1.39E−2
Y-91	5.88E+5	−	−	−	2.45E+6	7.03E+4	1.57E+4
Y-92	1.64E+1	−	−	−	2.45E+4	1.27E+5	4.61E−1
Y-93	1.50E+2	−	−	−	7.64E+4	1.67E+5	4.07E+0
Zr-95	1.15E+5	2.79E+4	−	3.11E+4	1.75E+6	2.17E+4	2.03E+4
Zr-97	1.50E+2	2.56E+1	−	2.59E+1	1.10E+5	1.40E+5	1.17E+1
Nb-95	1.57E+4	6.43E+3	−	4.72E+3	4.79E+5	1.27E+4	3.78E+3
Nb-97	3.42E−1	7.29E−2	−	5.70E−2	3.32E+3	2.69E+4	2.63E−2
Mo-99	−	1.65E+2	−	2.65E+2	1.35E+5	4.87E+4	3.23E+1
Tc-99m	1.40E−3	2.88E−3	−	3.11E−2	8.11E+2	2.03E+3	3.72E−2
Tc-101	6.51E−5	8.23E−5	−	9.79E−4	5.84E+2	8.44E+2	8.12E−4
Ru-103	2.02E+3	−	−	4.24E+3	5.52E+5	1.61E+4	6.79E+2
Ru-105	1.22E+0	−	−	8.99E−1	1.57E+4	4.84E+4	4.10E−1
Ru-106	8.68E+4	−	−	1.07E+5	1.16E+7	1.64E+5	1.09E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Inhalation Pathway Dose Factors − INFANT (cont.)
(mrem/yr per µCi/m^3)

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	9.98E+3	7.22E+3	−	1.09E+4	3.67E+6	3.30E+4	5.00E+3
Sb-124	3.79E+4	5.56E+2	1.01E+2	−	2.65E+6	5.91E+4	1.20E+4
Sb-125	5.17E+4	4.77E+2	6.23E+1	−	1.64E+6	1.47E+4	1.09E+4
Te-125m	4.76E+3	1.99E+3	1.62E+3	−	4.47E+5	1.29E+4	6.58E+2
Te-127m	1.67E+4	6.90E+3	4.87E+3	3.75E+4	1.31E+6	2.73E+4	2.07E+3
Te-127	2.23E+0	9.53E−1	1.85E+0	4.86E+0	1.03E+4	2.44E+4	4.89E−1
Te-129m	1.41E+4	6.09E+3	5.47E+3	3.18E+4	1.68E+6	6.90E+4	2.23E+3
Te-129	7.88E−2	3.47E−2	6.75E−2	1.75E−1	3.00E+3	2.63E+4	1.88E−2
Te-131m	1.07E+2	5.50E+1	8.93E+1	2.65E+2	1.99E+5	1.19E+5	3.63E+1
Te-131	1.74E−2	8.22E−3	1.58E−2	3.99E−2	2.06E+3	8.22E+3	5.00E−3
Te-132	3.72E+2	2.37E+2	2.79E+2	1.03E+3	3.40E+5	4.41E+4	1.76E+2
I-130	6.36E+3	1.39E+4	1.60E+6	1.53E+4	−	1.99E+3	5.57E+3
I-131	3.79E+4	4.44E+4	1.48E+7	5.18E+4	−	1.06E+3	1.96E+4
I-132	1.69E+3	3.54E+3	1.69E+5	3.95E+3	−	1.90E+3	1.26E+3
I-133	1.32E+4	1.92E+4	3.56E+6	2.24E+4	−	2.16E+3	5.60E+3
I-134	9.21E+2	1.88E+3	4.45E+4	2.09E+3	−	1.29E+3	6.65E+2
I-135	3.86E+3	7.60E+3	6.96E+5	8.47E+3	−	1.83E+3	2.77E+3
Cs-134	3.96E+5	7.03E+5	−	1.90E+5	7.97E+4	1.33E+3	7.45E+4
Cs-136	4.83E+4	1.35E+5	−	5.64E+4	1.18E+4	1.43E+3	5.29E+4
Cs-137	5.49E+5	6.12E+5	−	1.72E+5	7.13E+4	1.33E+3	4.55E+4
Cs-138	5.05E+2	7.81E+2	−	4.10E+2	6.54E+1	8.76E+2	3.98E+2
Ba-139	1.48E+0	9.84E−4	−	5.92E−4	5.95E+3	5.10E+4	4.30E−2
Ba-140	5.60E+4	5.60E+1	−	1.34E+1	1.60E+6	3.84E+4	2.90E+3
Ba-141	1.57E−1	1.08E−4	−	6.50E−5	2.97E+3	4.75E+3	4.97E−3
Ba-142	3.98E−2	3.30E−5	−	1.90E−5	1.55E+3	6.93E+2	1.96E−3
La-140	5.05E+2	2.00E+2	−	−	1.68E+5	8.48E+4	5.15E+1
La-142	1.03E+0	3.77E−1	−	−	8.22E+3	5.95E+4	9.04E−2
Ce-141	2.77E+4	1.67E+4	−	5.25E+3	5.17E+5	2.16E+4	1.99E+3
Ce-143	2.93E+2	1.93E+2	−	5.64E+1	1.16E+5	4.97E+4	2.21E+1
Ce-144	3.19E+6	1.21E+6	−	5.38E+5	9.84E+6	1.48E+5	1.76E+5
Pr-143	1.40E+4	5.24E+3	−	1.97E+3	4.33E+5	3.72E+4	6.99E+2
Pr-144	4.79E−2	1.85E−2	−	6.72E−3	1.61E+3	4.28E+3	2.41E−3
Nd-147	7.94E+3	8.13E+3	−	3.15E+3	3.22E+5	3.12E+4	5.00E+2
W-187	1.30E+1	9.02E+0	−	−	3.96E+4	3.56E+4	3.12E+0
Np-239	3.71E+2	3.32E+1	−	6.62E+1	5.95E+4	2.49E+4	1.88E+1

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Milk Pathway Dose Factors − ADULT
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	–	7.63E+2	7.63E+2	7.63E+2	7.63E+2	7.63E+2	7.63E+2
C-14	3.63E+5	7.26E+4	7.26E+4	7.26E+4	7.26E+4	7.26E+4	7.26E+4
Na-24	2.54E+6	2.54E+6	2.54E+6	2.54E+6	2.54E+6	2.54E+6	2.54E+6
P-32	1.71E+10	1.06E+9	–	–	–	1.92E+9	6.60E+8
Cr-51	–	–	1.71E+4	6.30E+3	3.80E+4	7.20E+6	2.86E+4
Mn-54	–	8.40E+6	–	2.50E+6	–	2.57E+7	1.60E+6
Mn-56	–	4.23E−3	–	5.38E−3	–	1.35E−1	7.51E−4
Fe-55	2.51E+7	1.73E+7	–	–	9.67E+6	9.95E+6	4.04E+6
Fe-59	2.98E+7	7.00E+7	–	–	1.95E+7	2.33E+8	2.68E+7
Co-57	–	1.28E+6	–	–	–	3.25E+7	2.13E+6
Co-58	–	4.72E+6	–	–	–	9.57E+7	1.06E+7
Co-60	–	1.64E+7	–	–	–	3.08E+8	3.62E+7
Ni-63	6.73E+9	4.66E+8	–	–	–	9.73E+7	2.26E+8
Ni-65	3.70E−1	4.81E−2	–	–	–	1.22E+0	2.19E−2
Cu-64	–	2.41E+4	–	6.08E+4	–	2.05E+6	1.13E+4
Zn-65	1.37E+9	4.36E+9	–	2.92E+9	–	2.75E+9	1.97E+9
Zn-69	–	–	–	–	–	–	–
Br-82	–	–	–	–	–	3.72E+7	3.25E+7
Br-83	–	–	–	–	–	1.49E−1	1.03E−1
Br-84	–	–	–	–	–	–	–
Br-85	–	–	–	–	–	–	–
Rb-86	–	2.59E+9	–	–	–	5.11E+8	1.21E+9
Rb-88	–	–	–	–	–	–	–
Rb-89	–	–	–	–	–	–	–
Sr-89	1.45E+9	–	–	–	–	2.33E+8	4.16E+7
Sr-90	4.68E+10	–	–	–	–	1.35E+9	1.15E+10
Sr-91	3.13E+4	–	–	–	–	1.49E+5	1.27E+3
Sr-92	4.89E−1	–	–	–	–	9.68E+0	2.11E−2
Y-90	7.07E+1	–	–	–	–	7.50E+5	1.90E+0
Y-91m	–	–	–	–	–	–	–
Y-91	8.60E+3	–	–	–	–	4.73E+6	2.30E+2
Y-92	5.42E−5	–	–	–	–	9.49E−1	1.58E−6
Y-93	2.33E−1	–	–	–	–	7.39E+3	6.43E−3
Zr-95	9.46E+2	3.03E+2	–	4.76E+2	–	9.62E+5	2.05E+2
Zr-97	4.26E−1	8.59E−2	–	1.30E−1	–	2.66E+4	3.93E−2
Nb-95	8.25E+4	4.59E+4	–	4.54E+4	–	2.79E+8	2.47E+4
Nb-97	–	–	–	–	–	5.47E−9	–
Mo-99	–	2.52E+7	–	5.72E+7	–	5.85E+7	4.80E+6
Tc-99m	3.25E+0	9.19E+0	–	1.40E+2	4.50E+0	5.44E+3	1.17E+2
Tc-101	–	–	–	–	–	–	–
Ru-103	1.02E+3	–	–	3.89E+3	–	1.19E+5	4.39E+2
Ru-105	8.57E−4	–	–	1.11E−2	–	5.24E−1	3.38E−4
Ru-106	2.04E+4	–	–	3.94E+4	–	1.32E+6	2.58E+3
Rh-103m	–	–	–	–	–	–	–
Rh-106	–	–	–	–	–	–	–

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − ADULT (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	5.83E+7	5.39E+7	−	1.06E+8	−	2.20E+10	3.20E+7
Sb-124	2.57E+7	4.86E+5	6.24E+4	−	2.00E+7	7.31E+8	1.02E+7
Sb125	2.04E+7	2.28E+5	2.08E+4	−	1.58E+7	2.25E+8	4.86E+6
Te-125m	1.63E+7	5.90E+6	4.90E+6	6.63E+7	−	6.50E+7	2.18E+6
Te-127m	4.58E+7	1.64E+7	1.17E+7	1.86E+8	−	1.54E+8	5.58E+6
Te-127	6.72E+2	2.41E+2	4.98E+2	2.74E+3	−	5.30E+4	1.45E+2
Te-129m	6.04E+7	2.25E+7	2.08E+7	2.52E+8	−	3.04E+8	9.57E+6
Te-129	−	−	−	−	−	−	−
Te-131m	3.61E+5	1.77E+5	2.80E+5	1.79E+6	−	1.75E+7	1.47E+5
Te-131	−	−	−	−	−	−	−
Te-132	2.39E+6	1.55E+6	1.71E+6	1.49E+7	−	7.32E+7	1.45E+6
I-130	4.26E+5	1.26E+6	1.07E+8	1.96E+6	−	1.08E+6	4.96E+5
I-131	2.96E+8	4.24E+8	1.39E+11	7.27E+8	−	1.12E+8	2.43E+8
I-132	1.64E−1	4.37E−1	1.53E+1	6.97E−1	−	8.22E−2	1.53E−1
I-133	3.97E+6	6.90E+6	1.01E+9	1.20E+7	−	6.20E+6	2.10E+6
I-134	−	−	−	−	−	−	−
I-135	1.39E+4	3.63E+4	2.40E+6	5.83E+4	−	4.10E+4	1.34E+4
Cs-134	5.65E+9	1.34E+10	−	4.35E+9	1.44E+9	2.35E+8	1.10E+10
Cs-136	2.61E+8	1.03E+9	−	5.74E+8	7.87E+7	1.17E+8	7.42E+8
Cs-137	7.38E+9	1.01E+10	−	3.43E+9	1.14E+9	1.95E+8	6.61E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	4.70E−8	−	−	−	−	8.34E−8	1.38E−9
Ba-140	2.69E+7	3.38E+4	−	1.15E+4	1.93E+4	5.54E+7	1.76E+6
Ba-141	−	−	−	−	−	−	−
Ba142	−	−	−	−	−	−	−
La-140	4.49E+0	2.26E+0	−	−	−	1.66E+5	5.97E−1
La-142	−	−	−	−	−	3.03E−8	−
Ce-141	4.84E+3	3.27E+3	−	1.52E+3	−	1.25E+7	3.71E+2
Ce-143	4.19E+1	3.09E+4	−	1.36E+1	−	1.16E+6	3.42E+0
Ce-144	3.58E+5	1.50E+5	−	8.87E+4	−	1.21E+8	1.92E+4
Pr-143	1.59E+2	6.37E+1	−	3.68E+1	−	6.96E+5	7.88E+0
Pr-144	−	−	−	−	−	−	−
Nd-147	9.42E+1	1.09E+2	−	6.37E+1	−	5.23E+5	6.52E+0
W-187	6.56E+3	5.48E+3	−	−	−	1.80E+6	1.92E+3
Np-239	3.66E+0	3.60E−1	−	1.12E+0	−	7.39E+4	1.98E−1

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Milk Pathway Dose Factors − TEENAGER
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	9.94E+2	9.94E+2	9.94E+2	9.94E+2	9.94E+2	9.94E+2
C-14	6.70E+5	1.34E+5	1.34E+5	1.34E+5	1.34E+5	1.34E+5	1.34E+5
Na-24	4.44E+6	4.44E+6	4.44E+6	4.44E+6	4.44E+6	4.44E+6	4.44E+6
P-32	3.15E+10	1.95E+9	−	−	−	2.65E+9	1.22E+9
Cr-51	−	−	2.78E+4	1.10E+4	7.13E+4	8.40E+6	5.00E+4
Mn-54	−	1.40E+7	−	4.17E+6	−	2.87E+7	2.78E+6
Mn-56	−	7.51E−3	−	9.50E−3	−	4.94E−1	1.33E−3
Fe-55	4.45E+7	3.16E+7	−	−	2.00E+7	1.37E+7	7.36E+6
Fe-59	5.20E+7	1.21E+8	−	−	3.82E+7	2.87E+8	4.68E+7
Co-57	−	2.25E+6	−	−	−	4.19E+7	3.76E+6
Co-58	−	7.95E+6	−	−	−	1.10E+8	1.83E+7
Co-60	−	2.78E+7	−	−	−	3.62E+8	6.26E+7
Ni-63	1.18E+10	8.35E+8	−	−	−	1.33E+8	4.01E+8
Ni-65	6.78E−1	8.66E−2	−	−	−	4.70E+0	3.94E−2
Cu-64	−	4.29E+4	−	1.09E+5	−	3.33E+6	2.02E+4
Zn-65	2.11E+9	7.31E+9	−	4.68E+9	−	3.10E+9	3.41E+9
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	−	5.64E+7
Br-83	−	−	−	−	−	−	1.91E−1
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.73E+9	−	−	−	7.00E+8	2.22E+9
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	2.67E+9	−	−	−	−	3.18E+8	7.66E+7
Sr-90	6.61E+10	−	−	−	−	1.86E+9	1.63E+10
Sr-91	5.75E+4	−	−	−	−	2.61E+5	2.29E+3
Sr-92	8.95E−1	−	−	−	−	2.28E+1	3.81E−2
Y-90	1.30E+2	−	−	−	−	1.07E+6	3.50E+0
Y-91m	−	−	−	−	−	−	−
Y-91	1.58E+4	−	−	−	−	6.48E+6	4.24E+2
Y-92	1.00E−4	−	−	−	−	2.75E+0	2.90E−6
Y-93	4.30E−1	−	−	−	−	1.31E+4	1.18E−2
Zr-95	1.65E+3	5.22E+2	−	7.67E+2	−	1.20E+6	3.59E+2
Zr-97	7.75E−1	1.53E−1	−	2.32E−1	−	4.15E+4	7.06E−2
Nb-95	1.41E+5	7.80E+4	−	7.57E+4	−	3.34E+8	4.30E+4
Nb-97	−	−	−	−	−	6.34E−8	−
Mo-99	−	4.56E+7	−	1.04E+8	−	8.16E+7	8.69E+6
Tc-99m	5.64E+0	1.57E+1	−	2.34E+2	8.73E+0	1.03E+4	2.04E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	1.81E+3	−	−	6.40E+3	−	1.52E+5	7.75E+2
Ru-105	1.57E−3	−	−	1.97E−2	−	1.26E+0	6.08E−4
Ru-106	3.75E+4	−	−	7.23E+4	−	1.80E+6	4.73E+3
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Milk Pathway Dose Factors − TEENAGER (cont.)
(mrem/yr per µCi/m^{3}) for H-3 and C-14
(m^{2} x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	9.63E+7	9.11E+7	−	1.74E+8	−	2.56E+10	5.54E+7
Sb-124	4.59E+7	8.46E+5	1.04E+5	−	4.01E+7	9.25E+8	1.79E+7
Sb-125	3.65E+7	3.99E+5	3.49E+4	−	3.21E+7	2.84E+8	8.54E+6
Te-125m	3.00E+7	1.08E+7	8.39E+6	−	−	8.86E+7	4.02E+6
Te-127m	8.44E+7	2.99E+7	2.01E+7	3.42E+8	−	2.10E+8	1.00E+7
Te-127	1.24E+3	4.41E+2	8.59E+2	5.04E+3	−	9.61E+4	2.68E+2
Te-129m	1.11E+8	4.10E+7	3.57E+7	4.62E+8	−	4.15E+8	1.75E+7
Te-129	−	−	−	1.67E−9	−	2.18E−9	−
Te-131m	6.57E+5	3.15E+5	4.74E+5	3.29E+6	−	2.53E+7	2.63E+5
Te-131	−	−	−	−	−	−	−
Te-132	4.28E+6	2.71E+6	2.86E+6	2.60E+7	−	8.58E+7	2.55E+6
I-130	7.49E+5	2.17E+6	1.77E+8	3.34E+6	−	1.67E+6	8.66E+5
I-131	5.38E+8	7.53E+8	2.20E+11	1.30E+9	−	1.49E+8	4.04E+8
I-132	2.90E−1	7.59E−1	2.56E+1	1.20E+0	−	3.31E−1	2.72E−1
I-133	7.24E+6	1.23E+7	1.72E+9	2.15E+7	−	9.30E+6	3.75E+6
I-134	−	−	−	−	−	−	−
I-135	2.47E+4	6.35E+4	4.08E+6	1.00E+5	−	7.03E+4	2.35E+4
Cs-134	9.81E+9	2.31E+10	−	7.34E+9	2.80E+9	2.87E+8	1.07E+10
Cs-136	4.45E+8	1.75E+9	−	9.53E+8	1.50E+8	1.41E+8	1.18E+9
Cs-137	1.34E+10	1.78E+10	−	6.06E+9	2.35E+9	2.53E+8	6.20E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	8.69E−8	−	−	−	−	7.75E−7	2.53E−9
Ba-140	4.85E+7	5.95E+4	−	2.02E+4	4.00E+4	7.49E+7	3.13E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	8.06E+0	3.96E+0	−	−	−	2.27E+5	1.05E+0
La-142	−	−	−	−	−	2.23E−7	−
Ce-141	8.87E+3	5.92E+3	−	2.79E+3	−	1.69E+7	6.81E+2
Ce-143	7.69E+1	5.60E+4	−	2.51E+1	−	1.68E+6	6.25E+0
Ce-144	6.58E+5	2.72E+5	−	1.63E+5	−	1.66E+8	3.54E+4
Pr-143	2.92E+2	1.17E+2	−	6.77E+1	−	9.61E+5	1.45E+1
Pr-144	−	−	−	−	−	−	−
Nd-147	1.81E+2	1.97E+2	−	1.16E+2	−	7.11E+5	1.18E+1
W-187	1.20E+4	9.78E+3	−	−	−	2.65E+6	3.43E+3
Np-239	6.99E+0	6.59E−1	−	2.07E+0	−	1.06E+5	3.66E−1

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.57E+3	1.57E+3	1.57E+3	1.57E+3	1.57E+3	1.57E+3
C-14	1.65E+6	3.29E+5	3.29E+5	3.29E+5	3.29E+5	3.29E+5	3.29E+5
Na-24	9.23E+6	9.23E+6	9.23E+6	9.23E+6	9.23E+6	9.23E+6	9.23E+6
P-32	7.77E+10	3.64E+9	−	−	−	2.15E+9	3.00E+9
Cr-51	−	−	5.66E+4	1.55E+4	1.03E+5	5.41E+6	1.02E+5
Mn-54	−	2.09E+7	−	5.87E+6	−	1.76E+7	5.58E+6
Mn-56	−	1.31E−2	−	1.58E−2	−	1.90E+0	2.95E−3
Fe-55	1.12E+8	5.93E+7	−	−	3.35E+7	1.10E+7	1.84E+7
Fe-59	1.20E+8	1.95E+8	−	−	5.65E+7	2.03E+8	9.71E+7
Co-57	−	3.84E+6	−	−	−	3.14E+7	7.77E+6
Co-58	−	1.21E+7	−	−	−	7.08E+7	3.72E+7
Co-60	−	4.32E+7	−	−	−	2.39E+8	1.27E+8
Ni-63	2.96E+10	1.59E+9	−	−	−	1.07E+8	1.01E+9
Ni-65	1.66E+0	1.56E−1	−	−	−	1.91E+1	9.11E−2
Cu-64	−	7.55E+4	−	1.82E+5	−	3.54E+6	4.56E+4
Zn-65	4.13E+9	1.10E+10	−	6.94E+9	−	1.93E+9	6.85E+9
Zn-69	−	−	−	−	−	2.14E−9	−
Br-82	−	−	−	−	−	−	1.15E+8
Br-83	−	−	−	−	−	−	4.69E−1
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	8.77E+9	−	−	−	5.64E+8	5.39E+9
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	6.62E+9	−	−	−	−	2.56E+8	1.89E+8
Sr-90	1.12E+11	−	−	−	−	1.51E+9	2.83E+10
Sr-91	1.41E+5	−	−	−	−	3.12E+5	5.33E+3
Sr-92	2.19E+0	−	−	−	−	4.14E+1	8.76E−2
Y-90	3.22E+2	−	−	−	−	9.15E+5	8.61E+0
Y-91m	−	−	−	−	−	−	−
Y-91	3.91E+4	−	−	−	−	5.21E+6	1.04E+3
Y-92	2.46E−4	−	−	−	−	7.10E+0	7.03E−6
Y-93	1.06E+0	−	−	−	−	1.57E+4	2.90E−2
Zr-95	3.84E+3	8.45E+2	−	1.21E+3	−	8.81E+5	7.52E+2
Zr-97	1.89E+0	2.72E−1	−	3.91E−1	−	4.13E+4	1.61E−1
Nb-95	3.18E+5	1.24E+5	−	1.16E+5	−	2.29E+8	8.84E+4
Nb-97	−	−	−	−	−	1.45E−6	−
Mo-99	−	8.29E+7	−	1.77E+8	−	6.86E+7	2.05E+7
Tc-99m	1.29E+1	2.54E+1	−	3.68E+2	1.29E+1	1.44E+4	4.20E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	4.29E+3	−	−	1.08E+4	−	1.11E+5	1.65E+3
Ru-105	3.82E−3	−	−	3.36E−2	−	2.49E+0	1.39E−3
Ru-106	9.24E+4	−	−	1.25E+5	−	1.44E+6	1.15E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − CHILD (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	2.09E+8	1.41E+8	−	2.63E+8	−	1.68E+10	1.13E+8
Sb-124	1.09E+8	1.41E+8	2.40E+5	−	6.03E+7	6.79E+8	3.81E+7
Sb-125	8.70E+7	1.41E+6	8.06E+4	−	4.85E+7	2.08E+8	1.82E+7
Te-125m	7.38E+7	2.00E+7	2.07E+7	−	−	7.12E+7	9.84E+6
Te-127m	2.08E+8	5.60E+7	4.97E+7	5.93E+8	−	1.68E+8	2.47E+7
Te-127	3.06E+3	8.25E+2	2.12E+3	8.71E+3	−	1.20E+5	6.56E+2
Te-129m	2.72E+8	7.61E+7	8.78E+7	8.00E+8	−	3.32E+8	4.23E+7
Te-129	−	−	−	2.87E−9	−	6.12E−8	−
Te-131m	1.60E+6	5.53E+5	1.14E+6	5.35E+6	−	2.24E+7	5.89E+5
Te-131	−	−	−	−	−	−	−
Te-132	1.02E+7	4.52E+6	6.58E+6	4.20E+7	−	4.55E+7	5.46E+6
I-130	1.75E+6	3.54E+6	3.90E+8	5.29E+6	−	1.66E+6	1.82E+6
I-131	1.30E+9	1.31E+9	4.34E+11	2.15E+9	−	1.17E+8	7.46E+8
I-132	6.86E−1	1.26E+0	5.85E+1	1.93E+0	−	1.48E+0	5.80E−1
I-133	1.76E+7	2.18E+7	4.04E+9	3.63E+7	−	8.77E+6	8.23E+6
I-134	−	−	−	−	−	−	−
I-135	5.84E+4	1.05E+5	9.30E+6	1.61E+5	−	8.00E+4	4.97E+4
Cs-134	2.26E+10	3.71E+10	−	1.15E+10	4.13E+9	2.00E+8	7.83E+9
Cs-136	1.00E+9	2.76E+9	−	1.47E+9	2.19E+8	9.70E+7	1.79E+9
Cs-137	3.22E+10	3.09E+10	−	1.01E+10	3.62E+9	1.93E+8	4.55E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	2.14E−7	−	−	−	−	1.23E−5	6.19E−9
Ba-140	1.17E+8	1.03E+5	−	3.34E+4	6.12E+4	5.94E+7	6.84E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	1.93E+1	6.74E+0	−	−	−	1.88E+5	2.27E+0
La-142	−	−	−	−	−	2.51E−6	−
Ce-141	2.19E+4	1.09E+4	−	4.78E+3	−	1.36E+7	1.62E+3
Ce-143	1.89E+2	1.02E+5	−	4.29E+1	−	1.50E+6	1.48E+1
Ce-144	1.62E+6	5.09E+5	−	2.82E+5	−	1.33E+8	8.66E+4
Pr-143	7.23E+2	2.17E+2	−	1.17E+2	−	7.80E+5	3.59E+1
Pr-144	−	−	−	−	−	−	−
Nd-147	4.45E+2	3.60E+2	−	1.98E+2	−	5.71E+5	2.79E+1
W-187	2.91E+4	1.72E+4	−	−	−	2.42E+6	7.73E+3
Np-239	1.72E+1	1.23E+0	−	3.57E+0	−	9.14E+4	8.68E−1

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − INFANT
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	2.38E+3	2.38E+3	2.38E+3	2.38E+3	2.38E+3	2.38E+3
C-14	3.23E+6	6.89E+5	6.89E+5	6.89E+5	6.89E+5	6.89E+5	6.89E+5
Na-24	1.61E+7	1.61E+7	1.61E+7	1.61E+7	1.61E+7	1.61E+7	1.61E+7
P-32	1.60E+11	9.42E+9	−	−	−	2.17E+9	6.21E+9
Cr-51	−	−	1.05E+5	2.30E+4	2.05E+5	4.71E+6	1.61E+5
Mn-54	−	3.89E+7	−	8.63E+6	−	1.43E+7	8.83E+6
Mn-56	−	3.21E−2	−	2.76E−2	−	2.91E+0	5.53E−3
Fe-55	1.35E+8	8.72E+7	−	−	4.27E+7	1.11E+7	2.33E+7
Fe-59	2.25E+8	3.93E+8	−	−	1.16E+8	1.88E+8	1.55E+8
Co-57	−	8.95E+6	−	−	−	3.05E+7	1.46E+7
Co-58	−	2.43E+7	−	−	−	6.05E+7	6.06E+7
Co-60	−	8.81E+7	−	−	−	2.10E+8	2.08E+8
Ni-63	3.49E+10	2.16E+9	−	−	−	1.07E+8	1.21E+9
Ni-65	3.51E+0	3.97E−1	−	−	−	3.02E+1	1.81E−1
Cu-64	−	1.88E+5	−	3.17E+5	−	3.85E+6	8.69E+4
Zn-65	5.55E+9	1.90E+10	−	9.23E+9	−	1.61E+10	8.78E+9
Zn-69	−	−	−	−	−	7.36E−9	−
Br-82	−	−	−	−	−	−	1.94E+8
Br-83	−	−	−	−	−	−	9.95E−1
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	2.22E+10	−	−	−	5.69E+8	1.10E+10
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	1.26E+10	−	−	−	−	2.59E+8	3.61E+8
Sr-90	1.22E+11	−	−	−	−	1.52E+9	3.10E+10
Sr-91	2.94E+5	−	−	−	−	3.48E+5	1.06E+4
Sr-92	4.65E+0	−	−	−	−	5.01E+1	1.73E−1
Y-90	6.80E+2	−	−	−	−	9.39E+5	1.82E+1
Y-91m	−	−	−	−	−	−	−
Y-91	7.33E+4	−	−	−	−	5.26E+6	1.95E+3
Y-92	5.22E−4	−	−	−	−	9.97E+0	1.47E−5
Y-93	2.25E+0	−	−	−	−	1.78E+4	6.13E−2
Zr-95	6.83E+3	1.66E+3	−	1.79E+3	−	8.28E+5	1.18E+3
Zr-97	3.99E+0	6.85E−1	−	6.91E−1	−	4.37E+4	3.13E−1
Nb-95	5.93E+5	2.44E+5	−	1.75E+5	−	2.06E+8	1.41E+5
Nb-97	−	−	−	−	−	3.70E−6	−
Mo-99	−	2.12E+8	−	3.17E+8	−	6.98E+7	4.13E+7
Tc-99m	2.69E+1	5.55E+1	−	5.97E+2	2.90E+1	1.61E+4	7.15E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	8.69E+3	−	−	1.81E+4	−	1.06E+5	2.91E+3
Ru-105	8.06E−3	−	−	5.92E−2	−	3.21E+0	2.71E−3
Ru-106	1.90E+5	−	−	2.25E+5	−	1.44E+6	2.38E+4
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Grass−Cow−Milk Pathway Dose Factors − INFANT (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	3.86E+8	2.82E+8	−	4.03E+8	−	1.46E+10	1.86E+8
Sb-124	2.09E+8	3.08E+6	5.56E+5	−	1.31E+8	6.46E+8	6.49E+7
Sb-125	1.49E+8	1.45E+6	1.87E+5	−	9.38E+7	1.99E+8	3.07E+7
Te-125m	1.51E+8	5.04E+7	5.07E+7	−	−	7.18E+7	2.04E+7
Te-127m	4.21E+8	1.40E+8	1.22E+8	1.04E+9	−	1.70E+8	5.10E+7
Te-127	6.50E+3	2.18E+3	5.29E+3	1.59E+4	−	1.36E+5	1.40E+3
Te-129m	5.59E+8	1.92E+8	2.15E+8	1.40E+9	−	3.34E+8	8.62E+7
Te-129	2.08E−9	−	1.75E−9	5.18E−9	−	1.66E−7	−
Te-131m	3.38E+6	1.36E+6	2.76E+6	9.35E+6	−	2.29E+7	1.12E+6
Te-131	−	−	−	−	−	−	−
Te-132	2.10E+7	1.04E+7	1.54E+7	6.51E+7	−	3.85E+7	9.72E+6
I-130	3.60E+6	7.92E+6	8.88E+8	8.70E+6	−	1.70E+6	3.18E+6
I-131	2.72E+9	3.21E+9	1.05E+12	3.75E+9	−	1.15E+8	1.41E+9
I-132	1.42E+0	2.89E+0	1.35E+2	3.22E+0	−	2.34E+0	1.03E+0
I-133	3.72E+7	5.41E+7	9.84E+9	6.36E+7	−	9.16E+6	1.58E+7
I-134	−	−	1.01E−9	−	−	−	−
I-135	1.21E+5	2.41E+5	2.16E+7	2.69E+5	−	8.74E+4	8.80E+4
Cs-134	3.65E+10	6.80E+10	−	1.75E+10	7.18E+9	1.85E+8	6.87E+9
Cs-136	1.96E+9	5.77E+9	−	2.30E+9	4.70E+8	8.76E+7	2.15E+9
Cs-137	5.15E+10	6.02E+10	−	1.62E+10	6.55E+9	1.88E+8	4.27E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	4.55E−7	−	−	−	−	2.88E−5	1.32E−8
Ba-140	2.41E+8	2.41E+5	−	5.73E+4	1.48E+5	5.92E+7	1.24E+7
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	4.03E+1	1.59E+1	−	−	−	1.87E+5	4.09E+0
La-142	−	−	−	−	−	5.21E−6	−
Ce-141	4.33E+4	2.64E+4	−	8.15E+3	−	1.37E+7	3.11E+3
Ce-143	4.00E+2	2.65E+5	−	7.72E+1	−	1.55E+6	3.02E+1
Ce-144	2.33E+6	9.52E+5	−	3.85E+5	−	1.33E+8	1.30E+5
Pr-143	1.49E+3	5.59E+2	−	2.08E+2	−	7.89E+5	7.41E+1
Pr-144	−	−	−	−	−	−	−
Nd-147	8.82E+2	9.06E+2	−	3.49E+2	−	5.74E+5	5.55E+1
W-187	6.12E+4	4.26E+4	−	−	−	2.50E+6	1.47E+4
Np-239	3.64E+1	3.25E+0	−	6.49E+0	−	9.40E+4	1.84E+0

Table 7.0−4
R_{aipo}, Grass−Cow−Meat Pathway Dose Factors − ADULT
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	3.25E+2	3.25E+2	3.25E+2	3.25E+2	3.25E+2	3.25E+2
C-14	3.33E+5	6.66E+4	6.66E+4	6.66E+4	6.66E+4	6.66E+4	6.66E+4
Na-24	1.84E−3	1.84E−3	1.84E−3	1.84E−3	1.84E−3	1.84E−3	1.84E−3
P-32	4.65E+9	2.89E+8	−	−	−	5.23E+8	1.80E+8
Cr-51	−	−	4.22E+3	1.56E+3	9.38E+3	1.78E+6	7.07E+3
Mn-54	−	9.15E+6	−	2.72E+6	−	2.80E+7	1.75E+6
Mn-56	−	−	−	−	−	−	−
Fe-55	2.93E+8	2.02E+8	−	−	1.13E+8	1.16E+8	4.72E+7
Fe-59	2.67E+8	6.27E+8	−	−	1.75E+8	2.09E+9	2.40E+8
Co-57	−	5.64E+6	−	−	−	1.43E+8	9.37E+6
Co-58	−	1.83E+7	−	−	−	3.70E+8	4.10E+7
Co-60	−	7.52E+7	−	−	−	1.41E+9	1.66E+8
Ni-63	1.89E+10	1.31E+9	−	−	−	2.73E+8	6.33E+8
Ni-65	−	−	−	−	−	−	−
Cu-64	−	2.95E−7	−	7.45E−7	−	2.52E−5	1.39E−7
Zn-65	3.56E+8	1.13E+9	−	7.57E+8	−	7.13E+8	5.12E+8
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	1.44E+3	1.26E+3
Br-83	−	−	−	−	−	−	−
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.87E+8	−	−	−	9.60E+7	2.27E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	3.01E+8	−	−	−	−	4.84E+7	8.65E+6
Sr-90	1.24E+10	−	−	−	−	3.59E+8	3.05E+9
Sr-91	−	−	−	−	−	1.38E−9	−
Sr-92	−	−	−	−	−	−	−
Y-90	1.07E+2	−	−	−	−	1.13E+6	2.86E+0
Y-91m	−	−	−	−	−	−	−
Y-91	1.13E+6	−	−	−	−	6.24E+8	3.03E+4
Y-92	−	−	−	−	−	−	−
Y-93	−	−	−	−	−	2.08E−7	−
Zr-95	1.88E+6	6.04E+5	−	9.48E+5	−	1.91E+9	4.09E+5
Zr-97	1.83E−5	3.69E−6	−	5.58E−6	−	1.14E+0	1.69E−6
Nb-95	2.29E+6	1.28E+6	−	1.26E+6	−	7.75E+9	6.86E+5
Nb-97	−	−	−	−	−	−	−
Mo-99	−	1.09E+5	−	2.46E+5	−	2.52E+5	2.07E+4
Tc-99m	−	−	−	−	−	−	−
Tc-101	−	−	−	−	−	−	−
Ru-103	1.06E+8	−	−	4.03E+8	−	1.23E+10	4.55E+7
Ru-105	−	−	−	−	−	−	−
Ru-106	2.80E+9	−	−	5.40E+9	−	1.81E+11	3.54E+8
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Grass−Cow−Meat Pathway Dose Factors − ADULT (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	6.69E+6	6.19E+6	−	1.22E+7	−	2.52E+9	3.67E+6
Sb-124	1.98E+7	3.74E+5	4.80E+4	−	1.54E+7	5.62E+8	7.85E+6
Sb-125	1.91E+7	2.13E+5	1.94E+4	−	1.47E+7	2.10E+8	4.54E+6
Te-125m	3.59E+8	1.30E+8	1.08E+8	1.46E+9	−	1.43E+9	4.81E+7
Te-127m	1.12E+9	3.99E+8	2.85E+8	4.53E+9	−	3.74E+9	1.36E+8
Te-127	−	−	−	1.09E−9	−	2.10E−8	−
Te-129m	1.14E+9	4.27E+8	3.93E+8	4.77E+9	−	5.76E+9	1.81E+8
Te-129	−	−	−	−	−	−	−
Te-131m	4.51E+2	2.21E+2	3.50E+2	2.24E+3	−	2.19E+4	1.84E+2
Te-131	−	−	−	−	−	−	−
Te-132	1.40E+6	9.07E+5	1.00E+6	8.73E+6	−	4.29E+7	8.51E+5
I-130	2.35E−6	6.94E−6	5.88E−4	1.08E−5	−	5.98E−6	2.74E−6
I-131	1.08E+7	1.54E+7	5.05E+9	2.64E+7	−	4.07E+6	8.83E+6
I-132	−	−	−	−	−	−	−
I-133	4.30E−1	7.47E−1	1.10E+2	1.30E+0	−	6.72E−1	2.28E−1
I-134	−	−	−	−	−	−	−
I-135	−	−	−	−	−	−	−
Cs-134	6.57E+8	1.56E+9	−	5.06E+8	1.68E+8	2.74E+7	1.28E+9
Cs-136	1.18E+7	4.67E+7	−	2.60E+7	3.56E+6	5.30E+6	3.36E+7
Cs-137	8.72E+8	1.19E+9	−	4.05E+8	1.35E+8	2.31E+7	7.81E+8
Cs-138	−	−	−	−	−	−	−
Ba-139	−	−	−	−	−	−	−
Ba-140	2.88E+7	3.61E+4	−	1.23E+4	2.07E+4	5.92E+7	1.89E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	3.60E−2	1.81E−2	−	−	−	1.33E+3	4.79E−3
La-142	−	−	−	−	−	−	−
Ce-141	1.40E+4	9.48E+3	−	4.40E+3	−	3.62E+7	1.08E+3
Ce-143	2.09E−2	1.55E+1	−	6.80E−3	−	5.78E+2	1.71E−3
Ce-144	1.46E+6	6.09E+5	−	3.61E+5	−	4.93E+8	7.83E+4
Pr-143	2.13E+4	8.54E+3	−	4.93E+3	−	9.33E+7	1.06E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	7.08E+3	8.18E+3	−	4.78E+3	−	3.93E+7	4.90E+2
W-187	2.16E−2	1.81E−2	−	−	−	5.92E+0	6.32E−3
Np-239	2.56E−1	2.51E−2	−	7.84E−2	−	5.15E+3	1.39E−2

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Meat Pathway Dose Factors − TEENAGER
(mrem/yr per μCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per μCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	1.94E+2	1.94E+2	1.94E+2	1.94E+2	1.94E+2	1.94E+2
C-14	2.81E+5	5.62E+4	5.62E+4	5.62E+4	5.62E+4	5.62E+4	5.62E+4
Na-24	1.47E−3	1.47E−3	1.47E−3	1.47E−3	1.47E−3	1.47E−3	1.47E−3
P-32	3.93E+9	2.44E+8	−	−	−	3.30E+8	1.52E+8
Cr-51	−	−	3.14E+3	1.24E+3	8.07E+3	9.50E+5	5.65E+3
Mn-4	−	6.98E+6	−	2.08E+6	−	1.43E+7	1.38E+6
Mn-56	−	−	−	−	−	−	−
Fe-55	2.38E+8	1.69E+8	−	−	1.07E+8	7.30E+7	3.93E+7
Fe-59	2.13E+8	4.98E+8	−	−	1.57E+8	1.18E+9	1.92E+8
Co-57	−	4.53E+6	−	−	−	8.45E+7	7.59E+6
Co-58	−	1.41E+7	−	−	−	1.94E+8	3.25E+7
Co-60	−	5.83E+7	−	−	−	7.60E+8	1.31E+8
Ni-63	1.52E+10	1.07E+9	−	−	−	1.71E+8	5.15E+8
Ni-65	−	−	−	−	−	−	−
Cu-64	−	2.41E−7	−	6.10E−7	−	1.87E−5	1.13E−7
Zn-65	2.50E+8	8.69E+8	−	5.56E+8	−	3.68E+8	4.05E+8
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	−	9.98E+2
Br-83	−	−	−	−	−	−	−
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.06E+8	−	−	−	6.01E+7	1.91E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	2.54E+8	−	−	−	−	3.03E+7	7.29E+6
Sr-90	8.05E+9	−	−	−	−	2.26E+8	1.99E+9
Sr-91	−	−	−	−	−	1.10E−9	−
Sr-92	−	−	−	−	−	−	−
Y-90	8.98E+1	−	−	−	−	7.40E+5	2.42E+0
Y-91m	−	−	−	−	−	−	−
Y-91	9.56E+5	−	−	−	−	3.92E+8	2.56E+4
Y-92	−	−	−	−	−	−	−
Y-93	−	−	−	−	−	1.69E−7	−
Zr-95	1.51E+6	4.76E+5	−	6.99E+5	−	1.10E+9	3.27E+5
Zr-97	1.53E−5	3.02E−6	−	4.58E−6	−	8.18E−1	1.39E−6
Nb-95	1.79E+6	9.94E+5	−	9.64E+5	−	4.25E+9	5.47E+5
Nb-97	−	−	−	−	−	−	−
Mo-99	−	8.98E+4	−	2.06E+5	−	1.61E+5	1.71E+4
Tc-99m	−	−	−	−	−	−	−
Tc-101	−	−	−	−	−	−	−
Ru-103	8.60E+7	−	−	3.03E+8	−	7.18E+9	3.68E+7
Ru-105	−	−	−	−	−	−	−
Ru-106	2.36E+9	−	−	4.55E+9	−	1.13E+11	2.97E+8
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4

R_{aipo}, Grass−Cow−Meat Pathway Dose Factors − TEENAGER (cont.)

(mrem/yr per $\mu Ci/m^3$) for H-3 and C-14

(m^2 x mrem/yr per $\mu Ci/sec$) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	5.06E+6	4.79E+6	−	9.14E+6	−	1.35E+9	2.91E+6
Sb-124	1.62E+7	2.98E+5	3.67E+4	−	1.41E+7	3.26E+8	6.31E+6
Sb-125	1.56E+7	1.71E+5	1.49E+4	−	1.37E+7	1.22E+8	3.66E+6
Te-125m	3.03E+8	1.09E+8	8.47E+7	−	−	8.94E+8	4.05E+7
Te-127m	9.41E+8	3.34E+8	2.24E+8	3.82E+9	−	2.35E+9	1.12E+8
Te-127	−	−	−	−	−	1.75E−8	−
Te-129m	9.58E+8	3.56E+8	3.09E+8	4.01E+9	−	3.60E+9	1.52E+8
Te-129	−	−	−	−	−	−	−
Te-131m	3.76E+2	1.80E+2	2.71E+2	1.88E+3	−	1.45E+4	1.50E+2
Te-131	−	−	−	−	−	−	−
Te-132	1.15E+6	7.26E+5	7.66E+5	6.97E+6	−	2.30E+7	6.84E+5
I-130	1.89E−6	5.48E−6	4.47E−4	8.44E−6	−	4.21E−6	2.19E−6
I-131	8.95E+6	1.25E+7	3.66E+9	2.16E+7	−	2.48E+6	6.73E+6
I-132	−	−	−	−	−	−	−
I-133	3.59E−1	6.10E−1	8.51E+1	1.07E+0	−	4.61E−1	1.86E−1
I-134	−	−	−	−	−	−	−
I-135	−	−	−	−	−	−	−
Cs-134	5.23E+8	1.23E+9	−	3.91E+8	1.49E+8	1.53E+7	5.71E+8
Cs-136	9.22E+6	3.63E+7	−	1.97E+7	3.11E+6	2.92E+6	2.44E+7
Cs-137	7.24E+8	9.63E+8	−	3.28E+8	1.27E+8	1.37E+7	3.36E+8
Cs-138	−	−	−	−	−	−	−
Ba-139	−	−	−	−	−	−	−
Ba-140	2.38E+7	2.91E+4	−	9.88E+3	1.96E+4	3.67E+7	1.53E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	2.96E−2	1.45E−2	−	−	−	8.35E+2	3.87E−3
La-142	−	−	−	−	−	−	−
Ce-141	1.18E+4	7.86E+3	−	3.70E+3	−	2.25E+7	9.03E+2
Ce-143	1.76E−2	1.28E+1	−	5.74E−3	−	3.85E+2	1.43E−3
Ce-144	1.23E+6	5.08E+5	−	3.04E+5	−	3.09E+8	6.60E+4
Pr-143	1.79E+4	7.15E+3	−	4.16E+3	−	5.90E+7	8.92E+2
Pr-144	−	−	−	−	−	−	−
Nd-147	6.24E+3	6.79E+3	−	3.98E+3	−	2.45E+7	4.06E+2
W-187	1.81E−2	1.48E−2	−	−	−	3.99E+0	5.17E−3
Np-239	2.23E−1	2.11E−2	−	6.61E−2	−	3.39E+3	1.17E−2

Table 7.0−4
$R_{aipo,}$ Grass−Cow−Meat Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	2.34E+2	2.34E+2	2.34E+2	2.34E+2	2.34E+2	2.34E+2
C-14	5.29E+5	1.06E+5	1.06E+5	1.06E+5	1.06E+5	1.06E+5	1.06E+5
Na-24	2.34E−3	2.34E−3	2.34E−3	2.34E−3	2.34E−3	2.34E−3	2.34E−3
P-32	7.41E+9	3.47E+8	−	−	−	2.05E+8	2.86E+8
Cr-51	−	−	4.89E+3	1.34E+3	8.93E+3	4.67E+5	8.81E+3
Mn-54	−	7.99E+6	−	2.24E+6	−	6.70E+6	2.13E+6
Mn-56	−	−	−	−	−	−	−
Fe-55	4.57E+8	2.42E+8	−	−	1.37E+8	4.49E+7	7.51E+7
Fe-59	3.78E+8	6.12E+8	−	−	1.77E+8	6.37E+8	3.05E+8
Co-57	−	5.92E+6	−	−	−	4.85E+7	1.20E+7
Co-58	−	1.65E+7	−	−	−	9.60E+7	5.04E+7
Co-60	−	6.93E+7	−	−	−	3.84E+8	2.04E+8
Ni-63	2.91E+10	1.56E+9	−	−	−	1.05E+8	9.91E+8
Ni-65	−	−	−	−	−	−	−
Cu-64	−	3.24E−7	−	7.82E−7	−	1.52E−5	1.96E−7
Zn-65	3.75E+8	1.00E+9	−	6.30E+8	−	1.76E+8	6.22E+8
Zn-69	−	−	−	−	−	−	−
Br-82	−	−	−	−	−	−	1.56E+3
Br-83	−	−	−	−	−	−	−
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	5.76E+8	−	−	−	3.71E+7	3.54E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	4.82E+8	−	−	−	−	1.86E+7	1.38E+7
Sr-90	1.04E+10	−	−	−	−	1.40E+8	2.64E+9
Sr-91	−	−	−	−	−	1.01E−9	−
Sr-92	−	−	−	−	−	−	−
Y-90	1.70E+2	−	−	−	−	4.84E+5	4.55E+0
Y-91m	−	−	−	−	−	−	−
Y-91	1.81E+6	−	−	−	−	2.41E+8	4.83E+4
Y-92	−	−	−	−	−	−	−
Y-93	−	−	−	−	−	1.55E−7	−
Zr-95	2.68E+6	5.89E+5	−	8.43E+5	−	6.14E+8	5.24E+5
Zr-97	2.84E−5	4.10E−6	−	5.89E−6	−	6.21E−1	2.42E−6
Nb-95	3.09E+6	1.20E+6	−	1.13E+6	−	2.23E+9	8.61E+5
Nb-97	−	−	−	−	−	−	−
Mo-99	−	1.25E+5	−	2.67E+5	−	1.03E+5	3.09E+4
Tc-99m	−	−	−	−	−	−	−
Tc-101	−	−	−	−	−	−	−
Ru-103	1.56E+8	−	−	3.92E+8	−	4.02E+9	5.98E+7
Ru-105	−	−	−	−	−	−	−
Ru-106	4.44E+9	−	−	5.99E+9	−	6.90E+10	5.54E+8
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Grass−Cow−Meat Pathway Dose Factors − CHILD (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	8.40E+6	5.67E+6	−	1.06E+7	−	6.75E+8	4.53E+6
Sb-124	2.93E+7	3.80E+5	6.46E+4	−	1.62E+7	1.83E+8	1.03E+7
Sb-125	2.85E+7	2.19E+5	2.64E+4	−	1.59E+7	6.80E+7	5.96E+6
Te-125m	5.69E+8	1.54E+8	1.60E+8	−	−	5.49E+8	7.59E+7
Te-127m	1.77E+9	4.78E+8	4.24E+8	5.06E+9	−	1.44E+9	2.11E+8
Te-127	−	−	−	1.21E−9	−	1.66E−8	−
Te-129m	1.81E+9	5.04E+8	5.82E+8	5.30E+9	−	2.20E+9	2.80E+8
Te-129	−	−	−	−	−	−	−
Te-131m	7.00E+2	2.42E+2	4.98E+2	2.34E+3	−	9.82E+3	2.58E+2
Te-131	−	−	−	−	−	−	−
Te-132	2.09E+6	9.27E+5	1.35E+6	8.60E+6	−	9.33E+6	1.12E+6
I-130	3.39E−6	6.85E−6	7.54E−4	1.02E−5	−	3.20E−6	3.53E−6
I-131	1.66E+7	1.67E+7	5.52E+9	2.74E+7	−	1.49E+6	9.49E+6
I-132	−	−	−	−	−	−	−
I-133	6.68E−1	8.26E−1	1.53E+2	1.38E+0	−	3.33E−1	3.12E−1
I-134	−	−	−	−	−	−	−
I-135	−	−	−	−	−	−	−
Cs-134	9.22E+8	1.51E+9	−	4.69E+8	1.68E+8	8.15E+6	3.19E+8
Cs-136	1.59E+7	4.37E+7	−	2.33E+7	3.47E+6	1.54E+6	2.83E+7
Cs-137	1.33E+9	1.28E+9	−	4.16E+8	1.50E+8	7.99E+6	1.88E+8
Cs-138	−	−	−	−	−	−	−
Ba-139	−	−	−	−	−	−	−
Ba-140	4.39E+7	3.85E+4	−	1.25E+4	2.29E+4	2.22E+7	2.56E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	5.41E−2	1.89E−2	−	−	−	5.27E+2	6.38E−3
La-142	−	−	−	−	−	−	−
Ce-141	2.22E+4	1.11E+4	−	4.84E+3	−	1.38E+7	1.64E+3
Ce-143	3.30E−2	1.79E+1	−	7.51E−3	−	2.62E+2	2.59E−3
Ce-144	2.32E+6	7.26E+5	−	4.02E+5	−	1.89E+8	1.24E+5
Pr-143	3.39E+4	1.02E+4	−	5.51E+3	−	3.66E+7	1.68E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	1.17E+4	9.48E+3	−	5.20E+3	−	1.50E+7	7.34E+2
W-187	3.36E−2	1.99E−2	−	−	−	2.79E+0	8.92E−3
Np-239	4.20E−1	3.02E−2	−	8.73E−2	−	2.23E+3	2.12E−2

Table 7.0−4
$R_{aipo,}$ Vegetation Pathway Dose Factors − ADULT
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	2.26E+3	2.26E+3	2.26E+3	2.26E+3	2.26E+3	2.26E+3
C-14	8.97E+5	1.79E+5	1.79E+5	1.79E+5	1.79E+5	1.79E+5	1.79E+5
Na-24	2.76E+5	2.76E+5	2.76E+5	2.76E+5	2.76E+5	2.76E+5	2.76E+5
P-32	1.40E+9	8.73E+7	−	−	−	1.58E+8	5.42E+7
Cr-51	−	−	2.79E+4	1.03E+4	6.19E+4	1.17E+7	4.66E+4
Mn-54	−	3.11E+8	−	9.27E+7	−	9.54E+8	5.94E+7
Mn-56	−	1.61E+1	−	2.04E+1	−	5.13E+2	2.85E+0
Fe-55	2.09E+8	1.45E+8	−	−	8.06E+7	8.29E+7	3.37E+7
Fe-59	1.27E+8	2.99E+8	−	−	8.35E+7	9.96E+8	1.14E+8
Co-57	−	1.17E+7	−	−	−	2.97E+8	1.95E+7
Co-58	−	3.09E+7	−	−	−	6.26E+8	6.92E+7
Co-60	−	1.67E+8	−	−	−	3.14E+9	3.69E+8
Ni-63	1.04E+10	7.21E+8	−	−	−	1.50E+8	3.49E+8
Ni-65	6.15E+1	7.99E+0	−	−	−	2.03E+2	3.65E+0
Cu-64	−	9.27E+3	−	2.34E+4	−	7.90E+5	4.35E+3
Zn-65	3.17E+8	1.01E+9	−	6.75E+8	−	6.36E+8	4.56E+8
Zn-69	8.75E−6	1.67E−5	−	1.09E−5	−	2.51E−6	1.16E−6
Br-82	−	−	−	−	−	1.73E+6	1.51E+6
Br-83	−	−	−	−	−	4.63E+0	3.21E+0
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	2.19E+8	−	−	−	4.32E+7	1.02E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	9.96E+9	−	−	−	−	1.60E+9	2.86E+8
Sr-90	6.05E+11	−	−	−	−	1.75E+10	1.48E+11
Sr-91	3.20E+5	−	−	−	−	1.52E+6	1.29E+4
Sr-92	4.27E+2	−	−	−	−	8.46E+3	1.85E+1
Y-90	1.33E+4	−	−	−	−	1.41E+8	3.56E+2
Y-91m	5.83E−9	−	−	−	−	1.71E−8	−
Y-91	5.13E+6	−	−	−	−	2.82E+9	1.37E+5
Y-92	9.01E−1	−	−	−	−	1.58E+4	2.63E−2
Y-93	1.74E+2	−	−	−	−	5.52E+6	4.80E+0
Zr-95	1.19E+6	3.81E+5	−	5.97E+5	−	1.21E+9	2.58E+5
Zr-97	3.33E+2	6.73E+1	−	1.02E+2	−	2.08E+7	3.08E+1
Nb-95	1.42E+5	7.91E+4	−	7.81E+4	−	4.80E+8	4.25E+4
Nb-97	2.90E−6	7.34E−7	−	8.56E−7	−	2.71E−3	2.68E−7
Mo-99	−	6.25E+6	−	1.41E+7	−	1.45E+7	1.19E+6
Tc-99m	3.06E+0	8.66E+0	−	1.32E+2	4.24E+0	5.12E+3	1.10E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	4.80E+6	−	−	1.83E+7	−	5.61E+8	2.07E+6
Ru-105	5.39E+1	−	−	6.96E+2	−	3.30E+4	2.13E+1
Ru-106	1.93E+8	−	−	3.72E+8	−	1.25E+10	2.44E+7
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Vegetation Pathway Dose Factors − ADULT (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.06E+7	9.76E+6	−	1.92E+7	−	3.98E+9	5.80E+6
Sb-124	1.04E+8	1.96E+6	2.52E+5	−	8.08E+7	2.95E+9	4.11E+7
Sb-125	1.36E+8	1.52E+6	1.39E+5	−	1.05E+8	1.50E+9	3.25E+7
Te-125m	9.66E+7	3.50E+7	2.90E+7	3.93E+8	−	3.86E+8	1.29E+7
Te-127m	3.49E+8	1.25E+8	8.92E+7	1.42E+9	−	1.17E+9	4.26E+7
Te-127	5.76E+3	2.07E+3	4.27E+3	2.35E+4	−	4.54E+5	1.25E+3
Te-129m	2.55E+8	9.50E+7	8.75E+7	1.06E+9	−	1.28E+9	4.03E+7
Te-129	6.65E−4	2.50E−4	5.10E−4	2.79E−3	−	5.02E−4	1.62E−4
Te-131m	9.12E+5	4.46E+5	7.06E+5	4.52E+6	−	4.43E+7	3.72E+5
Te-131	−	−	−	−	−	−	−
Te-132	4.29E+6	2.77E+6	3.06E+6	2.67E+7	−	1.31E+8	2.60E+6
I-130	3.96E+5	1.17E+6	9.90E+7	1.82E+6	−	1.01E+6	4.61E+5
I-131	8.09E+7	1.16E+8	3.79E+10	1.98E+8	−	3.05E+7	6.63E+7
I-132	5.74E+1	1.54E+2	5.38E+3	2.45E+2	−	2.89E+1	5.38E+1
I-133	2.12E+6	3.69E+6	5.42E+8	6.44E+6	−	3.31E+6	1.12E+6
I-134	1.06E−4	2.88E−4	5.00E−3	4.59E−4	−	2.51E−7	1.03E−4
I-135	4.08E+4	1.07E+5	7.04E+6	1.71E+5	−	1.21E+5	3.94E+4
Cs-134	4.66E+9	1.11E+10	−	3.59E+9	1.19E+9	1.94E+8	9.07E+9
Cs-136	4.20E+7	1.66E+8	−	9.24E+7	1.27E+7	1.89E+7	1.19E+8
Cs-137	6.36E+9	8.70E+9	−	2.95E+9	9.81E+8	1.68E+8	5.70E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	2.95E−2	2.10E−5	−	1.96E−5	1.19E−5	5.23E−2	8.64E−4
Ba-140	1.29E+8	1.62E+5	−	5.49E+4	9.25E+4	2.65E+8	8.43E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	1.97E+3	9.92E+2	−	−	−	7.28E+7	2.62E+2
La-142	1.40E−4	6.35E−5	−	−	−	4.64E−1	1.58E−5
Ce-141	1.96E+5	1.33E+5	−	6.17E+4	−	5.08E+8	1.51E+4
Ce-143	1.00E+3	7.42E+5	−	3.26E+2	−	2.77E+7	8.21E+1
Ce-144	3.29E+7	1.38E+7	−	8.16E+6	−	1.11E+10	1.77E+6
Pr-143	6.34E+4	2.54E+4	−	1.47E+4	−	2.78E+8	3.14E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	3.34E+4	3.86E+4	−	2.25E+4	−	1.85E+8	2.31E+3
W-187	3.82E+4	3.19E+4	−	−	−	1.05E+7	1.12E+4
Np-239	1.42E+3	1.40E+2	−	4.37E+2	−	2.87E+7	7.72E+1

Table 7.0−4

$R_{aipo,}$ Vegetation Pathway Dose Factors − TEENAGER

(mrem/yr per µCi/m^3) for H-3 and C-14

(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	2.59E+3	2.59E+3	2.59E+3	2.59E+3	2.59E+3	2.59E+3
C-14	1.45E+6	2.91E+5	2.91E+5	2.91E+5	2.91E+5	2.91E+5	2.91E+5
Na-24	2.45E+5	2.45E+5	2.45E+5	2.45E+5	2.45E+5	2.45E+5	2.45E+5
P-32	1.61E+9	9.96E+7	−	−	−	1.35E+8	6.23E+7
Cr-51	−	−	3.44E+4	1.36E+4	8.85E+4	1.04E+7	6.20E+4
Mn-54	−	4.52E+8	−	1.35E+8	−	9.27E+8	8.97E+7
Mn-56	−	1.45E+1	−	1.83E+1	−	9.54E+2	2.58E+0
Fe-55	3.25E+8	2.31E+8	−	−	1.46E+8	9.98E+7	5.38E+7
Fe59	1.81E+8	4.22E+8	−	−	1.33E+8	9.98E+8	1.63E+8
Co-57	−	1.79E+7	−	−	−	3.34E+8	3.00E+7
Co-58	−	4.38E+7	−	−	−	6.04E+8	1.01E+8
Co-60	−	2.49E+8	−	−	−	3.24E+9	5.60E+8
Ni-63	1.61E+10	1.13E+9	−	−	−	1.81E+8	5.45E+8
Ni-65	5.73E+1	7.32E+0	−	−	−	3.97E+2	3.33E+0
Cu-64	−	8.40E+3	−	2.12E+4	−	6.51E+5	3.95E+3
Zn-65	4.24E+8	1.47E+9	−	9.41E+8	−	6.23E+8	6.86E+8
Zn-69	8.19E−6	1.56E−5	−	1.02E−5	−	2.88E−5	1.09E−6
Br-82	−	−	−	−	−	−	1.33E+6
Br-83	−	−	−	−	−	−	3.01E+0
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	2.73E+8	−	−	−	4.05E+7	1.28E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	1.51E+10	−	−	−	−	1.80E+9	4.33E+8
Sr-90	7.51E+11	−	−	−	−	2.11E+10	1.85E+11
Sr-91	2.99E+5	−	−	−	−	1.36E+6	1.19E+4
Sr-92	3.97E+2	−	−	−	−	1.01E+4	1.69E+1
Y-90	1.24E+4	−	−	−	−	1.02E+8	3.34E+2
Y-91m	5.43E−9	−	−	−	−	2.56E−7	−
Y-91	7.87E+6	−	−	−	−	3.23E+9	2.11E+5
Y-92	8.47E−1	−	−	−	−	2.32E+4	2.45E−2
Y-93	1.63E+2	−	−	−	−	4.98E+6	4.47E+0
Zr-95	1.74E+6	5.49E+5	−	8.07E+5	−	1.27E+9	3.78E+5
Zr-97	3.09E+2	6.11E+1	−	9.26E+1	−	1.65E+7	2.81E+1
Nb-95	1.92E+5	1.06E+5	−	1.03E+5	−	4.55E+8	5.86E+4
Nb-97	2.69E−6	6.67E−7	−	7.80E−7	−	1.59E−2	2.44E−7
Mo-99	−	5.74E+6	−	1.31E+7	−	1.03E+7	1.09E+6
Tc-99m	2.70E+0	7.54E+0	−	1.12E+2	4.19E+0	4.95E+3	9.77E+1
Tc-101	−	−	−	−	−	−	−
Ru-103	6.87E+6	−	−	2.42E+7	−	5.74E+8	2.94E+6
Ru-105	5.00E+1	−	−	6.31E+2	−	4.04E+4	1.94E+1
Ru-106	3.09E+8	−	−	5.97E+8	−	1.48E+10	3.90E+7
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
R_{aipo}, Vegetation Pathway Dose Factors − TEENAGER (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	1.52E+7	1.44E+7	−	2.74E+7	−	4.04E+9	8.74E+6
Sb-124	1.55E+8	2.85E+6	3.51E+5	−	1.35E+8	3.11E+9	6.03E+7
Sb-125	2.14E+8	2.34E+6	2.04E+5	−	1.88E+8	1.66E+9	5.00E+7
Te-125m	1.48E+8	5.34E+7	4.14E+7	−	−	4.37E+8	1.98E+7
Te-127m	5.51E+8	1.96E+8	1.31E+8	2.24E+9	−	1.37E+9	6.56E+7
Te-127	5.43E+3	1.92E+3	3.74E+3	2.20E+4	−	4.19E+5	1.17E+3
Te-129m	3.67E+8	1.36E+8	1.18E+8	1.54E+9	−	1.38E+9	5.81E+7
Te-129	6.22E−4	2.32E−4	4.45E−4	2.61E−3	−	3.40E−3	1.51E−4
Te-131m	8.44E+5	4.05E+5	6.09E+5	4.22E+6	−	3.25E+7	3.38E+5
Te-131	−	−	−	−	−	−	−
Te-132	3.90E+6	2.47E+6	2.60E+6	2.37E+7	−	7.82E+7	2.32E+6
I-130	3.54E+5	1.02E+6	8.35E+7	1.58E+6	−	7.87E+5	4.09E+5
I-131	7.70E+7	1.08E+8	3.14E+10	1.85E+8	−	2.13E+7	5.79E+7
I-132	5.18E+1	1.36E+2	4.57E+3	2.14E+2	−	5.91E+1	4.87E+1
I-133	1.97E+6	3.34E+6	4.66E+8	5.86E+6	−	2.53E+6	1.02E+6
I-134	9.59E−5	2.54E−4	4.24E−3	4.01E−4	−	3.35E−6	9.13E−5
I-135	3.68E+4	9.48E+4	6.10E+6	1.50E+5	−	1.05E+5	3.52E+4
Cs-134	7.09E+9	1.67E+10	−	5.30E+9	2.02E+9	2.08E+8	7.74E+9
Cs-136	4.29E+7	1.69E+8	−	9.19E+7	1.45E+7	1.36E+7	1.13E+8
Cs-137	1.01E+10	1.35E+10	−	4.59E+9	1.78E+9	1.92E+8	4.69E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	2.77E−2	1.95E−5	−	1.84E−5	1.34E−5	2.47E−1	8.08E−4
Ba-140	1.38E+8	1.69E+5	−	5.75E+4	1.14E+5	2.13E+8	8.91E+6
Ba-141	−	−	−	−	−	−	−
Ba-142	−	−	−	−	−	−	−
La-140	1.80E+3	8.84E+2	−	−	−	5.08E+7	2.35E+2
La-142	1.28E−4	5.69E−5	−	−	−	1.73E+0	1.42E−5
Ce-141	2.82E+5	1.88E+5	−	8.86E+4	−	5.38E+8	2.16E+4
Ce-143	9.37E+2	6.82E+5	−	3.06E+2	−	2.05E+7	7.62E+1
Ce-144	5.27E+7	2.18E+7	−	1.30E+7	−	1.33E+10	2.83E+6
Pr-143	7.12E+4	2.84E+4	−	1.65E+4	−	2.34E+8	3.55E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	3.63E+4	3.94E+4	−	2.32E+4	−	1.42E+8	2.36E+3
W-187	3.55E+4	2.90E+4	−	−	−	7.84E+6	1.02E+4
Np-239	1.38E+3	1.30E+2	−	4.09E+2	−	2.10E+7	7.24E+1

Table 7.0−4
R_{aipo}, Vegetation Pathway Dose Factors − CHILD
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
H-3	−	4.01E+3	4.01E+3	4.01E+3	4.01E+3	4.01E+3	4.01E+3
C-14	3.50E+6	7.01E+5	7.01E+5	7.01E+5	7.01E+5	7.01E+5	7.01E+5
Na-24	3.83E+5	3.83E+5	3.83E+5	3.83E+5	3.83E+5	3.83E+5	3.83E+5
P-32	3.37E+9	1.58E+8	−	−	−	9.30E+7	1.30E+8
Cr-51	−	−	6.54E+4	1.79E+4	1.19E+5	6.25E+6	1.18E+5
Mn-54	−	6.61E+8	−	1.85E+8	−	5.55E+8	1.76E+8
Mn-56	−	1.90E+1	−	2.29E+1	−	2.75E+3	4.28E+0
Fe-55	8.00E+8	4.24E+8	−	−	2.40E+8	7.86E+7	1.31E+8
Fe-59	4.01E+8	6.49E+8	−	−	1.88E+8	6.76E+8	3.23E+8
Co-57	−	2.99E+7	−	−	−	2.45E+8	6.04E+7
Co-58	−	6.47E+7	−	−	−	3.77E+8	1.98E+8
Co-60	−	3.78E+8	−	−	−	2.10E+9	1.12E+9
Ni-63	3.95E+10	2.11E+9	−	−	−	1.42E+8	1.34E+9
Ni-65	1.05E+2	9.89E+0	−	−	−	1.21E+3	5.77E+0
Cu-64	−	1.11E+4	−	2.68E+4	−	5.20E+5	6.69E+3
Zn-65	8.12E+8	2.16E+9	−	1.36E+9	−	3.80E+8	1.35E+9
Zn-69	1.51E−5	2.18E−5	−	1.32E−5	−	1.38E−3	2.02E−6
Br-82	−	−	−	−	−	−	2.04E+6
Br-83	−	−	−	−	−	−	5.55E+0
Br-84	−	−	−	−	−	−	−
Br-85	−	−	−	−	−	−	−
Rb-86	−	4.52E+8	−	−	−	2.91E+7	2.78E+8
Rb-88	−	−	−	−	−	−	−
Rb-89	−	−	−	−	−	−	−
Sr-89	3.59E+10	−	−	−	−	1.39E+9	1.03E+9
Sr-90	1.24E+12	−	−	−	−	1.67E+10	3.15E+11
Sr-91	5.50E+5	−	−	−	−	1.21E+6	2.08E+4
Sr-92	7.28E+2	−	−	−	−	1.38E+4	2.92E+1
Y-90	2.30E+4	−	−	−	−	6.56E+7	6.17E+2
Y-91m	9.94E−9	−	−	−	−	1.95E−5	−
Y-91	1.87E+7	−	−	−	−	2.49E+9	5.01E+5
Y-92	1.56E+0	−	−	−	−	4.51E+4	4.46E−2
Y-93	3.01E+2	−	−	−	−	4.48E+6	8.25E+0
Zr-95	3.90E+6	8.58E+5	−	1.23E+6	−	8.95E+8	7.64E+5
Zr-97	5.64E+2	8.15E+1	−	1.17E+2	−	1.23E+7	4.81E+1
Nb-95	4.10E+5	1.59E+5	−	1.50E+5	−	2.95E+8	1.14E+5
Nb-97	4.90E−6	8.85E−7	−	9.82E−7	−	2.73E−1	4.13E−7
Mo-99	−	7.83E+6	−	1.67E+7	−	6.48E+6	1.94E+6
Tc-99m	4.65E+0	9.12E+0	−	1.33E+2	4.63E+0	5.19E+3	1.51E+2
Tc-101	−	−	−	−	−	−	−
Ru-103	1.55E+7	−	−	3.89E+7	−	3.99E+8	5.94E+6
Ru-105	9.17E+1	−	−	8.06E+2	−	5.98E+4	3.33E+1
Ru-106	7.45E+8	−	−	1.01E+9	−	1.16E+10	9.30E+7
Rh-103m	−	−	−	−	−	−	−
Rh-106	−	−	−	−	−	−	−

Table 7.0−4
$R_{aipo,}$ Vegetation Pathway Dose Factors − CHILD (cont.)
(mrem/yr per µCi/m^3) for H-3 and C-14
(m^2 x mrem/yr per µCi/sec) for others

Nuclide	Bone	Liver	Thyroid	Kidney	Lung	GI−LLI	T. Body
Ag-110m	3.22E+7	2.17E+7	−	4.05E+7	−	2.58E+9	1.74E+7
Sb-124	3.52E+8	4.57E+6	7.78E+5	−	1.96E+8	2.20E+9	1.23E+8
Sb-125	4.99E+8	3.85E+6	4.62E+5	−	2.78E+8	1.19E+9	1.05E+8
Te-125m	3.51E+8	9.50E+7	9.84E+7	−	−	3.38E+8	4.67E+7
Te-127m	1.32E+9	3.56E+8	3.16E+8	3.77E+9	−	1.07E+9	1.57E+8
Te-127	1.00E+4	2.70E+3	6.93E+3	2.85E+4	−	3.91E+5	2.15E+3
Te-129m	8.54E+8	2.39E+8	2.75E+8	2.51E+9	−	1.04E+9	1.33E+8
Te-129	1.15E−3	3.22E−4	8.22E−4	3.37E−3	−	7.17E−2	2.74E−4
Te-131m	1.54E+6	5.33E+5	1.10E+6	5.16E+6	−	2.16E+7	5.68E+5
Te-131	−	−	−	−	−	−	−
Te-132	6.98E+6	3.09E+6	4.50E+6	2.87E+7	−	3.11E+7	3.73E+6
I-130	6.21E+5	1.26E+6	1.38E+8	1.88E+6	−	5.87E+5	6.47E+5
I-131	1.43E+8	1.44E+8	4.76E+10	2.36E+8	−	1.28E+7	8.18E+7
I-132	9.20E+1	1.69E+2	7.84E+3	2.59E+2	−	1.99E+2	7.77E+1
I-133	3.59E+6	4.44E+6	8.25E+8	7.40E+6	−	1.79E+6	1.68E+6
I-134	1.70E−4	3.16E−4	7.28E−3	4.84E−4	−	2.10E−4	1.46E−4
I-135	6.54E+4	1.18E+5	1.04E+7	1.81E+5	−	8.98E+4	5.57E+4
Cs-134	1.60E+10	2.63E+10	−	8.14E+9	2.92E+9	1.42E+8	5.54E+9
Cs-136	8.06E+7	2.22E+8	−	1.18E+8	1.76E+7	7.79E+6	1.43E+8
Cs-137	2.39E+10	2.29E+10	−	7.46E+9	2.68E+9	1.43E+8	3.38E+9
Cs-138	−	−	−	−	−	−	−
Ba-139	5.11E−2	2.73E−5	−	2.38E−5	1.61E−5	2.95E+0	1.48E−3
Ba-140	2.77E+8	2.43E+5	−	7.90E+4	1.45E+5	1.40E+8	1.62E+7
Ba-141	−	−	−	−	−	−	−
Ba142	−	−	−	−	−	−	−
La-140	3.23E+3	1.13E+3	−	−	−	3.15E+7	3.81E+2
La-142	2.32E−4	7.40E−5	−	−	−	1.47E+1	2.32E−5
Ce-141	1.23E+5	6.14E+4	−	2.69E+4	−	7.66E+7	9.12E+3
Ce-143	1.73E+3	9.36E+5	−	3.93E+2	−	1.37E+7	1.36E+2
Ce-144	1.27E+8	3.98E+7	−	2.21E+7	−	1.04E+10	6.78E+6
Pr-143	1.48E+5	4.46E+4	−	2.41E+4	−	1.60E+8	7.37E+3
Pr-144	−	−	−	−	−	−	−
Nd-147	7.16E+4	5.80E+4	−	3.18E+4	−	9.18E+7	4.49E+3
W-187	6.47E+4	3.83E+4	−	−	−	5.38E+6	1.72E+4
Np-239	2.55E+3	1.83E+2	−	5.30E+2	−	1.36E+7	1.29E+2

Table 7.0−4
R_{aipo}, Ground Plane Pathway Dose Factors
(m^2 x mrem/yr per μCi/sec)

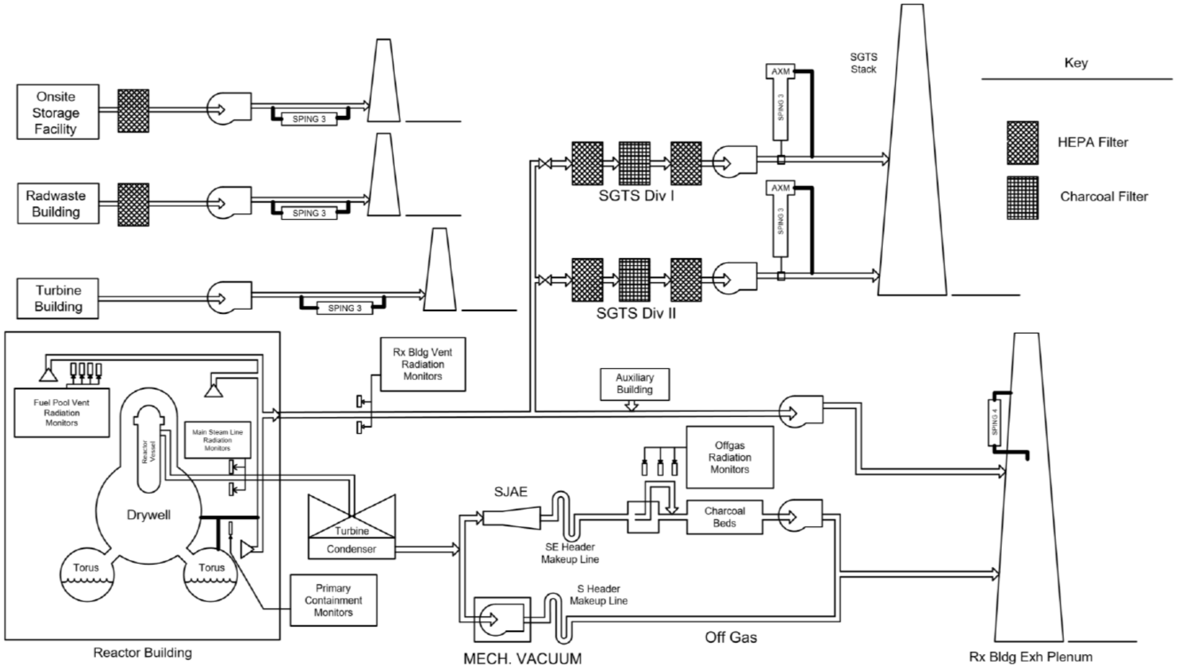
Nuclide	Any Organ
H-3	−
C-14	−
Na-24	1.21E+7
P-32	−
Cr-51	4.68E+6
Mn-54	1.34E+9
Mn-56	9.05E+5
Fe-55	−
Fe-59	2.75E+8
Co-58	3.82E+8
Co-60	2.16E+10
Ni-63	−
Ni-65	2.97E+5
Cu-64	6.09E+5
Zn-65	7.45E+8
Zn-69	−
Br-83	4.89E+3
Br-84	2.03E+5
Br-85	−
Rb-86	8.89E+6
Rb-88	3.29E+4
Rb-89	1.21E+5
Sr-89	2.16E+4
Sr-90	−
Sr-91	2.19E+6
Sr-92	7.77E+5
Y-90	4.48E+3
Y-91m	1.01E+5
Y-91	1.08E+6
Y-92	1.80E+5
Y-93	1.85E+5
Zr-95	2.48E+8
Zr-97	2.94E+6
Nb-95	1.36E+8
Mo-99	4.05E+6
Tc-99m	1.83E+5
Tc-101	2.04E+4
Ru-103	1.09E+8
Ru-105	6.36E+5
Ru-106	4.21E+8
Rh-103m	−
Rh-106	−
Ag-110m	3.47E+9
Te-125m	1.55E+6
Te-127m	9.17E+4

Table 7.0−4
$R_{aipo,}$ Ground Plane Pathway Dose Factors
(m^2 x mrem/yr per μCi/sec) (cont.)

Nuclide	Any Organ
Te-127	3.00E+3
Te-129m	2.00E+7
Te-129	2.60E+4
Te-131m	8.03E+6
Te-131	2.93E+4
Te-132	4.22E+6
I-130	5.53E+6
I-131	1.72E+7
I-132	1.24E+6
I-133	2.47E+6
I-134	4.49E+5
I-135	2.56E+6
Cs-134	6.75E+9
Cs-136	1.49E+8
Cs-137	1.04E+10
Cs-138	3.59E+5
Ba-139	1.06E+5
Ba-140	2.05E+7
Ba-141	4.18E+4
Ba-142	4.49E+4
La-140	1.91E+7
La-142	7.36E+5
Ce-141	1.36E+7
Ce-143	2.32E+6
Ce-144	6.95E+7
Pr-143	–
Pr-144	1.83E+3
Nd-147	8.40E+6
W-187	2.36E+6
Np-239	1.71E+6

FIGURE 7.0-1

GASEOUS RADIOACTIVE EFFLUENT MONITORING AND VENTILATION SYSTEMS DIAGRAM



NOTE: The HEPA and charcoal filters identified on the Standby Gas Treatment System (SGTS) are engineered safety features and are not considered Ventilation Exhaust Treatment Systems (VETS). No effluent reduction was credited in the UFSAR 10CFR50 Appendix I evaluation for filters installed in plant ventilation systems. Fermi 2 conforms to 10CFR50 Appendix I without filtration installed.

END OF SECTION 7.0

SECTION 8.0

SPECIAL DOSE ANALYSIS

8.0 SPECIAL DOSE ANALYSES

8.1 Doses Due to Activities Inside the SITE BOUNDARY

In accordance with ODCM 5.9.1.8, the Annual Radioactive Effluent Release Report submitted prior to May 1 of each year shall include an assessment of radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY.

Two locations within the Fermi 2 SITE BOUNDARY are accessible to MEMBERS OF THE PUBLIC for activities unrelated to DTE Energy operational and support activities. One is the over-water portion of the SITE BOUNDARY due east of the plant. Ice fishermen sometimes fish here during the winter. The other is the Fermi 2 Visitor's Center, outside the protected area (but inside the Owner Controlled Area), approximately 470 meters SSW of the Reactor Building. The Visitor's Center is open to the public and is routinely visited by MEMBERS OF THE PUBLIC, including school tour groups on a frequency of once per year.

Conservative assumptions of locations, exposure times, and exposure pathways for assessing doses from gaseous and liquid effluents due to activities inside the SITE BOUNDARY are presented in Table 8.0-1. The calculational methods presented in ODCM Sections 7.6 and 7.7 may be used for determining the maximum potential dose to a MEMBER OF THE PUBLIC based on the above assumptions. Alternatively, the effluent concentration values of Appendix B, Table 2, of the revised 10 CFR Part 20 may be used to assess dose since these concentrations, if continuously inhaled or ingested, produce a total effective dose equivalent of 50 mrem per year.

The potential dose from the fish pathway to a MEMBER OF THE PUBLIC engaged in ice fishing within the SITE BOUNDARY is accounted for by the modeling presented in ODCM Section 6.5. Therefore, no additional special dose analyses are required for this exposure pathway for reporting in the Annual Radioactive Effluent Release Report.

8.2 Doses to MEMBERS OF THE PUBLIC - 40 CFR 190

The Annual Radioactive Effluent Release Report shall also include an assessment of the radiation dose to the likely most exposed MEMBER OF THE PUBLIC for reactor releases and other nearby uranium fuel cycle sources (including dose contributions from effluents and direct radiation from onsite sources). For the likely most exposed MEMBER OF THE PUBLIC in the vicinity of the Fermi 2 site, the sources of exposure need consider only the radioactive effluents and direct exposure contribution from Fermi 2.

No other fuel cycle facilities contribute significantly to the cumulative dose to a MEMBER OF THE PUBLIC in the immediate vicinity of the site. Davis-Besse is the closest fuel cycle facility located about 20 miles to the SSE. Due to environmental dispersion, any routine releases from Davis-Besse would contribute insignificantly to the potential doses in the vicinity of Fermi 2.

As appropriate for demonstrating/evaluating compliance with the limits of ODCM 3.11.4 (40 CFR 190), the results of the environmental monitoring program may be used to provide data on actual measured levels of radioactive material in the actual pathways of exposure.

8.2.1 Effluent Dose Calculations

For purposes of implementing the surveillance requirements of ODCM 3.11.4 and the reporting requirements of ODCM 5.9.1.8, dose calculations for Fermi 2 may be performed using the calculational methods contained within this ODCM and the conservative controlling pathways and locations of Table 7.0-3. Liquid pathway doses may be calculated using Equation (6-10). Doses due to releases of radioiodines, tritium and particulates may be calculated based on Equation (7-14).

The following equations may be used for calculating the doses to MEMBERS OF THE PUBLIC from releases of noble gases. Equation (8-2) is not used for evaluating compliance with 40 CFR Part 190, since this regulation does not address skin dose. If noble gases are being released from more than one point, these equations must be used to evaluate each release point separately, and then the doses must be added to obtain the total noble gas dose.

$$\mathbf{D_{tb}} = \mathbf{3.17\,E-08} * \chi\mathbf{/Q} * \sum\left(\mathbf{K_i} * \mathbf{Q_i}\right) \tag{8-1}$$

and

$$\mathbf{D_S} = \mathbf{3.17\,E-08} * \chi\mathbf{/Q} * \sum\left[(\mathbf{L_i} + \mathbf{1.1M_i}) * \mathbf{Q_i}\right] \tag{8-2}$$

Where:

D_{tb} = total body dose due to gamma emissions for noble gas radionuclides (mrem)

D_S = skin dose due to gamma and beta emissions for noble gas radionuclides (mrad)

χ/Q = atmospheric dispersion to the offsite location (sec/m^3)

Q_i = cumulative release of noble gas radionuclide i over the period of interest (µCi)--may be determined according to Equation (7-8)

1.67E + 01 = (1E + 03 ml/liter) * (1 min/60 sec)

K_i = total body dose factor due to gamma emissions from noble gas radionuclide i (mrem/yr per µCi/m^3) (from Table 7.0-2)

L_i = skin dose factor due to beta emissions from noble gas radionuclide i (mrem/yr per µCi/m^3) (from Table 7.0-2)

M_i = gamma air dose factor for noble gas radionuclide i (mrad/yr per µCi/m^3) (from Table 7.0-2)

1.1 = mrem skin dose per mrad gamma air dose (mrem/mrad)

3.17 E - 08 = 1 / 3.15 E + 07 yr/sec

Note: Average annual meteorological dispersion parameters or meteorological conditions concurrent with the release period under evaluation may be used (e.g., quarterly averages or year-specific annual averages, 5-year averages).

8.2.2 Direct Exposure Dose Determination

From evaluations performed in the Fermi 2 Environmental Report, Section 5.3.4, the direct exposure to the highest offsite location from the Turbine Building N-16 skyshine dose has been calculated to be approximately 3 mrem/year. The introduction of hydrogen injection at Fermi 2 in 1997 (hydrogen water chemistry) tends to increase direct exposure. Direct exposure to offsite or onsite individuals may be evaluated based on the results of environmental measurements (e.g. area TLD and survey meter data) or by the use of a radiation transport and shielding calculational method. Only during atypical conditions will there exist any potential for significant onsite sources at Fermi 2 that would yield potentially significant offsite doses to a MEMBER OF THE PUBLIC. However, should a situation exist whereby the direct exposure contribution is potentially significant, onsite measurements, offsite measurements and calculational techniques will be used for determination of dose for assessing 40 CFR 190 compliance. The calculational techniques will be identified, reviewed, and approved at that time, and will be included in any report on doses due to such atypical conditions.

8.2.3 Dose Assessment Based on Radiological Environmental Monitoring Data

Normally, the assessment of potential doses to MEMBERS OF THE PUBLIC must be calculated based on the measured radioactive effluents at the plant. The resultant levels of radioactive material in the offsite environment are usually so minute as to be undetectable. The calculational methods presented in this ODCM are used for modeling the transport in the environment and the resultant exposure to offsite individuals.

The results of the radiological environmental monitoring program can provide input into the overall assessment of impact of plant operations and radioactive effluents. With measured levels of plant related radioactive material in principal pathways of exposure, a quantitative assessment of potential exposures can be performed. With the monitoring program not identifying any measurable levels, the data provides a qualitative assessment - a confirmatory demonstration of the negligible impact.

Dose modeling can be simplified into three basic parameters that can be applied in using environmental monitoring data for dose assessment:

$$\mathbf{D} = \mathbf{C} * \mathbf{U} * \mathbf{DF}$$

(8-3)

Where:

D = dose or dose commitment

C = concentration in the exposure media, such as air concentration for the inhalation pathway, or fish, vegetation or milk concentration for the ingestion pathway

U = individual exposure to the pathway, such as hr/yr for direct exposure, kg/yr for ingestion pathway

DF = dose conversion factor to convert from an exposure or uptake to an individual dose or dose commitment

The applicability of each of these basic modeling parameters to the use of environmental monitoring data for dose assessment is addressed below:

Concentration - C

The main value of using environmental sampling data to assess potential doses to individuals is that the data represents actual measured levels of radioactive material in the exposure pathways. This eliminates one main uncertainty and the modeling has been removed - the release from the plant and the transport to the environmental exposure medium.

Environmental samples are collected on a routine frequency per the ODCM. To determine the annual average concentration in the environmental medium for use in assessing cumulative dose for the year, an average concentration should be determined based on the sampling frequency and measured levels:

$$\overline{\mathbf{C_i}} = \sum\left(\mathbf{C_i} * \mathbf{t}\right) / \mathbf{365}$$

(8-4)

Where:

$\overline{C_i}$ = average concentration in the sampling medium for the year

C_i = concentration of each radionuclide i measured in the individual sampling medium

t = period of time that the measured concentration is considered representative of the sampling medium (typically equal to the sampling frequency; e.g., 7 days for weekly samples, 30 days for monthly samples).

If the concentration in the sampling medium is below the detection capabilities (i.e., less than Lower Limits of Detection (LLD), a value of zero should be used for C_i ($C_i = 0$).

Exposure - U

Default Exposure Values (U) as recommended in Regulatory Guide 1.109 are presented in Table 8.0-2. These values should be used only when specific data applicable to the environmental pathway being evaluated is unavailable.

Also, the routine radiological environmental monitoring program is designed to sample/monitor the environmental media that would provide early indications of any measurable levels in the environment but not necessarily levels to which any individual is exposed. For example, sediment samples are collected in the area of the liquid discharge: typically, no individuals are directly exposed. To apply the measured levels of radioactivity in samples that are not directly applicable to exposure to real individuals, the approach recommended is to correlate the location and measured levels to actual locations of exposure.

Hydrological or atmospheric dilution factors can be used to provide reasonable correlations of concentrations (and doses) at other locations. The other alternative is to conservatively assume a hypothetical individual at the sampling location. Doses that are calculated in this manner should be presented as hypothetical and very conservatively determined - actual exposure would be much less. Samples collected from the Monroe water supply intake should be used for estimating the potential drinking water doses. Other water samples collected, such as near field dilution area, are not applicable to this pathway.

Dose Factors - DF

The dose factors are used to convert the intake of the radioactive material to an individual dose commitment. Values of the dose factors are presented in NRC Regulatory Guide 1.109. The use of the RG 1.109 values applicable to the exposure pathway and maximum exposed individual is referenced in Table 8.0-2.

Assessment of Direct Exposure Doses from Noble Gases

Thermoluminescent Dosimeters (TLD) are routinely used to assess the direct exposure component of radiation doses in the environment. However, because routine releases of radioactive material (noble gases) are so low, the resultant direct exposure doses are also very low. A study* performed for the NRC concluded that it was generally impractical to distinguish any plant contribution to the natural background radiation levels (direct exposure) below around 10 mrem per year. Therefore, for routine releases from nuclear power plants the use of TLD is mainly confirmatory - ensuring actual exposures are within the expected natural background variation.

For releases of noble gases, environmental modeling using plant measured releases and atmospheric transport models as presented in ODCM Sections 7.6 and 8.2.1 represents the best method of assessing potential environmental doses. However, under unusual conditions, direct radiation from noble gas concentrations could be sufficient to cause significant increases in TLD readings; any observed variations in TLD measurements outside the norm should be evaluated.

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* NUREG/CR-0711, Evaluation of Methods for the Determination of X- and Gamma-Ray Exposure Attributable to a Nuclear Facility Using Environmental TLD Measurements, Gail dePlanque, June 1979, USNRC.

TABLE 8.0-1

Assumptions for Assessing Doses Due to Activities inside SITE BOUNDARY

	Periodic Onsite Work for Another Employer	**Site Tours**
Distance / Direction:	0.25 miles / SSW	0.25 miles / SSE
Estimated Exposure Time:	400 hr/yr (8 hr/week for 50 weeks)	16 hr/yr (8 hr/visit, 2 visits per year)
Exposure Pathways:	direct exposure from noble gases inhalation of tritium, iodines particulates	direct exposure from noble gases inhalation of tritium, iodines particulates
Meteorological Dispersion	annual average (as determined for year(s) being evaluated) 1.04E-05 sec/m^3*	annual average (as determined for year(s) being evaluated) 2.03E-5 sec/m^3*

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* 2009 – 2013 Five-year average χ/Q values for the Turbine Building release point. These values are shown as examples of the range of values to be expected.

TABLE 8.0-2

Recommended Exposure Rates in Lieu of Site Specific Data*

Exposure Pathway	Maximum Exposed Age Group	Exposure Rates	Table Reference for Dose Factor from RG 1.109
Liquid Releases			
Fish	Adult	21 kg/y	E-11
Drinking Water	Adult	730 l/y	E-11
Bottom Sediment	Teen	67 h/y	E-6
Atmospheric Releases			
Inhalation	Teen	8,000 m^3/y	E-8
Direct Exposure	All	6,100 h/y**	N/A
Leafy Vegetables	Child	26 kg/y	E-13
Fruits, Vegetables and Grain	Teen	630 kg/y	E-12
Milk	Infant	330 l/y	E-14

* Adapted from Regulatory Guide 1.109, Table E-5. This table is not a complete list of exposure rates; other applicable values may be found in Regulatory Guide 1.109.

** Net exposure of 6,100 h/y is based on the total 8760 hours per year adjusted by a 0.7 shielding factor as recommended in Regulatory Guide 1.109.

END OF SECTION 8.0

SECTION 9.0

ASSESSMENT OF LAND USE CENSUS DATA

9.0 ASSESSMENT OF LAND USE CENSUS DATA

A Land Use Census (LUC) is conducted annually in the vicinity of the Fermi 2 site. This census fulfills two main purposes: 1) Meet requirements of ODCM 3.12.2 for identifying controlling location/pathway for dose assessment of ODCM 3.11.2.3; and 2) provide data on actual exposure pathways for assessing realistic doses to MEMBERS OF THE PUBLIC.

9.1 Land Use Census as Required by ODCM 3.12.2

As required by ODCM 3.12.2, a Land Use Census shall be conducted during the growing season at least once per twelve months. The purpose of the census is to identify within a 5 mile distance the location in each of the 16 meteorological sectors of all milk producing animals, all meat producing animals, all gardens larger than 500 ft^2 producing broadleaf vegetation, and the closest residence to the plant. The data from the LUC is used for updating the location/pathway for dose assessment and for updating the Radiological Environmental Monitoring Program.

If the census identifies a location/pathway(s) yielding a higher potential dose to a MEMBER OF THE PUBLIC than currently being assessed as required by ODCM 3.11.2.3 (and ODCM Section 7.7 and Table 7.0-3), this new location pathway(s) shall be used for dose assessment. In this case, Table 7.0-3 shall be updated to include the currently identified controlling location/pathway(s). Also, if the census identifies a location(s) that yields a calculated potential dose (via the same exposure pathway) 20% greater than a location currently included in the Radiological Environmental Monitoring Program, the new location(s) shall be added to the program within 30 days, unless permission to take samples cannot be obtained from the affected landowner or site boundary vegetation sampling is being performed per the note in section 9.1.3. The sampling location(s), excluding control locations, having the lowest calculated dose may be deleted from the program after October 31 following the current census. As required by ODCM 3.12.2 and 5.9.1.8, the new location/pathway(s) shall be identified in the next Annual Radioactive Effluent Release Report. The following guideline shall be used for assessing the results from the land use census to ensure compliance with ODCM 3.12.2.

9.1.1 Data Compilation

1. Compile all locations and pathways of exposure as identified by the land use census.

2. From these compiled data, identify any changes from the previous year's census. Identify the current controlling location/pathway (critical receptor) used in ODCM Table 7.0-3. Also, identify any location currently included in the REMP (Table 10.0-1).

3. Perform relative dose calculations based on actual Fermi 2 gaseous effluent releases for a recent period of reactor operation, using the pathway dose equations of the ODCM. In identifying the critical receptor for Table 7.0-3, all age groups and all pathways relevant to ODCM 3.11.2.3 that may be present at each evaluated location are considered. The critical receptor is assumed to be a member of the age group with the highest calculated dose to the maximally exposed organ due to I-131, I-133, H-3, C-14 and particulates with half lives greater than 8 days. Other receptors may have higher doses to other organs than the critical receptor has to those organs.

4. Formulate a listing of locations of high dose significance in descending order of relative dose significance. Include the relative dose significance in the listing.

9.1.3 Program Updates

1. If any receptor is identified with a higher relative dose than the current critical receptor in ODCM Table 7.0-3, this receptor and its associated location and pathways should replace the previously identified critical receptor information in Table 7.0-3.

2. The Land Use Census data should be used to revise the REMP and Section 10.0 of the ODCM in accordance with ODCM 3.12.2, Action Item b.

3. Any changes in either the controlling location/pathway(s) (critical receptor) for the ODCM dose calculations (Section 7.7 and Table 7.0-3) or the REMP (ODCM Section 10.0 and Table 10.0-1) shall be reported to NRC in accordance with ODCM 3.12.2, Action Items a. and b. and ODCM 5.9.1.8.

   NOTE: As permitted by footnote to ODCM 3.12.2, broadleaf vegetation sampling may be performed at the SITE BOUNDARY in two locations, in different sectors with highest predicted D/Qs, in lieu of the garden sampling. Also, for conservatism in dose assessment for compliance with ODCM 3.11.2.3 (see also ODCM Section 7.7 and Table 7.0-3), hypothetical exposure location/pathway(s) and conservative dispersion factors may be assumed (e.g., milk cow at 5 mile location or garden at SITE BOUNDARY in highest D/Q sector). By this approach, the ODCM is not subject to frequent revision as pathways and locations change from year to year. A verification that the hypothetical pathways and dispersion factors lead to conservative calculated doses, relative to doses calculated using actual pathways and factors, is still required.

9.2 Land Use Census to Support Realistic Dose Assessment

The LUC provides data needed to support the special dose analyses of the ODCM Section 8.0. Activities inside the SITE BOUNDARY should be periodically reviewed for dose assessment as required by ODCM 5.9.1.8 (see also ODCM Section 8.1). Assessment of realistic doses to MEMBERS OF THE PUBLIC is required by ODCM 3.11.4 for demonstrating compliance with the EPA Environmental Dose Standard, 40 CFR 190 (ODCM Section 8.2).

To support these dose assessments, the LUC shall include use of Lake Erie water on and near the site. The LUC shall include data on Lake Erie use obtained from local and state officials. Reasonable efforts shall be made to identify individual irrigation and potable water users, and industrial and commercial water users whose source is Lake Erie. This data is used to verify the pathways of exposure used in ODCM Section 6.5. If Fermi 2 is in zero liquid release status for the year in which the LUC is performed, i.e. if no radioactive liquid releases have occurred or are planned for the entire year, the requirements of this paragraph do not apply.

END OF SECTION 9.0

SECTION 10.0

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

10.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

The Radiological Environmental Monitoring Program (REMP) is conducted in accordance with the requirements of ODCM 3.12.1. The sampling and analysis program described herein was developed to provide representative measurements of radiation and radioactive materials resulting from station operation in the principal pathways of exposure of MEMBERS OF THE PUBLIC. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR Part 50 and thereby supplements the radiological effluent control program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Guidance for the development of this monitoring program is provided by the NRC Radiological Assessment Branch Technical Position on Environmental Monitoring, Revision 1, November 1979.

10.1 Sampling Locations

Sampling locations as required by ODCM 3.12.1 are described in Table 10.0-1.

NOTE: For purposes of implementing ODCM 3.12.2, sampling locations will be modified as required to reflect the findings of the annual land use census as described in ODCM Section 9.1 and as required by other contingencies (e.g. unavailability of milk from a listed location). Such changes will be documented in plant records and reflected in the next ODCM revision, the next Annual Effluent Release Report, and the next Annual Radiological Environmental Operating Report. Also, if the circumstances of such changes involve a possible change in the maximally exposed individual evaluated for ODCM Control 3.11.2.3, the identity of this individual will be reevaluated.

10.2 Reporting Levels

ODCM 3.12.1, Action b, describes criteria for a Special Report to the NRC if levels of plant-related radioactive material, when averaged over a calendar quarter, exceed the prescribed levels of ODCM Table 3.12.1-2. The reporting levels are based on the design objective doses of 10 CFR 50, Appendix I (i.e., the annual limits of ODCM 3.11.1.2, 3.11.2.2 and 3.11.2.3). In other words, levels of radioactive material in the respective sampling medium equal to the prescribed reporting levels are representative of potential annual doses of 3 mrem, total body or 10 mrem, maximum organ from liquid pathways; or 5 mrem, total body, or 15 mrem, maximum organ for the gaseous effluent pathway. These potential doses are modeled on the maximum individual exposure or consumption rates of NRC Regulatory Guide 1.109.

The evaluation of potential doses should be based solely on radioactive material resulting from plant operation. As stated in ODCM 3.12.1, Action b, the report shall also be submitted if radionuclides other than those in ODCM Table 3.12.1-2 are detected (and are a result of plant effluents) and the potential dose exceeds the above annual design objectives. The method described in ODCM Section 8.2.3 may be used for assessing the potential dose and required reporting for radionuclides other than those in ODCM Table 3.12.1-2.

10.3 Interlaboratory Comparison Program

A major objective of this program is to assist laboratories involved in environmental radiation measurements to develop and maintain both an intralaboratory and an interlaboratory quality control program. This is accomplished through a laboratory intercomparison study ("cross-check") program involving environmental media and a variety of radionuclides with activities at or near environmental levels.

Simulated environmental samples, containing known amounts of one or more radionuclides, are prepared and routinely distributed to DTE Energy's contract environmental laboratory, which performs the required analyses. The analysis results are then compared to the known concentrations in the samples. The program thus enables the laboratory to document the precision and accuracy of its radiation data, and identify instrument and procedural problems.

The environmental laboratory is required to participate in an Interlaboratory Comparison Program and to submit QA Program Progress Summary Reports to DTE Energy on an annual basis. These reports contain performance data summaries on blind spiked analyses, and explanations of deviations from expected results. A summary of the Interlaboratory Comparison Program results obtained is required to be included in the Annual Radiological Environmental Operating Report pursuant to ODCM 5.9.1.7.

Participation in an Interlaboratory Comparison Program ensures that an independent check on the precision and accuracy of the measurements of radioactive material in environmental sample matrices is performed as part of the QA Program for environmental monitoring in order to demonstrate that the results are valid for the purpose of Section IV.B.2 of Appendix I to 10 CFR Part 50.

TABLE 10.0-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
FERMI 2 SAMPLE LOCATIONS AND ASSOCIATED MEDIA

KEY	
T	TLD Locations (Pg. 10-5 through 10-9)
S	Sediments Locations (Pg. 10-10)
F	Fish Locations (Pg. 10-10)
M	Milk Locations (Pg. 10-11)
DW	Drinking Water Locations (Pg. 10-12)
SW	Surface Water Locations (Pg. 10-12)
GW	Ground Water Locations (Pg. 10-12)
API	Air Particulate/Iodine Locations (Pg. 10-13)
FP	Food Products Locations (Pg. 10-14)

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T1	NE/38°	1.3 mi	Estral Beach Pole on Lakeshore, 23 Poles S of Lakeview (Special Area)	Direct Radiation	Q
T2	NNE/22°	1.2 mi	Pole at termination of Brancheau St. (Special Area)	Direct Radiation	Q
T3	N/9°	1.1 mi	Pole, NW Corner of Swan Boat Club Fence (Special Area)	Direct Radiation	Q
T4	NNW/337°	0.6 mi	Site Boundary and Toll Rd, on Site Fence by API #2	Direct Radiation	Q
T5	NW/313°	0.6 mi	Site Boundary and Toll Rd, on Site Fence by API #3	Direct Radiation	Q
T6	WNW/294°	0.6 mi	Site boundary fence at south end of N. Bullit Rd. by API-6	Direct Radiation	Q
T7	W/270°	14.0 mi	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles W of Doty Rd. (Control)	Direct Radiation	Q
T8	NW/305°	1.9 mi	Pole on Post Rd. near NE Corner of Dixie Hwy. and Post Rd.	Direct Radiation	Q
T9	NNW/334°	1.5 mi	Pole, NW Corner of Trombley and Swan View Road	Direct Radiation	Q
T10	N/6°	2.1 mi	Pole, S Side of Masserant - 2 Poles W of Chinavare	Direct Radiation	Q
T11	NNE/23°	6.2 mi	Pole, NE Corner of Milliman and Jefferson	Direct Radiation	Q
T12	NNE/29°	6.3 mi	Pointe Mouillee Game Area - Field Office, Pole near Tree, N Area of Parking Lot	Direct Radiation	Q
T13	N/356°	4.1 mi	Labo and Dixie Hwy - Pole on SW Corner with Light	Direct Radiation	Q
T14	NNW/337°	4.4 mi	Labo and Brandon - Pole on SE Corner near RR	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T15	NW/315°	3.9 mi	Pole, behind building at the corner of Swan Creek and Mill St.	Direct Radiation	Q
T16	WNW/283°	4.9 mi	Pole, SE corner of War and Post Rds. (2nd pole past War Rd.)	Direct Radiation	Q
T17	W/271°	4.9 mi	Pole, NE Corner of Nadeau and LaPrad near Mobile Home Park	Direct Radiation	Q
T18	WSW/247°	4.8 mi	Pole, NE Corner of Mentel and Hurd	Direct Radiation	Q
T19	SW/236°	5.2 mi	Fermi siren pole on Waterworks Rd, NE corner of intersection—Sterling State Park Rd Entrance Drive/Waterworks	Direct Radiation	Q
T20	WSW/257°	2.7 mi	Pole, S Side of Williams Rd. - 9 Poles W of Dixie Hwy. (Special Area)	Direct Radiation	Q
T21	WSW/239°	2.7 mi	Pole, N Side of Pearl at Parkview (last pole at end of road N. side) - Woodland Beach (Special Area)	Direct Radiation	Q
T22	S/172°	1.2 mi	Pole, N Side of Pointe Aux Peaux 2 Poles W of Long - Site Boundary	Direct Radiation	Q
T23	SSW/195°	1.1 mi	Pole, S Side of Pointe Aux Peaux - 1 Pole E of St. Clair next to Vent Pipe - Site Boundary	Direct Radiation	Q
T24	SW/225°	1.2 mi	Fermi Gate along Pointe Aux Peaux Rd.- on fence wire W of Gate - Site Boundary	Direct Radiation	Q
T25	WSW/252°	1.5 mi	Pole, Toll Rd. - 11 Poles S of Fermi Dr.	Direct Radiation	Q
T26	WSW/259°	1.1 mi	Pole, Toll Rd. - 5 Poles S of Fermi Dr.	Direct Radiation	Q
T27	SW/225°	6.8 mi	Pole, NE Corner of McMillan and East Front St. (Special Area)	Direct Radiation	Q
T28	SW/229°	10.7 mi	Pole, Mortar Creek – 1st pole south of Hull Rd, E side	Direct Radiation	Q
T29	WSW/237°	10.3 mi	Pole, NE Corner of S Dixie and Albain	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T30	WSW/247°	7.8 mi	Elm St. Pole on North Side near parking lot next to St. Mary's Church (Special Area)	Direct Radiation	Q
T31	WSW/255°	9.6 mi	1st Pole W of Entrance Drive Milton "Pat" Munson Recreational Reserve - N. Custer Rd. (Control)	Direct Radiation	Q
T32	WNW/295°	10.3 mi	Pole, Corner of Stony Creek and Finzel Rds.	Direct Radiation	Q
T33	NW/317°	9.2 mi	Pole, W Side of Grafton Rd. 1 Pole N of Ash/Grafton Intersection	Direct Radiation	Q
T34	NNW/338°	9.8 mi	Pole, SW Corner of Port Creek and Will-Carleton Rd (1st pole on Port Creek)	Direct Radiation	Q
T35	N/359°	6.9 mi	Pole, S Side of S. Huron River Dr. across from Race St. (Special Area)	Direct Radiation	Q
T36	N/358°	9.1 mi	Pole, NE Corner of Gibraltar and Cahill Rds.	Direct Radiation	Q
T37	NNE/21°	9.8 mi	Pole, On Gibraltar Rd (next to Humbug Marina)	Direct Radiation	Q
T38	WNW/294°	1.7 mi	Residence - 6594 N. Dixie Hwy.	Direct Radiation	Q
T39	S/176°	0.3 mi	SE Corner of Protected Area Fence (PAF)	Direct Radiation	Q
T40	S/170°	0.3 mi	Midway along OBA - PAF	Direct Radiation	Q
T41	SSE/161°	0.2 mi	Midway between OBA and Shield Wall – PAF (North end of OBA)	Direct Radiation	Q
T42	SSE/149°	0.2 mi	Midway along Shield Wall - PAF	Direct Radiation	Q
T43	SE/131°	0.1 mi	Midway between Shield Wall and Aux Boilers - PAF	Direct Radiation	Q
T44	ESE/109°	0.1 mi	Opposite OSSF Door - PAF	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
T45	E/86°	0.1 mi	NE Corner - PAF	Direct Radiation	Q
T46	ENE/67°	0.2 mi	NE Side Barge Slip - on Fence	Direct Radiation	Q
T47	S/185°	0.1 mi	South of Turbine Bldg. rollup door on PAF (fence adjacent to SE Corner of AIB)	Direct Radiation	Q
T48	SW/235°	0.2 mi	30 ft. from corner of AAP on PAF	Direct Radiation	Q
T49	WSW/251°	1.1 mi	Corner of site boundary fence north of NOC along Critical Path Rd. (at the turn)	Direct Radiation	Q
T50	W/270°	0.9 mi	Site boundary fence near main gate by the south Bullit St. sign	Direct Radiation	Q
T51	N/3°	0.4 mi	Site boundary fence north of North Cooling Tower	Direct Radiation	Q
T52	NNE/20°	0.4 mi	Site boundary fence at the corner of Arson and Tower	Direct Radiation	Q
T53	NE/55°	0.2 mi	Site boundary fence east of South Cooling Tower	Direct Radiation	Q
T54	S/189°	0.3 mi	Pole, across from Fermi 2 Visitors Center	Direct Radiation	Q
T55	WSW/251°	3.3 mi	Pole, N side of Nadeau Rd, across from Sodt Elementary School Marquee (entrance to Fire Station)	Direct Radiation	Q
T56	WSW/255°	4.9 mi	Pole, entrance to Jefferson Middle School on Stony Creek Rd. (NE Side of road)	Direct Radiation	Q
T57	W/260°	2.7 mi	Pole, north side of Williams Rd. across from Jefferson High School entrance (by long residential driveway)	Direct Radiation	Q
T58	WSW/249°	4.9 mi	Pole, on Hurd Rd, half way between Mentel Rd and Yax Rd (near former Hurd Elementary School lot)	Direct Radiation	Q
T59	NW/325°	2.6 mi	Pole, north of St. Charles Church entrance on Dixie Hwy.	Direct Radiation	Q
T60	NNW/341°	2.5 mi	1st pole north of North Elementary School entrance on Dixie Hwy.	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Direct Radiation

Station Number	***Meteorological Sector/Azimuth Direction***	***Distance from Reactor (Approx.)***	***Description***	***Media***	***Frequency***
T61	W/268º	10.1 mi	Pole, SW Corner of Stewart and Raisinville Rds.	Direct Radiation	Q
T62	SW/232º	9.7 mi	Pole, SE Corner of Albain and Hull Rds.	Direct Radiation	Q
T63	WSW/245º	9.6 mi	Pole, Corner of Dunbar and Telegraph Rds.	Direct Radiation	Q
T64	WNW/286º	0.2 mi	W of switchgear yard midway along PAF	Direct Radiation	Q
T65	NW/322º	0.1 mi	PAF – North East corner of ISFSI Pad	Direct Radiation	Q
T66	NE/50º	0.1 mi	Behind Bldg. 42 on PAF	Direct Radiation	Q
T67	NNW/338º	0.2 mi	Site boundary fence W of S cooling tower	Direct Radiation	Q
T68	WNW/303 º	0.6 mi	Langton Rd seven poles E of Leroux Rd	Direct Radiation	Q
T69	NW/306 º	0.8 mi	Langton Rd four poles E of Leroux Rd	Direct Radiation	Q
T70	NNW/333 º	1.1 mi	Leroux Rd and Post Rd pole at West corner of turn	Direct Radiation	Q
T71	WNW/300 º	1.1 mi	Leroux Rd six poles N of Fermi Dr	Direct Radiation	Q
ISFSI-1	WNW/302.3º	0.175 mi	Center of west ISFSI fence line	Direct Radiation	Q
ISFSI-2	NW/310.2º	0.186 mi	Northwest corner of ISFSI fence	Direct Radiation	Q
ISFSI-3	NW/313.2º	0.166 mi	Center of north ISFSI fence line	Direct Radiation	Q
ISFSI-4	NW/315.6º	0.149 mi	Northeast corner of ISFSI fence	Direct Radiation	Q
ISFSI-5	NW/305.4º	0.140 mi	Center of east ISFSI fence line	Direct Radiation	Q
ISFSI-6	WNW/294.1º	0.136 mi	Southeast corner of ISFSI fence	Direct Radiation	Q
ISFSI-7	WNW/293.0º	0.157 mi	Center of south ISFSI fence line	Direct Radiation	Q
ISFSI-8	WNW/293.0º	0.177 mi	Southwest corner of ISFSI fence	Direct Radiation	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Fish and Sediment

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
SEDIMENTS					
S-1	SSE/165°	0.9 mi	Pointe Aux Peaux, Shoreline to 500 ft. offshore sighting directly to Land Base Water Tower	Sediment	SA
S-2	E/81°	0.2 mi	Fermi 2 Discharge, approx. 200 ft. offshore	Sediment	SA
S-3	NE/39°	1.1 mi	Estral Beach, approx. 200 ft. offshore, off North shoreline where Swan Creek and Lake Erie meet	Sediment	SA
S-4	WSW/241°	3.0 mi	Indian Trails Community Beach	Sediment	SA
S-5	NNE/20°	11.7 mi	DTE Energy Trenton Channel Power Plant intake area (Control)	Sediment	SA
FISH					
F-1	NNE/31°	9.5 mi	Celeron Island (Control)	Fish	SA
F-2	E/86°	0.4 mi	Fermi 2 Discharge (Approx. 1200 ft. offshore)	Fish	SA
F-3	SW/227°	3.5 mi	Breast Bay Area (Control)	Fish	SA

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Milk / Grass

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
M-8	WNW/289º	9.9 mi	Calder Dairy - 9334 Finzel Rd. (Control)	Milk	M-SM

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Water

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
DRINKING WATER					
DW-1	S/174°	1.1 mi	Monroe Water Station N Side of Pointe Aux Peaux 1/2 Block W of Long Rd.	Drinking Water	M
DW-2	N/8°	18.5 mi	Great Lakes Water Authority, 14700 Moran Rd. Allen Park (Control)	Drinking Water	M
SURFACE WATER					
SW-2	NNE/20°	11.7 mi	DTE Energy Trenton Channel Power Plant Intake Structure (Screenhouse #1) (Control)	Surface Water	M
SW-3	SSE/160°	0.2 mi	DTE Energy Fermi 2 General Service Water Intake Structure	Surface Water	M
SITE WELLS					
GW-1	S/175°	0.4 mi	Approx. 100 ft. W of Lake Erie, EF-1 Parking lot Groundwater near gas fired peakers	Groundwater	Q
GW-2	SSW/208°	1.0 mi	4 ft. S of Pointe Aux Peaux (PAP) Rd. Fence 427 ft. W of where PAP crosses over Stony Point's Western Dike	Groundwater	Q
GW-3	SW/226°	1.0 mi	143 ft. W of PAP Rd. Gate, 62 ft. N of PAP Rd. Fence	Groundwater	Q
GW-4	WNW/299°	0.6 mi	42 ft. S of Langton Rd., 8 ft. E of Toll Rd. Fence	Groundwater	Q

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Air Particulate Air Iodine

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
API-1	NE/39°	1.4 mi	Estral Beach Pole on Lakeshore, 18 Poles S of Lakeview (Nearest Community with highest χ/Q)	Radioiodine Particulates	W W
API-2	NNW/337°	0.6 mi	Site Boundary and Toll Road, on Site Fence by T-4	Radioiodine Particulates	W W
API-3	NW/313°	0.6 mi	Site Boundary and Toll Road, on Site Fence by T-5	Radioiodine Particulates	W W
API-4	W/270°	14.0 mi	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles W of Doty Rd. (control)	Radioiodine Particulates	W W
API-5	S/188°	1.2 mi	Pole, N corner of Pointe Aux Peaux and Dewey Rd.	Radioiodine Particulates	W W
API-6	WNW/295°	0.6 mi	Pole, Site boundary and Toll Road inside Site fence by T-6	Radioiodine Particulates	W W

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Food Products

Station Number	*Meteorological Sector/Azimuth Direction*	*Distance from Reactor (Approx.)*	*Description*	*Media*	*Frequency*
FP-9	W/261°	10.9 mi	4074 North Custer Road (across the street)	Food Products (vegetation)	M (when available)
FP-HD1	NE	1.4 mi	Near highest D/Q offsite location in Sector C (near API-2)	Food Products (vegetation)	M (when available)
FP-HD2	NW	0.6 mi	Near highest D/Q offsite location in Sector Q (near API-3)	Food Products (vegetation)	M (when available)
FP-HD3	WNW	0.6 mi	Near highest D/Q offsite location in Sector P (near API-6)	Food Products (vegetation)	M (when available)

TABLE 10.0-1

Radiological Environmental Monitoring Program, Fermi 2 Sample Locations and Associated Media

Land Use Census Closest Residences

Meteorological Sector / Azimuth Direction	*Distance from Reactor (Approx.)*	*Description*
NE	1.1 mi	
NNE	1.0 mi	
N	1.1 mi	
NNW	1.1 mi	
NW	1.1 mi	
WNW	0.7 mi	
W	1.2 mi	
WSW	1.4 mi	
SW	1.3 mi	
SSW	1.1 mi	
S	1.0 mi	
ENE-SSE		Lake Erie

END OF SECTION 10.0

END OF ODCM

Enclosure 2 to
NRC-22-0021

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Fermi 2 Annual Radiological Environmental Operating Report

FERMI 2 POWER PLANT

DTE Electric Company

OPERATING LICENSE NO. NPF - 43

2021

Annual Radiological Environmental Operating Report

for the period of
January 1, 2021 through December 31, 2021

Prepared by:

Fermi 2
Radiological Engineering

Table of Contents

List of Figures *Page*

List of Tables *Page*

Executive Summary

This Annual Radiological Environmental Operating Report is a detailed report on the Radiological Environmental Monitoring Program (REMP) conducted at DTE Electric Company's Fermi 2 nuclear power plant from January 1, 2021 through December 31, 2021.

Samples collected as part of the REMP were analyzed by GEL Laboratories, LLC. Radioactivity measurements for these samples are reported in terms of sample concentration, which is compared with the laboratory's minimum detectable concentration (MDC) level for each analysis. If the measured concentration exceeds the MDC, radioactivity is considered to have been detected in the sample. The unit of radioactivity normally used in this report is the picocurie (pCi); a picocurie is one-one trillionth of a Curie (Ci). The unit of direct radiation dose used in this report is milliroentgen (mR); a milliroentgen is one-one thousandth of a Roentgen (R).

The REMP is divided into four major parts: direct radiation monitoring, atmospheric monitoring, terrestrial monitoring, and aquatic monitoring. The results of 2021 data showed that environmental radioactivity levels have not increased from background radioactivity levels detected prior to the operation of Fermi 2.

Direct radiation measurements were taken at 79 onsite and offsite locations using thermoluminescent dosimeters (TLD). In 2021, readings of 41 TLDs located beyond the site boundary and less than 8 miles from the plant were not significantly different from those of 12 control TLDs located more than 9 miles from the plant. The readings of these offsite TLDs, which are considered to be due only to background radiation, is equivalent to the radiation levels measured prior to the operation of Fermi 2. Readings of 26 onsite TLDs, which are affected by direct radiation from the plant or from the spent fuel casks, were frequently above background levels, as expected.

Atmospheric monitoring results for 2021 showed only naturally occurring radioactivity and were consistent with levels measured prior to the operation of Fermi 2. No radioactivity attributable to activities at Fermi 2 was detected in any atmospheric samples during 2021.

Terrestrial and aquatic monitoring results for the 2021 samples of milk, vegetation, offsite ground water, drinking water, surface water, aquatic sediments, and fish showed mostly naturally occurring radioactivity. However, in two sediment samples, Cs-137, which is primarily attributable to atmospheric nuclear weapons testing, was detected. Also, in one control fish sample, Sr-89 was reported at a level less than the required detection level and in one control drinking water sample Sr-90 was reported equal to the required detection level. However, these low level results are not attributed to plant effects due to the usual non-detection of Sr-89/Sr-90 in plant effluent samples and the large dilution between the plant and the control fish location (9.5 miles from the reactor) and control drinking water location (18.5 mile from the reactor). The radioactivity levels detected were generally consistent with levels measured prior to the operation of Fermi 2. No radioactivity attributable to activities at Fermi 2 was detected in any terrestrial or aquatic samples during 2021.

In summary, REMP sampling did not identify any radioactivity above MDC levels attributable to the operation of Fermi 2.

Radiological Environmental Monitoring Program Results

Direct Radiation Monitoring

Radiation is a normal component of the environment resulting primarily from natural sources, such as cosmic radiation and terrestrial radionuclides, and, to a lesser extent, from man made sources such as fallout from past nuclear weapons testing. The earth is constantly bombarded by cosmic radiation in the form of high energy gamma rays and particle radiation. The earth's crust also contains natural radioactive material, such as uranium, thorium, and potassium-40, which contributes to the background radiation. Direct radiation monitoring primarily measures ionizing radiation from these cosmic and terrestrial sources.

Thermoluminescent Dosimeters

Fermi 2 uses thermoluminescent dosimeters (TLDs) to measure direct gamma radiation in the environment adjacent to Fermi 2. The TLDs are thoroughly tested to comply with NRC Regulatory Guide 4.13 and American National Standards Institute's (ANSI) publication N545-1975. Compliance with these standards assures accurate measurements under varying environmental conditions.

Fermi 2 has 79 TLD locations within a fifteen-mile radius of the plant. These 79 TLD locations may be divided into 3 categories: 1) 26 TLDs which are located onsite and are affected by "sky shine" radiation from the plant and/or by radiation from the facility's Independent Spent Fuel Storage Installation, and therefore are not representative of off-site dose, 2) 41 "indicator" TLDs which are located at the site boundary or offsite but less than 8 miles from the plant, and 3) 12 "control" TLDs which are located more than 9 miles from the plant. Readings of the indicator TLDs are compared with readings from the control TLDs to determine whether there is any measurable offsite direct radiation from the plant which can be distinguished from the background radiation which all of these TLDs receive while in the field. These environmental TLDs are exchanged and processed on a quarterly basis. TLD data are reported in terms of milliroentgen per standard quarter (mR/std qtr), with a standard quarter being 91 days.

In 2021, the average exposure for TLDs at all off-site indicator locations was 14.3 mR/std qtr and for all control locations was 14.0 mR/std qtr. This difference is not statistically significant. (The one sigma uncertainty of these values is usually greater than 0.6 mR.)

These exposures are consistent with preoperational and past operational measurements, as shown in Figure 1.

In addition to comparing the average readings of indicators and controls, it is important to determine whether any individual TLD locations show higher readings which could be attributed to direct radiation from the plant, and whether readings are increasing at any location in comparison to a baseline period.

In a comparison of all 2021 indicator and control TLD readings to a baseline of 2016-2020 readings, six locations showed quarterly or annual readings above the "minimum differential dose" as defined in ANSI/HPS 13.37. However the increased readings at these locations (T7, T9, T12, T32, T37, and T63) were not related to increased direct radiation from the plant; four of these six locations were control locations.

It has been noted that there are unique long term patterns of exposure at many locations which tend to be consistent over a multi-year period. For example, there are six indicator TLDs which had consistently higher readings than the average in the 2016 to 2020 period: these were T16, T26, T49, T57, T68, and T69, which showed average five year (2016-2020) readings ranging from 16.2 to 17.9 mR/quarter and are located at distances from 0.6 miles to 4.9 miles from the plant. T49, at 1.1 miles WSW of the plant, was the highest of these six in each of these years.

In 2021, this pattern was slightly different, with T16, T25, T49, T57, T68, and T71 showing the highest average readings, with T16, at 4.9 miles WNW of the plant, being the highest reading location. The 2021 average readings for these six locations range from 16.0 to 17.5 mR/quarter. The question of whether any of these higher reading TLDs could be reflecting direct radiation from the plant was evaluated. The distances from the plant of the six highest reading TLDs in 2021 are:

T68 at 0.6 miles: 16.6 mR/quarter
T71 at 1.1 miles: 16.0 mR/quarter
T49 at 1.1 miles: 17.2 mR/quarter
T25 at 1.5 miles: 17.0 mR/quarter
T57 at 2.7 miles: 16.2 mR/quarter
T16 at 4.9 miles: 17.5 mR/quarter

The above data for these six locations do not show increased readings closer to the plant, with higher readings being seen at more distant locations. The closest of these higher reading TLDs, T68 at 0.6 miles from the plant, is located between two other TLDs—T5 and T6—which are also 0.6 miles from the plant and do not show similarly higher readings. The consistently higher readings at the six locations shown above (also seen in previous years) are attributed to offsite environmental factors, which could include soil conditions such as fertilization, nearby rocks or structures, shady versus sunlit locations, and other environmental factors.

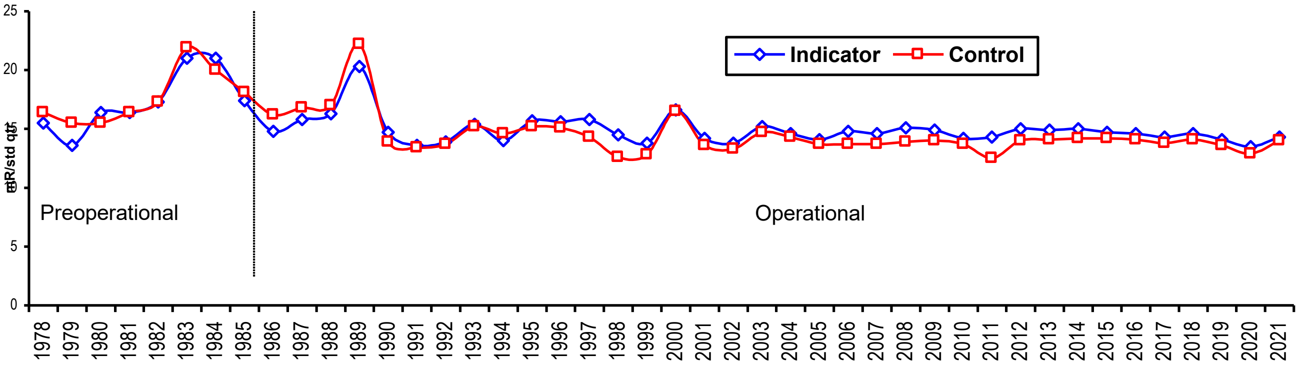


Figure 1: Fermi 2 Annual Average TLD Gamma Exposure. The differences between readings at indicator and control locations are not significant.

Atmospheric Monitoring

A potential exposure pathway to people is inhalation of airborne radioactive materials. Fermi 2 continuously samples the ambient air surrounding Fermi 2 for radioactivity attributable to the operation of the plant. Atmospheric monitoring began in 1979 during the preoperational program. At each sampling location, a mechanical air sampler is used to draw a continuous volume of air through two filters designed to collect particulates and radioiodines. Air samples are collected weekly and analyzed for gross beta radiation as well as gamma radiation attributable to iodine-131. The particulate filters for each sampling location are combined on a quarterly basis to form a "composite sample" and are analyzed for gamma-emitting radionuclides. There are five indicator sampling locations 0.6 to 1.4 miles from the plant. The control location is 14 miles west of the plant in an upwind sector that is considered to be unaffected by the operation of the plant.

Air Sampling

On October 16, 1980, the People's Republic of China conducted an atmospheric nuclear weapon test. The fallout from this test was detected in Fermi 2 preoperational environmental air samples in 1981 (see Figure 2). The average gross beta for 1981 was 2.40E-1 pCi/cubic meter for control samples which was a factor of ten times greater than background gross beta. Gamma spectroscopic analyses of the particulate filters indicated cesium-137, cerium-141, cerium-144, ruthenium-103, ruthenium-106, zirconium-95, niobium-95, manganese-54, and antimony-125 in the atmosphere as a result of this test.

In 1986, as shown in Figure 2, there was a slight increase in gross beta activity and a 2.70E-1 pCi/cubic meter "spike" in the iodine-131 activity. These elevated levels in 1986 are attributed to the nuclear accident at Chernobyl on April 26, 1986. For all other years, the iodine-131 activity was below the lower limit of detection (LLD) of 7.0E-2 pCi/cubic meter.

On March 11, 2011, following the Tohoku earthquake and tsunami, the Fukushima Daiichi Nuclear Power Plant in Japan experienced a series of equipment failures, fuel-melt, and releases of radioactivity to the environment. Within weeks of the accident, US nuclear power plant REMP programs and other monitoring stations detected the radioactivity from Japan mainly in the form of airborne iodine-131.

During the week of April 5, 2011, all five of Fermi's air monitoring stations detected radioactivity greater than the MDC at an average airborne gross beta of 7.12E-2 pCi/cubic meter and 8.12E-2 pCi/cubic meter for iodine-131 due to the accident at Fukushima Daiichi Nuclear Power Plant.

During the 2021 monitoring period, 312 particulate air filters and 312 charcoal cartridges were collected and analyzed for gross beta activity and iodine-131 respectively. The average gross beta was 4.53E-2 pCi/cubic meter for indicator samples and 4.19E-2 pCi/cubic meter for control samples. None of the charcoal filters collected showed detectable levels of iodine-131. The following table contains the annual average gross beta results of all six current sample locations for 2021.

Table 1: 2021 Average Gross Beta Concentrations in Air Particulates (pCi/m3)

Station	Description (sector/distance)	Annual Average (Std.Dev., N)
API-1 (I)	Estral Beach (NE/1.4 mi.)	4.03E-2 (1.56E-2, N=52)
API-2 (I)	Site Boundary (NNW/0.6 mi.)	8.12E-2 (3.24E-2, N=52)
API-3 (I)	Site Boundary (NW/0.6 mi.)	3.60E-2 (1.56E-2, N=52)
API-4 (C)	North Custer Rd. (W/14 mi.)	4.19E-2 (1.59E-2, N=52)
API-5 (I)	Site Boundary (S/1.2 mi.)	3.57E-2 (9.13E-3, N=52)
API-6 (I)	Site Boundary (WNW/0.6 mi.)	3.31E-2 (9.91E-3, N=52)

(I) = Indicator Station (C) = Control Station

Twenty-four (24) quarterly particulate filter composites were prepared and analyzed for gamma emitting radionuclides. Naturally occurring beryllium-7 and potassium-40 were detected in both indicator and control samples.

In conclusion, the atmospheric monitoring data are consistent with preoperational and prior operational data and show no adverse long-term trends in the environment attributable to operation of Fermi 2 as illustrated in Figures 2 and 3.

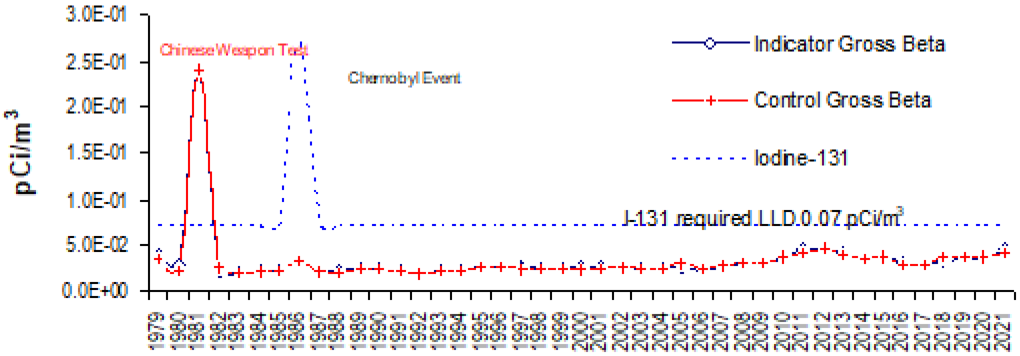


Figure 2: **Annual Average Gross Beta and Iodine-131 Activity in Air Samples.** The similarity between indicator and control gross beta results demonstrates that the operation of Fermi 2 has had no adverse impact with respect to these radionuclides. For I-131, the lower limit of detection (LLD) of 0.07 pCi/cubic meter is shown, except for the Chinese weapon test event in which I-131 was detected.

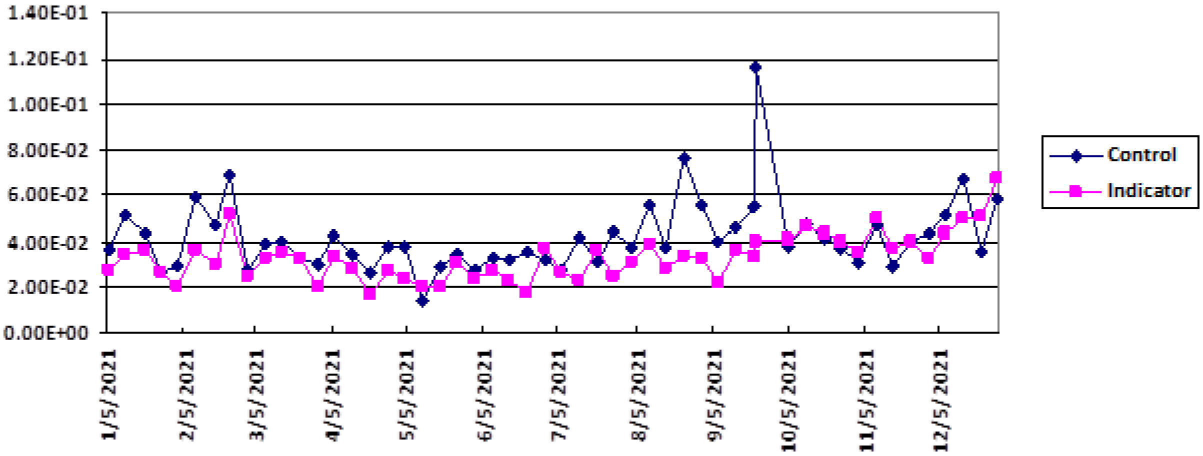


Figure 3: **Fermi 2 Air Particulate Gross Beta for 2021.** This figure shows the concentration of beta emitting radionuclides in airborne particulate samples at the control location (API-4, 14 miles west of the plant) and at the closest indicator location (API-6, 0.6 miles WNW of the plant). It does not show consistently increased radioactivity at the indicator location; in fact control concentrations are generally higher. However it does show slight seasonal variation similar to that observed in previous years, namely greater activity in fall and winter months.

Terrestrial Monitoring

Radionuclides released to the atmosphere may deposit on soil and vegetation, and therefore, may eventually be incorporated into the human food chain. To assess the impact of Fermi 2 operations to humans from the ingestion pathway, samples of milk, vegetation, and ground water are collected and analyzed for radioactivity. The following sections discuss the type and frequency of terrestrial sampling, analyses performed, as well as a comparison of 2021 data to previous operational and preoperational data.

Milk Sampling

A major pathway in the human food chain is the consumption of milk from grazing animals (dairy cows or goats) due to biological concentration and the short time between source and human consumption in this pathway. Until 2016, milk was collected from one indicator location and one control location semimonthly when animals are in pasture, and monthly when the animals are on stored feed. However, in the fall of 2016, the indicator milk sample location ceased operation, and thereafter only the control milk sample is being collected. The milk is analyzed for iodine-131, other gamma emitting radionuclides, and strontium-89/90.

Milk sampling began in 1979 during the preoperational program. During this time period, milk samples were analyzed for iodine-131 and other gamma emitting radionuclides. Cesium-137 and naturally occurring potassium-40 were the only radionuclides detected in milk samples during the preoperational program. The cesium-137 activity averaged 3.60E+0 pCi/liter and was due to past atmospheric nuclear weapons testing. In 1986, after the nuclear accident at Chernobyl, iodine-131 and cesium-137 were detected in both indicator and control milk samples. The average activity was 3.70E+0 pCi/liter for iodine-131 and 6.60E+0 pCi/liter for cesium-137.

The analysis for strontium-89/90 began in 1988, and strontium-90 was occasionally detected in both indicator and control milk samples because of past atmospheric nuclear weapons testing. In 1970, the concentration of strontium-90 in Monroe County milk was 6.00E+0 pCi/liter according to the Michigan Department of Health's “Milk Surveillance,” Radiation Data and Reports, Vol. 11-15, 1970-1974. Figure 4 shows the calculated radiological decay curve for the 1970 concentration of strontium-90 and the average concentrations, or MDC values if strontium-90 was not detected, since 1988. This graph illustrates that the inventory of strontium-90 in local milk samples has not exceeded the projected decay from 1970 levels. This supports the conclusion that the inventory of strontium-90 in the Fermi 2 environment is due to sources such as fallout from past atmospheric nuclear weapons testing and not the operation of Fermi 2.

During 2021, thirty-six (36) milk samples were collected and analyzed for iodine-131, gamma emitting radionuclides, and strontium-89/90. No iodine-131 or strontium-89/90 was detected greater than the MDC in any of the samples. Since there were no confirmed detections of strontium-90 in any milk samples, the average MDC of 1.49 pCi/liter is shown for strontium-90 in milk in 2021 in Figure 4.

Naturally occurring potassium-40 was detected in these milk samples (average 1.46E+3 pCi/L, Std. Dev. 4.73E+1, N=36).

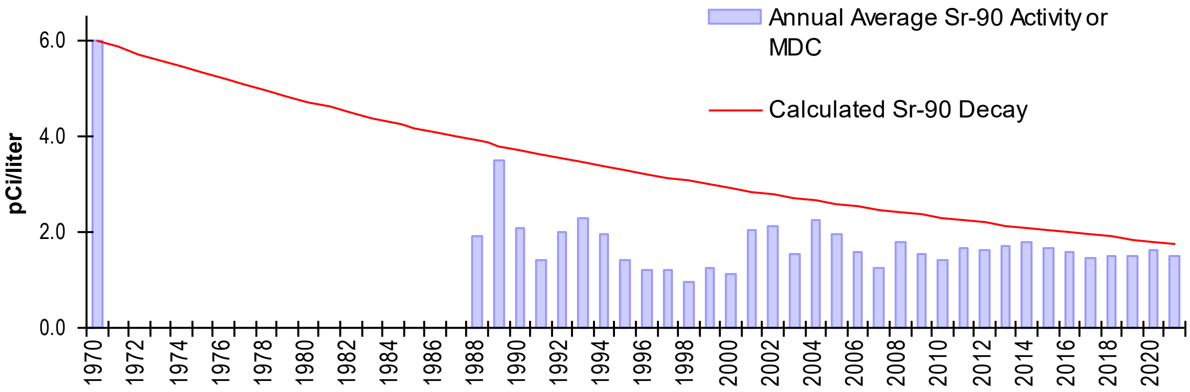


Figure 4: **Historical Strontium-90 Activity in Local Milk Samples.** The concentration of strontium-90 in local milk samples and the MDC levels are below the calculated decay curve based on 1970 levels. The data shown are the average of positive values; if strontium was not detected at the Minimum Detectable Concentration (MDC) in any samples taken during the monitoring period, the average of the MDC values is shown.

Ground-Water Sampling

In areas not served by municipal water systems, water supplies for domestic use are generally obtained from private wells. The network of private wells presently in use forms the source of water for domestic and livestock purposes in farms and homes west and north of the site. With the construction of new water plants and distribution systems, the water use trend in the area is from ground water (local wells) to surface water (municipal water supply).

Ground water is collected on a quarterly basis from four wells surrounding Fermi 2. (This sampling is distinct from the onsite groundwater sampling performed under the integrated ground water protection program--IGWPP.) The ground water is analyzed for gamma-emitting radionuclides and tritium. Sampling location GW-4, which is located approximately 0.6 miles west northwest, is designated as the control location because it is up-gradient and is least likely to be affected by the operation of the plant. The other three sampling locations are down-gradient from Fermi 2 and designated as indicator locations.

Ground-water sampling began in 1987, during the operational period of the REMP program. From 1987 to 1996, naturally occurring potassium-40, cesium-137, and tritium were detected in both indicator and control samples. The average concentration was 7.71E+0 pCi/liter for cesium-137 and 1.50E+2 pCi/liter for tritium. The presence of cesium-137 and tritium in those ground-water samples was due to fallout from past atmospheric nuclear weapons testing leaching into the soil and becoming incorporated into the ground water. From 1997 on, only naturally occurring radioactivity was detected in ground-water samples.

In 2021, twenty (20) ground-water samples were collected and analyzed for gamma emitting radionuclides and tritium. Only naturally occurring thorium-228 was detected at concentrations greater than the MDC; this isotope was detected in only one control sample.

Vegetation Sampling

Fermi 2 collects vegetation samples from three indicator locations, and at one control location that is at a distance and direction which is considered to be unaffected by plant operations. Samples are to be collected monthly, when available, and analyzed for gamma-emitting radionuclides.

Vegetable sampling started in 1982. During the preoperational period from 1982 to 1985, only naturally occurring potassium-40 was detected in both indicator and control vegetable samples. During the operational period from 1985 to 1990 and 1994 to 1995, only naturally occurring potassium-40 was detected in both indicator and control vegetable samples. However, in 1991, 1992, and 1993, cesium-137 was detected in one indicator sample each year and had an average concentration of 1.2E+1 pCi/kilogram.

Cesium-137 may become incorporated into plants by either uptake from the soil or direct deposition on foliar surfaces. Since cesium-137 is normally not detected in gaseous effluent samples from Fermi 2, and there have been no recent atmospheric weapons testing or nuclear accidents, the incorporation of cesium-137 by direct deposition is highly unlikely. The most probable source of cesium-137 in vegetable samples is the uptake of previously deposited cesium-137, which has leached into the soil. This cesium activity is attributed to fallout from past atmospheric weapons testing and to the nuclear accident at Chernobyl.

During 2021, nine (9) vegetation samples were collected and analyzed for gamma emitting radionuclides. No iodine-131 was detected greater than the MDC in vegetation samples during 2021. The only gamma emitting radionuclides detected were naturally occurring beryllium-7 and potassium-40, which were found in both indicator and control samples.

To summarize, terrestrial monitoring results for 2021 of milk, ground water, and vegetation samples, showed confirmed detection of naturally occurring radioactivity only. The radioactivity levels detected were consistent with levels measured prior to the operation of Fermi 2 and no radioactivity attributable to activities at Fermi 2 was detected greater than the MDC in any terrestrial sample. In conclusion, the terrestrial monitoring data show no adverse trends attributable to emissions from Fermi 2 in the terrestrial environment.

Aquatic Monitoring

Fermi 2 is located at the west end of Lake Erie. This Great Lake is used as a source for drinking water, as well as for recreational activities such as fishing, swimming, sunbathing, and boating. Because of these uses, Lake Erie and its tributaries are routinely monitored for radioactivity.

The aquatic monitoring portion of the REMP consists of sampling raw municipal drinking water, surface water, lake sediments, and fish for the presence of radioactivity. The following sections discuss the type and frequency of aquatic sampling, analyses performed, as well as a comparison of 2021 data to previous operational and preoperational data.

Drinking-Water Sampling

Fermi 2 monitors drinking water at one control location and one indicator location using automatic samplers. The automatic samplers collect drinking water at time intervals that are very short (hourly) relative to the sample collection period (monthly) in order to assure that a representative sample is obtained. Indicator water samples are obtained at the Monroe water intake located approximately 1.1 miles south of the plant. Detroit municipal water is used for the control samples and is obtained at the Great Lakes Water Authority water intake in Allen Park located approximately 18.6 miles north of the plant. Drinking water samples are collected monthly and analyzed for gross beta, strontium-89/90, and gamma-emitting radionuclides. The monthly samples for each location are combined quarterly and analyzed for tritium activity.

In late 1980, as shown in Figure 5, an atmospheric nuclear weapon test was conducted by the People's Republic of China. As a result of this test, the average gross beta for 1981 was 9.80E+0 pCi/liter for water samples. Figure 5 also shows that, except for the Chinese weapons testing, the historic drinking water sample data are below or slightly above the lower limit of detection (4.00E+0 pCi/liter) required by US Environmental Protection Agency (USEPA) National Interim Primary Drinking Water regulations. Even during the Chinese weapons testing, the drinking water samples did not exceed the USEPA maximum allowable criteria of 5.00E+1 pCi/liter gross beta. In 1980 and 1983, cesium-137 was detected in drinking water samples at levels ranging from 5.40E+0 pCi/liter to 1.90E+1 pCi/liter. Tritium was also detected during the preoperational program and had an average of 3.25E+2 pCi/liter. The presence of cesium-137 and detectable levels of tritium in these water samples is due to fallout from past atmospheric nuclear weapons testing and naturally occurring tritium.

The analysis of drinking water for strontium-89 and strontium-90 began in 1988 and strontium-90 has been detected in both indicator and control samples. Tritium was also detected in both indicator and control drinking water samples at times during this earlier time period. The presence of strontium-90 and detectable levels of tritium in these water samples is due to fallout from past atmospheric nuclear weapons testing and naturally occurring tritium. In recent years these nuclides have not been detected in drinking water samples.

In 2021, thirty-six (36) drinking water samples were collected and analyzed for gross beta; thirty-five (35) drinking water samples were collected and analyzed for gamma emitting radionuclides and strontium-89/90. One control drinking water sample arrived at GEL with the cap missing with only enough sample left to run gross beta analysis. Strontium-89 activity was not detected greater than the MDC in any drinking water sample, however strontium-90 activity was detected at a level equal to the LLD in one control sample. Twelve (12) quarterly composite drinking water samples were prepared and analyzed for tritium. No tritium activity was detected greater than the MDC in drinking water samples from indicator or control locations during 2021. The only radionuclides detected in these samples were naturally occurring potassium-40, in one indicator sample. Figure 5 shows historical indicator versus control location gross beta activity, or MDC values if gross beta was not detected, as was the case in 2021. There is no indication of a trend toward greater activity in indicator samples than in control samples.

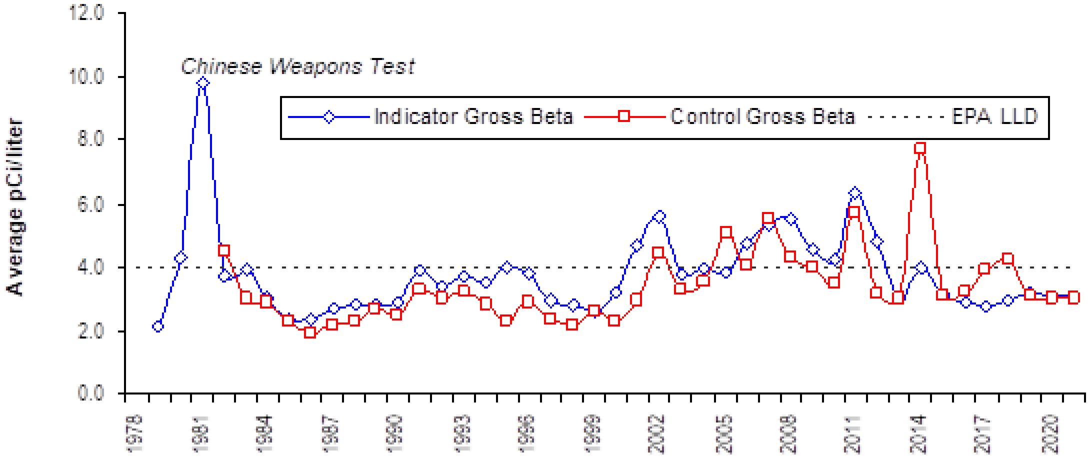


Figure 5: **Historical Gross Beta Activity in Drinking Water Samples.** Since 1982, the annual concentrations of beta emitting radionuclides in drinking water samples collected from indicator locations have been similar to those from control locations. Figure 5 shows that Fermi 2 has had no measurable radiological impact on local drinking water. This graph shows the average of positive values, or if activity was less than MDC in all samples taken during the monitoring period, the average of the MDC values is reported.

Surface-Water Sampling

Fermi 2 monitors surface water at two locations using automatic samplers. As with drinking water, the automatic samplers collect surface water at time intervals that are very short (hourly) relative to the sample collection period (monthly) to ensure that a representative sample is obtained. Indicator surface water samples are obtained at the Fermi 2 General Service Water building, located approximately 0.2 miles south southeast from Fermi 2. The control surface water samples are obtained from DTE Energy Trenton Channel Power Plant's cooling water intake on the Detroit River, which is approximately 11.7 miles north northeast of Fermi 2. Surface water samples are collected monthly and analyzed for strontium-89/90 and gamma emitting radionuclides. The monthly samples for each location are combined quarterly to form a quarterly composite sample and are analyzed for tritium.

Surface water sampling began in 1979, and the samples were analyzed for gamma emitting radionuclides and tritium. During this preoperational program, no gamma emitting radionuclides, except for naturally occurring potassium-40, were detected. Tritium was detected in both indicator and control samples during this time period and had an average concentration of 3.15E+2 pCi/liter. This tritium activity represents the background concentration due to naturally occurring tritium and tritium produced during past atmospheric nuclear weapons testing.

From 1985 to 2000, as part of the operational program, surface-water samples were analyzed for gamma emitting radionuclides and tritium. The analysis for strontium-89/90 did not begin until 1988, and strontium-90 was detected in both indicator and control samples. In 1990, two indicator samples showed detectable activity for cesium-137 at an average concentration of 1.20E+1 pCi/liter. The presence of cesium-137 and strontium-90 in these water samples is due to fallout from past atmospheric nuclear weapons testing. Tritium was detected in both indicator and control surface water samples during this time period at a concentration of 2.31E+2 pCi/liter. This tritium activity is consistent with background levels measured during the preoperational program.

In 2021, thirty-six (36) surface water samples were collected and analyzed for gamma emitting radionuclides and strontium-89/90. From these samples, twelve (12) quarterly composite samples (eight samples for indicator locations and four samples for the control location) were prepared and analyzed for tritium. During 2021, no plant related gamma emitting radioisotopes were detected above their respective MDC in any surface-water samples. However, in one indicator sample, naturally occurring potassium-40 was detected at a concentration of 4.30E+1 pCi/L. Strontium-89 and strontium-90 activity were not detected greater than the MDC in surface water samples from indicator or control locations during 2021. Tritium was not detected greater than the MDC in surface water samples from indicator or control locations during 2021.

Sediment Sampling

Sediments often act as a sink (temporary or permanent) for radionuclides, but they may also become a source, as when they are resuspended during periods of increased turbulence or are dredged and deposited elsewhere. Sediment, in the vicinity of the liquid discharge point, represents the most likely site for accumulation of radionuclides in the aquatic environment, and with long-lived radionuclides, a gradual increase in radioactivity concentration would be expected over time if discharges occur (no radioactive liquid discharges have occurred at Fermi 2 since the mid-1990s). Sediment, therefore, can provide a long-term indication of change that may not appear in other sample media (i.e., water or fish samples).

Sediments from five locations are collected from the Lake Erie shoreline and bottom on a semiannual basis (Spring and Fall) and are analyzed for gamma emitting radionuclides and strontium-89/90. Of these five sample locations, one is a control and four are indicator locations. The control sample is collected near the DTE Energy Trenton Channel Power Plant's cooling water intake. The indicator samples are collected at:

- Estral Beach
- Offshore of the Fermi 2 liquid discharge
- Pointe Aux Peaux (shoreline)
- Indian Trails Community Beach

During the preoperational monitoring program, only samples from indicator locations were analyzed for gamma emitting radionuclides as there was no control location required. Naturally occurring radionuclides were commonly identified in sediment samples from this period; the only manmade radioisotope detected was cesium-137. For this time period, the average cesium-137 concentration was 3.27E+2 pCi/kilogram. The presence of cesium-137 in these sediment samples is due to fallout from past atmospheric nuclear weapons testing.

From 1985 to 2021, cesium-137 (average activity 1.44E+2 pCi/kilogram) and naturally occurring radionuclides were detected in sediment samples. The analysis for strontium-89/90 began in 1988, and strontium-90 has periodically been detected in both indicator and control samples (average activity 2.25E+2 pCi/kilogram). Because of both of these radioisotopes' long half-lives, approximately 30 years, the persistence of cesium-137 and sporadic occurrence of strontium-90 in sediment samples has been attributed to fallout from past atmospheric nuclear weapons testing.

In 1990 and 1991, the spring samples taken at the Fermi 2 liquid discharge line (location S-2) showed activity for plant related radionuclides (manganese-54, cobalt-58, cobalt-60, and zinc-65) and was determined to be a result of liquid effluent from Fermi 2. The sample results were well below any regulatory reporting limits and were consistent with the activity released from the plant in liquid effluents as per the approved effluent program. The dose impact was negligible due to these effluents.

In 2021, ten (10) sediment samples were collected and analyzed for gamma emitting radionuclides and strontium-89/90. Cesium-137 was detected in two indicator location samples (average 5.64E+1 pCi/kg). The presence of cesium-137 in sediment samples is due to fallout from past atmospheric nuclear weapons testing. Naturally occurring radionuclides actinium-228, bismuth-214, lead-212, lead-214, potassium-40, radium-226, thallium-208, thorium-228, and thorium-230 were detected in both indicator and control sediment samples during this sampling period and naturally occurring Be-7 was detected in one control sample. The highest concentrations of these naturally occurring radionuclides have consistently been detected offshore of the Fermi 2 liquid discharge point; this may be related to the fact that this is also the circulating water pond decant point. However, the detection of Cs-137 occurred in 2 indicator locations, Pointe Aux Peaux shoreline and the Fermi 2 liquid discharge point. The sample from Pointe Aux Peaux shoreline was almost double the concentration seen at the Fermi 2 liquid discharge point. No plant-related radionuclides were identified in any sediment samples taken in 2021.

Figure 6 shows the historical concentration of cesium-137 in sediment samples from 1978 to 2021. Using the average pre-operational cesium-137 activity in sediments (3.27E+2 pCi/kilogram, Std Dev 2.11E+2) as a starting point, the estimated decayed cesium-137 activity is calculated using the half-life of cesium-137 (30.08 years) and a starting year of 1978. This trend of decreasing activity of cesium-137 is also seen in the sediment samples taken since 1985, although sediment sample cesium-137 activity seems to have leveled off in recent years, perhaps due to additional inputs such as the Chernobyl and Fukushima accidents.

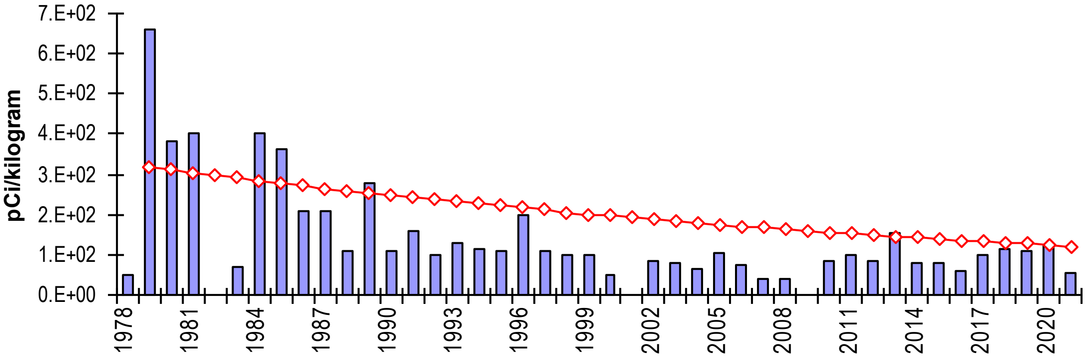


Figure 6: Historical Cesium-137 Activity in Sediment Samples. As the calculated trend line shows, the concentration of cesium-137 in Lake Erie sediments has not exceeded predicted levels based on decay of cesium-137 from preoperational levels.

Fish Sampling

Samples of fish are collected from Lake Erie at three locations on a semiannual basis. There are two control locations and one indicator location. The two control locations are offshore of Celeron Island and in Brest Bay. The indicator location is approximately 1200 feet offshore of the Fermi 2 historical liquid effluent discharge point. Edible portions of the fish are analyzed for gamma emitting radionuclides and strontium-89/90.

During the preoperational program, fish samples were analyzed for gamma emitting radionuclides. Only cesium-137 and naturally occurring potassium-40 were detected during this time period. The average concentration of cesium-137 for indicator samples was 3.53E+1 pCi/kilogram and 4.20E+1 pCi/kilogram for control samples. The presence of cesium-137 in these fish samples is due to fallout from past atmospheric nuclear weapons testing.

From 1985 to 2021, naturally occurring potassium-40 and sometimes cesium-137 were detected in fish samples. The average cesium-137 concentration for indicator samples was 2.87E+1 pCi/kilogram and 3.31E+1 pCi/kilogram for control samples. The analysis for strontium-89/90 began in 1990, and strontium-90 was sometimes detected. The average strontium-90 concentrations for indicator samples was 3.84E+1 pCi/kilogram and 3.15E+1 pCi/kilogram for control samples. The presence of cesium-137 and strontium-90 in these fish samples is due to fallout from past atmospheric nuclear weapons testing.

In 2021, 21 fish samples were collected and analyzed for gamma emitting radionuclides and strontium-89/90. Naturally occurring potassium-40 was detected in all indicator and all but one control fish sample in 2021. The average indicator concentration of potassium-40 was 3.17E+3 pCi/kg, and the average control concentration was 3.09E+3 pCi/kg. One control fish sample did have a Sr-89 concentration of 8.55E+1 pCi/kg which is above the MDC, but below the required LLD. No other radionuclides were detected in fish samples in 2021.

To summarize, aquatic monitoring results for 2021 of water, sediment, and fish showed only naturally occurring radioactivity and radioactivity associated with fallout from past atmospheric nuclear weapons testing and were consistent with levels measured prior to the operation of Fermi 2. In conclusion, no radioactivity attributable to activities at Fermi 2 was detected greater than the MDC in any aquatic sample during 2021 and no adverse long-term trends are seen in the aquatic monitoring data.

Land-Use Census

The Land-Use Census is conducted in accordance with the Fermi 2 Offsite Dose Calculation Manual (ODCM), control 3.12.2, and satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. This census identifies changes in the use of unrestricted areas to permit modifications to monitoring programs for evaluating doses to individuals from principal pathways of exposure. The pathways of concern are listed below:

- **Inhalation Pathway** - Internal exposure as a result of breathing radionuclides carried in the air.
- **Ground Exposure Pathway** - External exposure from radionuclides deposited on the ground.
- **Plume Exposure Pathway** - External exposure directly from a plume or cloud of radioactive material.
- **Vegetation Pathway** - Internal exposure as a result of eating vegetables which have absorbed deposited radioactive material, or which have absorbed radionuclides through the soil.
- **Milk Pathway** - Internal exposure as a result of drinking milk which may contain radioactive material as a result of dairy animals grazing on a pasture contaminated by radionuclides.
- **Meat Pathway** - Internal exposure as a result of consuming meat which may contain radioactive material as a result of animals grazing on a pasture contaminated by radionuclides.

The Land-Use Census is conducted during the growing season and is used to identify, within a radius of 5 miles, the locations of the nearest residences, milk animals, meat animals, and gardens (greater than 50 square meters and containing broad leaf vegetation) in 12 of the 16 meteorological sectors surrounding Fermi 2. The remaining 4 sectors are situated over Lake Erie and cannot be sampled for the Land-Use Census. Gardens greater than 50 square meters are the minimum size required to produce the quantity (26 kg/year) of leafy vegetables assumed in NRC Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were made: (1) 20% of the garden is used for growing broad leaf vegetation (i.e., lettuce and cabbage); and (2) a vegetation yield of 2 kg/square meter.

2021 Land-Use Census Results

The Land Use Census (LUC) is conducted in accordance with ODCM control 3.12.2 and satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. This census identifies changes in the use of unrestricted areas to permit modifications to monitoring programs for evaluating doses to individuals from principal pathways of exposure. The annual Land-Use Census is conducted during the growing season and is used to identify, within a radius of 5 miles, the location of the closest residences, milk animals, meat animals, and gardens in each of the 12 land-based meteorological sectors surrounding Fermi 2.

The 2021 Land-Use Census was performed during the months of August and September. The 2021 census data were obtained with the use of Global Positioning System (GPS) equipment and new locations confirmed using location data obtained from a commercial online search engine. These data were compared to the 2020 data to determine any significant changes in the use of the land. The results of the census are tabulated in Table 2 of this report.

The changes from previous LUC results appear minimal with respect to potential maximum receptors; therefore, there is no reason to change the ODCM description of the maximum exposed individual. It remains conservative with respect to all potential offsite dose pathways, no matter how unlikely they may be.

The location of the hypothetical, conservative, "maximum exposed individual" remains the same and is described as follows:

Pathway	Sector	Azimuth (degrees)	Distance (miles)	Age Group	Maximum Organ
Ingestion (vegetation)	WNW	302.2	0.71	Child	Thyroid/ Bone*

* For the 10 CFR 50 Appendix I required calculation of dose due to I-131, I-133, H-3, and particulates with half-lives greater than 8 days, the thyroid is the maximum organ. However, if C-14 is added to this dose calculation, bone becomes the maximum organ.

Table 2: 2021 Land-Use Census

Sector	Address	Type	Sub-Type	Approx. Miles	2021 Status	2020 Status	2019 Status
WSW	2180 Fairview	Garden		4.48	Active	Active	New
WSW	3324 Ferndale	Garden		3.26	Inactive	Active	New
WSW	3470 Fernwood Dr	Garden		2.94	Active	New	
WSW	1212 Fix Rd	Undefined	Chickens	5.28	Inactive	Inactive	New
WSW	1339 Fix Rd	Garden		5.11	Inactive	New	
WSW	3400 Lakeshore Blvd	Undefined	Chickens	3.24	New		
WSW	3049 Mentel Rd	Garden		4.28	Inactive	Active	Inactive
WSW	3219 Mentel Rd	Garden		4.26	Active	Active	Inactive
WSW	2746 Mentel Rd	Undefined	Chickens	4.39	New		
WSW	2333 Mentel Rd	Garden		4.68	New		
WSW	3134 N Dixie Hwy	Garden		3.56	Active	Active	Active
WSW	2831 Nadeau Rd	Garden		3.39	Inactive	Active	New
WSW	2966 Nadeau Rd	Undefined	Chickens	3.25	New		
WSW	3398 Parkwood	Garden		3.26	Active	Active	Active
WSW	3427 Parkwood	Garden		3.23	Active	Active	New
WSW	4981 Pte Aux Peaux	Residence		1.39	Active	Inactive	Active
WSW	3253 Seminole	Garden		3	Inactive	Inactive	Active
WSW	3091 Tenth St	Garden		1.74	Active	New	
WSW	5384 Williams	Garden		2.64	Active	Active	Active
WSW	5190 Williams Rd	Undefined	Chickens	2.61	Active	Active	New
WSW	2833 Woodland Blvd	Garden		3.42	Inactive	Active	Inactive
WSW	3032 Woodland Blvd	Garden		3.44	Active	New	
WNW	1950 Buhl Rd	Undefined	Chickens/ Ducks	4.68	Active	New	
WNW	2106 Buhl Rd	Garden		4.58	Active	Active	New
WNW	6200 Langton	Residence		0.71	Active	Active	Active
WNW	5922 Leroux Rd	Garden		1.54	Inactive	New	
WNW	5922 Leroux Rd	Undefined	Chickens	1.54	New		
WNW	6425 N Dixie Hwy	Meat	Cattle	1.64	Active	Active	Active
WNW	6175 N Dixie Hwy	Undefined	Chickens	1.7	Active	Active	New
WNW	6175 N Dixie Hwy	Garden		1.7	New		
WNW	6623 Newport South	Undefined	Chickens	3.38	Active	Inactive	Active
WNW	6685 Newport South	Garden/ Undefined	Chickens	3.28	Active	Active	Active
WNW	6800 Newport South	Undefined	Chickens	3.24	Inactive	Inactive	Active
WNW	7288Newport South	Garden/ Undefined	Chickens/ Goats	3.44	Active	Active	Active
WNW	7478 Newport South	Undefined	Chickens	3.53	Active	Active	Active
WNW	7478 Newport South	Undefined	Goats	3.53	New		
WNW	2785 Post Rd	Milk	Goats	3.56	Inactive	Inactive	Inactive

Sector	Address	Type	Sub-Type	Approx. Miles	2021 Status	2020 Status	2019 Status
WNW	2785 Post Rd	Garden		3.56	Active	Inactive	Active
WNW	2785 Post Rd	Undefined	Ducks	3.56	Inactive	Inactive	Active
WNW	2785 Post Rd	Undefined	Chickens	3.56	Inactive	Inactive	Active
WNW	4167 Post Rd	Milk/Meat	Goats	2.38	Inactive	Active	Inactive
WNW	4167 Post Rd	Undefined	Chickens	2.38	Inactive	Active	Inactive
WNW	7855 War Rd	Undefined	Chickens/ Ducks	4.86	Active	Active	New
WNW	7265 War Rd	Garden		4.84	Inactive	Inactive	New
W	6170 Leroux	Undefined	Chickens	1.25	Active	Active	Active
W	6170 Leroux	Undefined	Ducks	1.25	Active	Active	Active
W	6170 Leroux	Undefined	Goats	1.25	Active	Active	Active
W	5960 Mentel	Garden		4.14	Active	Active	Active
W	2500 Mentel Rd	Garden		4.49	Inactive	New	
W	6097 N Stoney Creek	Garden		4.09	New		
W	5478 N Stoney Creek	Undefined	Ducks	3.09	New		
W	2417 Nadeau Rd	Undefined	Chickens	3.27	Active	Active	Active
W	2823 Nadeau Rd	Garden		3.42	Inactive	New	
W	5810 Stoney Creek	Undefined	Chickens	3.44	Inactive	Inactive	Active
W	6028 Stoney Creek	Garden		3.82	Active	Active	Active
W	5684 Toll Rd	Garden		1.59	Inactive	Inactive	Inactive
W	5701 Toll Rd	Milk	Goats	1.56	Active	Active	Active
W	5701 Toll Rd	Undefined	Chickens	1.56	Active	Active	Active
W	6001 Toll Rd	Residence		1.18	Active	Active	Active
W	6334 Williams	Garden		2.7	Active	Inactive	Active
SW	3073 First St	Garden		4.39	Active	Active	Active
SW	5194 Pte Aux Peaux	Residence		1.25	Active	Active	Active
SW	2861 Second	Garden		4.61	Inactive	New	
SW	2864 Second St	Garden		4.61	Active	New	
SW	4895 Sycamore	Garden		1.52	New		
SSW	4340 Fifth	Garden		1.5	Active	Active	Active
SSW	5813 Parkview St	Garden		1.54	Active	Active	Inactive
SSW	5820 Pte Aux Peaux	Residence		1.11	Active	Inactive	Active
SSE	4834 Long	Residence		1.04	Active	Active	Active
S	4573 Dixon Dr	Garden		1.27	Active	New	
S	4405 Ives	Garden		1.39	Active	Active	Active
S	3880 Lakeshore	Undefined	Ducks	1.77	Inactive	Inactive	Active
S	6339 Sterling	Garden		1.23	Active	Inactive	Inactive
NW	9443 Brandon Rd	Undefined	Chickens/ Ducks	4.11	New		
NW	3535 Evergreen	Garden		3.82	Active	Active	Active
NW	3608 Evergreen	Garden		3.9	Active	Active	Active
NW	3771 Labo Rd	Undefined	Chickens	4.79	Active	New	
NW	3600 Law St	Garden		3.93	New		

Sector	Address	Type	Sub-Type	Approx. Miles	2021 Status	2020 Status	2019 Status
NW	6511 Leroux	Residence		1.06	Active	Active	Active
NW	8911 N Dixie Hwy	Garden		3.03	Active	New	
NW	2374 Newport Rd	Undefined	Chickens	4.93	Inactive	Inactive	Inactive
NW	3922 Newport Rd	Undefined	Chickens	3.84	Inactive	New	
NW	4800 South St	Garden		2.2	Active	Active	Active
NW	10025 Swan Creek	Undefined	Chickens	4.94	Active	Active	Inactive
NW	7795 Swan Creek	Garden		2.38	Active	Active	Active
NW	8006 Swan Creek	Garden		2.54	Inactive	Inactive	Inactive
NW	9834 Swan Creek	Undefined	Chickens	4.74	Inactive	Inactive	Inactive
NW	7829 Swan Creek	Garden		2.44	New		
NNW	4783 Anteau	Undefined	Chickens/ Ducks	2.98	Active	Active	Inactive
NNW	4856 Anteau	Undefined	Chickens/ Ducks	2.93	Active	Active	Active
NNW	4865 Anteau	Undefined/ Meat	Chickens/ Cattle	2.91	Active	Active	Active
NNW	4776 Anteau Rd	Undefined	Chickens	2.99	New		
NNW	10709 Armstrong	Undefined	Chickens	4.92	Active	New	
NNW	8976 Armstrong	Undefined	Chickens	3.31	New		
NNW	10207 Brandon Rd	Undefined	Chickens	4.61	New		
NNW	10153 Brandon Rd	Undefined	Chickens	4.58	New		
NNW	4880 Labo	Milk	Cattle	4.31	Active	Active	Active
NNW	5144 Labo	Undefined	Ducks	4.32	Inactive	Inactive	New
NNW	7024 Miller	Garden		1.35	Active	Active	Inactive
NNW	8210 N Dixie Hwy	Garden		2.54	Active	Active	Active
NNW	8400 N Dixie Hwy	Garden		2.56	Active	Active	Active
NNW	8400 N Dixie Hwy	Chickens		2.56	New		
NNW	3981 Newport	Undefined	Chickens	3.82	Active	Active	Active
NNW	5701 Post Rd	Residence		1.03	Active	Active	Active
NNW	5645 Swanview Rd	Undefined	Chickens	1.51	Active	New	
NNE	6460 Brancheau	Residence		1.08	Active	Active	Active
NNE	7093 Lakeview Blvd	Garden		1.85	Active	Active	Active
NNE	7208 Lakeview Blvd	Garden		1.91	Inactive	Active	Active
NNE	7415 Lakeview Blvd	Undefined	Chickens	1.94	Active	New	
NE	6760 Lakeshore	Residence		1.11	Active	Active	Active
NE	7340 Lakeview Ave.	Garden		1.94	Active	Active	Active
N	6288 Brancheau	Residence		1.11	Active	Active	Active
N	8180 Chinavare	Undefined	Chickens/ Goats	2.35	Inactive	Active	Active
N	8577 Chinavere	Garden		2.72	Active	Active	Active
N	9293 Chinavare	Garden		3.44	Active	Active	Active
N	9399 Chinavere	Garden		3.49	Active	Active	Active
N	9521 Chinavare	Undefined	Chickens	3.61	Inactive	Inactive	Inactive

Sector	Address	Type	Sub-Type	Approx. Miles	2021 Status	2020 Status	2019 Status
N	9715 Chinavare	Undefined	Chickens	3.81	Active	Active	Active
N	10119 Haggerman	Garden		4.38	Active	Active	Inactive
N	10404 Haggerman	Garden		4.61	Active	Active	Active
N	10462 Haggerman	Garden		4.68	Inactive	Active	Active

Errata from 2020 Report -- None

END OF ANNUAL ENVIRONMENTAL OPERATING REPORT BODY

Appendix A

Sampling Locations

Table A-1: *Direct Radiation Sample Locations*

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T1	NE/38°	1.3 mi.	Estral Beach, Pole on Lakeshore 23 Poles S of Lakeview. (Special Area)	Q	I
T2	NNE/22°	1.2 mi.	Pole at termination of Brancheau St. (Special Area)	Q	I
T3	N/9°	1.1 mi.	Pole, NW corner of Swan Boat Club fence. (Special Area)	Q	I
T4	NNW/337°	0.6 mi.	Site boundary and Toll Rd. on Site fence by API #2.	Q	I
T5	NW/313°	0.6 mi.	Site boundary and Toll Rd. on Site fence by API #3.	Q	I
T6	WNW/294°	0.6 mi.	Site boundary fence at south end of N. Bullit Rd.	Q	I
T7	W/270°	14.0 mi.	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles west of Doty Rd.	Q	C
T8	NW/305°	1.9 mi.	Pole on Post Rd. near NE corner of Dixie Hwy. and Post Rd.	Q	I
T9	NNW/334°	1.5 mi.	Pole, NW corner of Trombley and Swan View Rd.	Q	I
T10	N/6°	2.1 mi.	Pole, S side of Massarant - 2 poles W of Chinavare.	Q	I
T11	NNE/23°	6.2 mi.	Pole, NE corner of Milliman and Jefferson.	Q	I

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Table A-1: Direct Radiation Sample Locations (continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T12	NNE/29°	6.3 mi.	Pointe Mouille Game Area Field Office, Pole near tree, N area of parking lot.	Q	I
T13	N/356°	4.1 mi.	Labo and Dixie Hwy. Pole on SW corner with light.	Q	I
T14	NNW/337°	4.4 mi.	Labo and Brandon, Pole on SE corner near RR.	Q	I
T15	NW/315°	3.9 mi.	Pole, behind building at the corner of Swan Creek and Mill St.	Q	I
T16	WNW/283°	4.9 mi.	Pole, SE corner of War and Post Rd. (2nd pole past War Rd.)	Q	I
T17	W/271°	4.9 mi.	Pole, NE corner of Nadeau and LaPrad near mobile home park.	Q	I
T18	WSW/247°	4.8 mi.	Pole, NE corner of Mentel and Hurd Rd.	Q	I
T19	SW/236°	5.2 mi.	Fermi siren pole on Waterworks Rd. NE corner of intersection - Sterling State Park Rd. Entrance Drive/Waterworks	Q	I
T20	WSW/257°	2.7 mi.	Pole, S side of Williams Rd, 9 poles W of Dixie Hwy. (Special Area)	Q	I
T21	WSW/239°	2.7 mi.	Pole, N side of Pearl at Parkview (last pole at end of road N side) Woodland Beach (Special Area)	Q	I
T22	S/172°	1.2 mi.	Pole, N side of Pointe Aux Peaux 2 poles W of Long - Site Boundary.	Q	I

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Table A-1: Direct Radiation Sample Locations (continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T23	SSW/195°	1.1 mi.	Pole, S side of Pointe Aux Peaux 1 pole E of St. Clair next to Vent Pipe - Site Boundary.	Q	I
T24	SW/225°	1.2 mi.	Fermi Gate along Pointe Aux Peaux Rd. on fence wire W of gate - Site Boundary.	Q	I
T25	WSW/252°	1.5 mi.	Pole, Toll Rd. - 11 poles S of Fermi Drive.	Q	I
T26	WSW/259°	1.1 mi.	Pole, Toll Rd. - 5 poles S of Fermi Drive.	Q	I
T27	SW/225°	6.8 mi.	Pole, NE corner of McMillan and East Front St. (Special Area)	Q	I
T28	SW/229°	10.7 mi.	Pole, Mortar Creek—1st pole south of Hull Rd. E side	Q	C
T29	WSW/237°	10.3 mi.	Pole, NE corner of S Dixie and Albain.	Q	C
T30	WSW/247°	7.8 mi.	Elm St. pole on north side near parking lot next to St. Mary’s church (Special Area)	Q	I
T31	WSW/255°	9.6 mi.	1st pole W of entrance drive Milton "Pat" Munson Recreational Reserve on North Custer Rd.	Q	C
T32	WNW/295°	10.3 mi.	Pole, corner of Stony Creek and Finzel Rd.	Q	C
T33	NW/317°	9.2 mi.	Pole, W side of Grafton Rd. 1 pole N of Ash and Grafton intersection.	Q	C

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Table A-1: Direct Radiation Sample Locations (continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T34	NNW/338°	9.8 mi.	Pole, SW corner of Port Creek and Will-Carleton Rd. (1st pole on Port Creek)	Q	C
T35	N/359°	6.9 mi.	Pole, S Side of S Huron River Dr. across from Race St. (Special Area)	Q	I
T36	N/358°	9.1 mi.	Pole, NE corner of Gibraltar and Cahill Rd.	Q	C
T37	NNE/21°	9.8 mi.	Pole, on Gibraltar Rd. next to Humbug Marina.	Q	C
T38	WNW/294°	1.7 mi.	Residence - 6594 N. Dixie Hwy.	Q	I
T39	S/176°	0.3 mi.	SE corner of Protected Area Fence (PAF).	Q	O
T40	S/170°	0.3 mi.	Midway along OBA - PAF.	Q	O
T41	SSE/161°	0.2 mi.	Midway between OBA and Shield Wall—PAF (north end of OBA)	Q	O
T42	SSE/149°	0.2 mi.	Midway along Shield Wall on PAF.	Q	O
T43	SE/131°	0.1 mi.	Midway between Shield Wall and Aux Boilers on PAF.	Q	O
T44	ESE/109°	0.1 mi.	Opposite OSSF door on PAF.	Q	O
T45	E/86°	0.1 mi.	NE Corner of PAF.	Q	O
T46	ENE/67°	0.2 mi.	NE side of barge slip on fence.	Q	O

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Table A-1: Direct Radiation Sample Locations (continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T47	S/185°	0.1 mi.	South of Turbine Bldg. rollup door on PAF (fence adjacent to SE corner AIB)	Q	O
T48	SW/235°	0.2 mi.	30 ft. from corner of AAP on PAF.	Q	O
T49	WSW/251°	1.1 mi.	Corner of Site Boundary fence north of NOC along Critical Path Rd. (at turn)	Q	I
T50	W/270°	0.9 mi.	Site Boundary fence near main gate by the south Bullet Street sign.	Q	I
T51	N/3°	0.4 mi.	Site Boundary fence north of north Cooling Tower.	Q	O
T52	NNE/20°	0.4 mi.	Site Boundary fence at the corner of Arson and Tower.	Q	O
T53	NE/55°	0.2 mi.	Site Boundary fence east of South Cooling Tower.	Q	O
T54	S/189°	0.3 mi.	Pole across from Fermi 2 Visitors Center.	Q	O
T55	WSW/251°	3.3 mi.	Pole, north side of Nadeau Rd. across from Sodt Elementary School Marquee (entrance to fire station)	Q	I
T56	WSW/255°	4.9 mi.	Pole, entrance to Jefferson Middle School on Stony Creek Rd. (NE side of road)	Q	I
T57	W/260°	2.7 mi.	Pole, north side of Williams Rd. across from Jefferson High School entrance (by long residential driveway)	Q	I

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Table A-1: Direct Radiation Sample Locations (continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T58	WSW/249°	4.9 mi.	Pole, on Hurd Rd., halfway between Mentel Rd. and Yax Rd.	Q	I
T59	NW/325°	2.6 mi.	Pole north of St. Charles Church entrance on Dixie Hwy.	Q	I
T60	NNW/341°	2.5 mi.	1st pole north of North Elementary School entrance on Dixie Hwy.	Q	I
T61	W/268°	10.1 mi.	Pole, SW corner of Stewart and Raisinville Rd.	Q	C
T62	SW/232°	9.7 mi.	Pole, SE corner of Albain and Hull Rd.	Q	C
T63	WSW/245°	9.6 mi.	Pole, NE corner of Dunbar and Telegraph Rd.	Q	C
T64	WNW/286°	0.2 mi.	West of switchgear yard midway along PAF.	Q	O
T65	NW/322°	0.1 mi.	PAF North East corner of ISFSI pad	Q	O
T66	NE/50°	0.1 mi.	Behind Bldg. 42 on PAF.	Q	O
T67	NNW/338°	0.2 mi.	Site Boundary fence West of South Cooling Tower.	Q	O
T68	WNW/303°	0.6 mi	Langton Rd. seven poles East of Leroux Rd.	Q	I
T69	NW/306°	0.8 mi	Langton Rd. four poles East of Leroux Rd.	Q	I
T70	NNW/333°	1.1 mi	Leroux Rd. and Post Rd. pole at W corner of turn.	Q	I
T71	WNW/300°	1.1 mi	Leroux Rd. six poles North of Fermi Dr.	Q	I

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Table A-1: Direct Radiation Sample Locations (continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
ISFSI-1	WNW/302.3°	0.175 mi.	Center of west ISFSI fence.	Q	O
ISFSI-2	NW/310.2°	0.186 mi.	NW corner ISFSI fence.	Q	O
ISFSI-3	NW/313.2°	0.166 mi.	Center of north ISFSI fence.	Q	O
ISFSI-4	NW/315.6°	0.149 mi.	NE corner ISFSI fence.	Q	O
ISFSI-5	NW/305.4°	0.140 mi	Center of east ISFSI fence.	Q	O
ISFSI-6	WNW/294.1°	0.136 mi	SE corner ISFSI fence.	Q	O
ISFSI-7	WNW/293.0°	0.157 mi	Center of south ISFSI fence.	Q	O
ISFSI-8	WNW/293°	0.177 mi	SW corner ISFSI fence.	Q	O

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Table A-2: ***Air Particulate and Air Iodine Sample Locations:***

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
API-1	NE/39°	1.4 mi.	Estral Beach Pole on Lakeshore, 18 Poles S of Lakeview (Nearest Community with highest X/Q).	W	I
API-2	NNW/337°	0.6 mi.	Site Boundary and Toll Road, on Site Fence by T-4.	W	I
API-3	NW/313°	0.6 mi.	Site Boundary and Toll Road, on Site Fence by T-5.	W	I
API-4	W/270°	14.0 mi.	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles west of Doty Rd.	W	C
API-5	S/188°	1.2 mi.	Pole, N corner of Pointe Aux Peaux and Dewey Rd.	W	I
API-6	WNW/295°	0.6 mi.	Pole, Site Boundary and Toll Rd., by T-6	W	I

I = Indicator *C = Control* *W = Weekly*

Table A-3: ***Milk Sample Locations***

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
M-8	WNW/289°	9.9 mi.	Calder Dairy - 9334 Finzel Rd.	M-SM	C

*

I = Indicator *C = Control* *M = Monthly* *SM = Semimonthly*

Note: An indicator milk location was discontinued in 2016 due to shutdown of the milking operation. A replacement indicator location has not yet been found.

A-4: Vegetation Sample Locations

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
FP-9	W/261°	10.9 mi.	4074 North Custer Road (across the street)	M	C
FP-HD1	NE/39°	1.4 mi.	Near highest D/Q offsite location in Sector C (near API-2)	M	I
FP-HD2	NW/315°	0.6 mi.	Near highest D/Q offsite location in Sector Q (near API-3)	M	I
FP-HD3	WNW/292°	0.6 mi.	Near highest D/Q offsite location in Sector P (near API-6)	M	I

I = Indicator *C = Control* *M = Monthly (when available)*

Table A-5: ***Drinking-Water Sample Locations***

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
DW-1	S/174°	1.1 mi.	Monroe Water Station N Side of Pointe Aux Peaux 1/2 Block W of Long Rd.	M	I
DW-2	N/8°	18.5 mi.	Great Lakes Water Authority, 14700 Moran Rd, Allen Park.	M	C

I = Indicator *C = Control* *M = Monthly*

Table A-6: Surface-Water Sample Locations

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
SW-2	NNE/20°	11.7 mi.	DTE Energy Trenton Channel Power Plant Intake Structure (Screenhouse #1).	M	C
SW-3	SSE/160°	0.2 mi.	DTE Energy Fermi 2 General Service Water Intake Structure.	M	I

I = Indicator　　*C = Control*　　*M = Monthly*

Table A-7: ***Ground-Water Sample Locations***

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
GW-1	S/175°	0.4 mi.	Approx. 100 ft W of Lake Erie, EF-1 Parking lot near gas fired peakers.	Q	I
GW-2	SSW/208°	1.0 mi.	4 ft S of Pointe Aux Peaux (PAP) Rd. Fence 427 ft W of where PAP crosses over Stoney Point's Western Dike.	Q	I
GW-3	SW/226°	1.0 mi.	143 ft W of PAP Rd. Gate, 62 ft N of PAP Rd. Fence.	Q	I
GW-4	WNW/299°	0.6 mi.	42 ft S of Langton Rd, 8 ft E of Toll Rd. Fence.	Q	C

I = Indicator　　*C = Control*　　*Q = Quarterly*

Table A-8: ***Sediment Sample Locations***

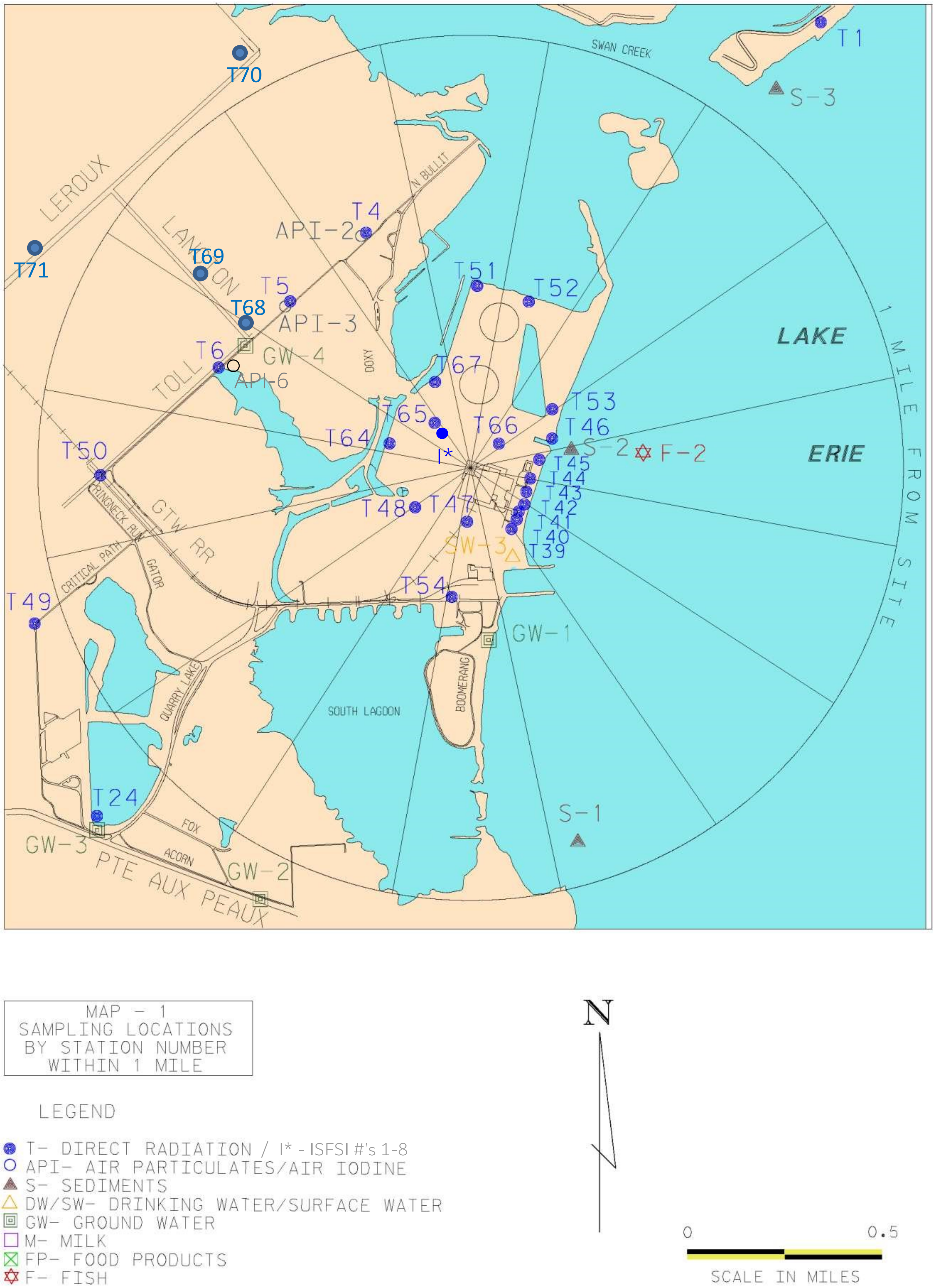
Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
S-1	SSE/165°	0.9 mi.	Pointe Aux Peaux, Shoreline to 500 ft offshore sighting directly to Land Base Water Tower.	SA	I
S-2	E/81°	0.2 mi.	Fermi 2 Discharge, approx. 200 ft offshore.	SA	I
S-3	NE/39°	1.1 mi.	Estral Beach, approx. 200 ft offshore, off North shoreline where Swan Creek and Lake Erie meet.	SA	I
S-4	WSW/241°	3.0 mi.	Indian Trails Community Beach.	SA	I
S-5	NNE/20°	11.7 mi.	DTE Trenton Channel Power Plant intake area.	SA	C

I = Indicator *C = Control* *SA = Semiannually*

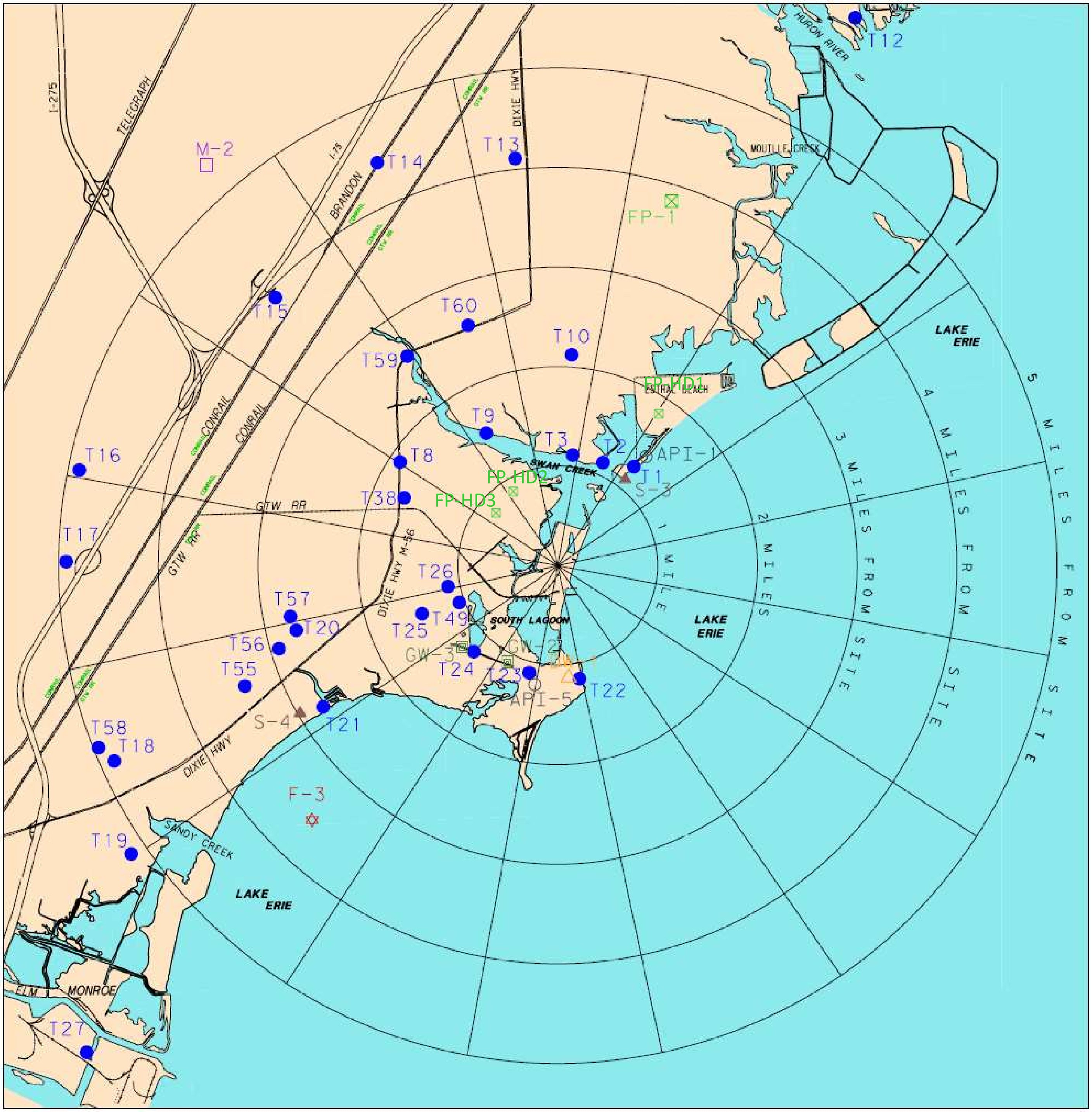
Table A-9: ***Fish Sample Locations***

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
F-1	NNE/31°	9.5 mi.	Near Celeron Island.	SA	C
F-2	E/86°	0.4 mi.	Fermi 2 Discharge (approx. 1200 ft offshore).	SA	I
F-3	SW/227°	3.5 mi.	Brest Bay.	SA	C

I = Indicator *C = Control* *SA = Semiannually*



MAP - 1
SAMPLING LOCATIONS
BY STATION NUMBER
WITHIN 1 MILE



MAP - 2
SAMPLING LOCATIONS
BY STATION NUMBER
(1 To 5 MILES)

LEGEND

- ● T- DIRECT RADIATION
- ○ API- AIR PARTICULATES/AIR IODINE
- ▲ S- SEDIMENTS
- △ DW/SW- DRINKING WATER/SURFACE WATER
- ▣ GW- GROUND WATER
- ☐ M- MILK
- ☒ FP- FOOD PRODUCTS
- ✡ F- FISH

N

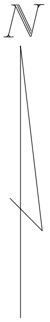
0 1

SCALE IN MILES

MAP - 3
SAMPLING LOCATIONS
BY STATION NUMBER
(GREATER THAN 5 MILES)

LEGEND

- ◎ T- DIRECT RADIATION
- ○ API- AIR PARTICULATES OR AIR IODINE
- ▲ S- SEDIMENTS
- △ DW/SW- DRINKING WATER/SURFACE WATER
- ▣ GW- GROUND WATER
- □ M- MILK
- ☒ FP- FOOD PRODUCTS
- ✡ F- FISH



Appendix B

Environmental Data Summary

Table B-1 Radiological Environmental Monitoring Program Summary

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January – December 2021
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD (b)	Indicator Locations Mean and Range (d)	Location with Highest Annual Mean		Control Locations Mean and Range (d)	Number of Non-routine Results (f)
				Location (e)	Mean and Range (d)		
Direct Radiation *mR/std qtr* (a)	Gamma (TLD) 211	1.0	14.3 (163/164) 10.6 to 18.9	T-16 (Indicator)	17.5 (4/4) 16.3 to 18.9	14.0 (48/48) 11.4 to 17.4	None
Airborne Particulates *ρCi/cu. m.*	Gross Beta 312	1.00E-2	4.53E-2 (260/260) 1.67E-2 to 1.81E-1	API-2 (Indicator)	8.12E-2 (52/52) 2.71E-2 to 1.81E-1	4.19E-2 (52/52) 1.46E-2 to 1.16E-1	None
	Gamma Spec. 24						
	Be-7	N/A	8.09E-2 (20/20) 4.93E-2 to 1.99E-1	API-2 (Indicator)	1.61E-1 (4/4) 9.33E-2 to 1.99E-1	7.52E-2 (4/4) 5.09E-2 to 9.39E-2	None
	K-40	N/A	1.26E-2 (13/20) 3.63E-3 to 1.78E-2	API-4 (Control)	1.56E -2 (3/4) 1.36E-2 to 1.69E-2	1.56E -2 (3/4) 1.36E-2 to 1.69E-2	None
	Mn-54	N/A	≤MDC			<MDC	None
	Co-58	N/A	≤MDC			<MDC	None
	Fe-59	N/A	≤MDC			<MDC	None
	Zn-65	N/A	≤MDC			<MDC	None
	Zr-95	N/A	≤MDC			<MDC	None
	Nb-95	N/A	≤MDC			<MDC	None
	Ru-103	N/A	≤MDC			<MDC	None
	Ru-106	N/A	≤MDC			<MDC	None
	Cs-134	5.00E-2	≤MDC			<MDC	None
	Cs-137	6.00E-2	≤MDC			<MDC	None
	Ba-140	N/A	≤MDC			<MDC	None
	La-140	N/A	≤MDC			<MDC	None
	Ce-141	N/A	≤MDC			<MDC	None
	Ce-144	N/A	≤MDC			<MDC	None
Airborne Iodine *ρCi/cu. m.*	I-131 312	7.00E-2	≤MDC			<MDC	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January – December 2021

Sample Type (Units)	Type and Number of Analysis	LLD (b)	Indicator Locations Mean and Range (d)	Location with Highest Annual Mean		Control Locations Mean and Range (d)	Number of Non-routine Results (f)
				Location (e)	Mean and Range (d)		
Milk	I-131 36	1.00E+0				≤MDC	None
ρCi/l	Sr-89 36	N/A				≤MDC	None
	Sr-90 36	N/A				≤MDC	None
	Gamma Spec. 36						
	Be-7	N/A				≤MDC	None
	K-40	N/A	No indicator location in 2021	M-8 (Control)	1.46E+3 (36/36) 1.39E+3 to 1.59E+3	1.46E+3 (36/36) 1.39E+3 to 1.59E+3	None
	Mn-54	N/A				≤MDC	None
	Co-58	N/A				≤MDC	None
	Fe-59	N/A				≤MDC	None
	Co-60	N/A				≤MDC	None
	Zn-65	N/A				≤MDC	None
	Zr-95	N/A				≤MDC	None
	Nb-95	N/A				≤MDC	None
	Ru-103	N/A				≤MDC	None
	Ru-106	N/A				≤MDC	None
	Cs-134	1.50E+1				≤MDC	None
	Cs-137	1.80E+1				≤MDC	None
	Ba-140	1.50E+1				≤MDC	None
	La-140	1.50E+1				≤MDC	None
	Ce-141	N/A				≤MDC	None
	Ce-144	N/A				≤MDC	None
Vegetation	I-131 9	6.00E+1	≤MDC			≤MDC	None
ρCi/kg wet	Gamma Spec. 9						
	Be-7	N/A	4.04E+3 (6/6) 2.26E+2 to 7.22E+3	FP-HD1 (Indicator)	5.84E+3 (3/3) 4.36E+3 to 7.22E+3	4.24E+3 (3/3) 3.20E+3 to 4.81E+3	None
	K-40	N/A	4.68E+3 (6/6) 2.49E+3 to 6.79E+3	FP-HD1 (Indicator)	6.55E+3 (3/3) 6.18E+3 to 6.79E+3	5.23E+3 (3/3) 3.77E+3 to 6.69E+3	None
	Th-228	N/A	≤MDC			≤MDC	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January – December 2021

Sample Type (Units)	Type and Number of Analysis	LLD (b)	Indicator Locations Mean and Range (d)	Location with Highest Annual Mean		Control Locations Mean and Range (d)	Number of Non-routine Results (f)
				Location (e)	Mean and Range(d)		
Vegetation (cont.) *ρCi/kg wet*	Mn-54	N/A	≤MDC			≤MDC	None
	Co-58	N/A	≤MDC			≤MDC	None
	Fe-59	N/A	≤MDC			≤MDC	None
	Co-60	N/A	≤MDC			≤MDC	None
	Zn-65	N/A	≤MDC			≤MDC	None
	Zr-95	N/A	≤MDC			≤MDC	None
	Nb-95	N/A	≤MDC			≤MDC	None
	Ru-103	N/A	≤MDC			≤MDC	None
	Ru-106	N/A	≤MDC			≤MDC	None
	Cs-134	6.00E+1	≤MDC			≤MDC	None
	Cs-137	8.00E+1	≤MDC			≤MDC	None
	Ba-140	N/A	≤MDC			≤MDC	None
	La-140	N/A	≤MDC			≤MDC	None
	Ce-141	N/A	≤MDC			≤MDC	None
	Ce-144	N/A	≤MDC			≤MDC	None
	Ac-228	N/A	≤MDC			≤MDC	None
	Th-228	N/A	≤MDC			≤MDC	None
Drinking Water *ρCi/l*	Gross Beta 36	4.00E+0	≤MDC			≤MDC	None
	Sr-89 35	1.00E+1	≤MDC			≤MDC	None
	Sr-90	2.00E+0	≤MDC	DW-2 (Control)	2.00E+0 (1/11)	2.00E+0	None
	Gamma Spec. 35						
	Be-7	N/A	≤MDC			≤MDC	None
	K-40	N/A	5.13E+1 (1/24)	DW-1 (Indicator)	5.13E+1 (1/24)	≤MDC	None
	Cr-51	N/A	≤MDC			≤MDC	None
	Mn-54	1.50E+1	≤MDC			≤MDC	None
	Co-58	1.50E+1	≤MDC			≤MDC	None
	Fe-59	3.00E+1	≤MDC			≤MDC	None
	Co-60	1.50E+1	≤MDC			≤MDC	None
	Zn-65	3.00E+1	≤MDC			≤MDC	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January – December 2021

Sample Type (Units)	Type and Number of Analysis	LLD (b)	Indicator Locations Mean and Range (d)	Location with Highest Annual Mean		Control Locations Mean and Range (d)	Number of Non-routine Results (f)
				Location (e)	Mean and Range (d)		
Drinking Water	Zr-95	1.50E+1	≤MDC			≤MDC	None
ρCi/l	Nb-95	1.50E+1	≤MDC			≤MDC	None
	Ru-103	N/A	≤MDC			≤MDC	None
	Ru-106	N/A	≤MDC			≤MDC	None
	Cs-134	1.50E+1	≤MDC			≤MDC	None
	Cs-137	1.80E+1	≤MDC			≤MDC	None
	Ba-140	1.50E+1	≤MDC			≤MDC	None
	La-140	1.50E+1	≤MDC			≤MDC	None
	Ce-141	N/A	≤MDC			≤MDC	None
	Ce-144	N/A	≤MDC			≤MDC	None
	Th-228	N/A	≤MDC			≤MDC	None
	H-3 12	2.00E+3	≤MDC			≤MDC	None
Surface Water	Sr-89 36	N/A	≤MDC			≤MDC	None
ρCi/l	Sr-90	N/A	≤MDC			≤MDC	None
	Gamma Spec. 36						
	Be-7	N/A	≤MDC			≤MDC	None
	K-40	N/A	4.30E+1 (1/24)	SW-3 (Indicator)	4.30E+1 (1/24)	≤MDC	None
	Cr-51	N/A	≤MDC			≤MDC	None
	Mn-54	1.50E+1	≤MDC			≤MDC	None
	Co-58	1.50E+1	≤MDC			≤MDC	None
	Fe-59	3.00E+1	≤MDC			≤MDC	None
	Co-60	1.50E+1	≤MDC			≤MDC	None
	Zn-65	3.00E+1	≤MDC			≤MDC	None
	Zr-95	1.50E+1	≤MDC			≤MDC	None
	Nb-95	1.50E+1	≤MDC			≤MDC	None
	Ru-103	N/A	≤MDC			≤MDC	None
	Ru-106	N/A	≤MDC			≤MDC	None
	Cs-134	1.50E+1	≤MDC			≤MDC	None
	Cs-137	1.80E+1	≤MDC			≤MDC	None
	Ba-140	1.50E+1	≤MDC			≤MDC	None
	La-140	1.50E+1	≤MDC			≤MDC	None
	Ce-141	N/A	≤MDC			≤MDC	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January – December 2021

Sample Type (Units)	Type and Number of Analysis	LLD (b)	Indicator Locations Mean and Range (d)	Location with Highest Annual Mean		Control Locations Mean and Range (d)	Number of Non-routine Results (f)
				Location (e)	Mean and Range (d)		
Surface Water (cont.) *ρCi/l*	Ce-144	N/A	≤MDC			≤MDC	None
	Th-228	N/A	5.27E+0 (1/24)	SW-3 (Indicator)	5.27E+0 (1/24)	≤MDC	None
	H-3 12	2.00E+3	≤MDC			≤MDC	None
Groundwater *ρCi/l*	Gamma Spec. 20						
	Be-7	N/A	≤MDC			≤MDC	None
	K-40	N/A	≤MDC			≤MDC	None
	Cr-51	N/A	≤MDC			≤MDC	None
	Mn-54	1.50E+1	≤MDC			≤MDC	None
	Co-58	1.50E+1	≤MDC			≤MDC	None
	Fe-59	3.00E+1	≤MDC			≤MDC	None
	Co-60	1.50E+1	≤MDC			≤MDC	None
	Zn-65	3.00E+1	≤MDC			≤MDC	None
	Zr-95	1.50E+1	≤MDC			≤MDC	None
	Nb-95	1.50E+1	≤MDC			≤MDC	None
	Ru-103	N/A	≤MDC			≤MDC	None
	Ru-106	N/A	≤MDC			≤MDC	None
	Cs-134	1.50E+1	≤MDC			≤MDC	None
	Cs-137	1.80E+1	≤MDC			≤MDC	None
	Ba-140	1.50E+1	≤MDC			≤MDC	None
	La-140	1.50E+1	≤MDC			≤MDC	None
	Ce-141	N/A	≤MDC			≤MDC	None
	Ce-144	N/A	≤MDC			≤MDC	None
	Ac-228	N/A	≤MDC			≤MDC	
	Th-228	N/A	≤MDC	GW-4 (Control)	6.31E+0 (1/8)	6.31E+0 (1/8)	None
	H-3 20	2.00E+3	≤MDC			≤MDC	None
Sediment *ρCi/kg dry*	Sr-89 10	N/A	≤MDC			≤MDC	
	Sr-90	N/A	≤MDC			≤MDC	None
	Gamma Spec. 10						
	Be-7	N/A	≤MDC	S-5 (Control)	5.71E+2 (1/2)	5.71E+2 (1/2)	None
	K-40	N/A	1.35E+4 (7/8) 8.71E+3 to 2.40E+4	S-2 (Indicator)	1.86E+4 (2/2) 1.32E+4 to 2.40E+4	1.47E+4 (2/2) 1.24E+4 to 1.69E+4	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January – December 2021

Sample Type (Units)	Type and Number of Analysis	LLD (b)	Indicator Locations Mean and Range (d)	Location with Highest Annual Mean		Control Locations Mean and Range (d)	Number of Non-routine Results (f)
				Location (e)	Mean and Range (d)		
Sediment (cont.) *ρCi/kg dry*	Thallium-208	N/A	1.47E+2 (7/8) 4.10E+1 to 3.11E+2	S-2 (Indicator)	2.38E+2 (2/2) 1.64E+2 to 3.11E+2	2.04E+2 (2/2) 1.98E+2 to 2.10E+2	None
	Lead-212	N/A	4.99E+2 (8/8) 9.43E+1 to 1.31E+3	S-2 (Indicator)	9.64E+2 (2/2) 6.17E+2 to 1.31E+3	7.52E+2 (2/2) 6.40E+2 to 8.64E+2	None
	Bismuth-214	N/A	5.13E+2 (7/8) 1.09E+2 to 1.23E+3	S-2 (Indicator)	9.15E+2 (2/2) 6.00E+2 to 1.23E+3	6.16E+2 (2/2) 5.69E+2 to 6.63E+2	None
	Lead-214	N/A	5.68E+2 (8/8) 9.18E+1 to 1.56E+3	S-2 (Indicator)	1.12E+3 (2/2) 6.86E+2 to 1.56E+3	8.16E+2 (2/2) 8.11E+2 to 8.22E+2	None
	Radium-226	N/A	5.13E+2 (7/8) 1.09E+2 to 1.23E+3	S-2 (Indicator)	9.15E+2 (2/2) 6.00E+2 to 1.23E+3	6.16E+2 (2/2) 5.69E+2 to 6.63E+2	None
	Actinium-228	N/A	6.24E+2 (6/8) 1.44E+2 to 1.07E+3	S-1 (Indicator)	8.71E+2 (2/2) 6.71E+2 to 1.07E+3	7.28E+2 (2/2) 6.71E+2 to 7.84E+2	None
	Thorium-228	N/A	4.99E+2 (8/8) 9.43E+1 to 1.31E+3	S-2 (Indicator)	9.65E+2 (2/2) 6.17E+2 to 1.31E+3	7.52E+2 (2/2) 6.40E+2 to 8.64E+2	None
	Thorium-230	N/A	5.13E+2 (7/8) 1.09E+2 to 1.23E+3	S-2 (Indicator)	9.15E+2 (2/2) 6.00E+2 to 1.23E+3	6.16E+2 (2/2) 5.69E+2 to 6.63E+2	None
	Mn-54	N/A	≤MDC			≤MDC	None
	Co-58	N/A	≤MDC			≤MDC	None
	Fe-59	N/A	≤MDC			≤MDC	None
	Co-60	N/A	≤MDC			≤MDC	None
	Zn-65	N/A	≤MDC			≤MDC	None
	Zr-95	N/A	≤MDC			≤MDC	None
	Nb-95	N/A	≤MDC			≤MDC	None
	Ru-103	N/A	≤MDC			≤MDC	None
	Ru-106	N/A	≤MDC			≤MDC	None
	Cs-134	1.50E+2	≤MDC			≤MDC	None
	Cs-137	1.80E+2	5.64E+1 (2/8) 3.99E+1 to 7.28E+1	S-1 (Indicator)	7.28E+1 (1/2)	≤MDC	None
	Ba-140	N/A	≤MDC			≤MDC	None
	La-140	N/A	≤MDC			≤MDC	None
	Ce-141	N/A	≤MDC			≤MDC	None
	Ce-144	N/A	≤MDC			≤MDC	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January – December 2021

Sample Type (Units)	Type and Number of Analysis	LLD (b)	Indicator Locations Mean and Range (d)	Location with Highest Annual Mean		Control Locations Mean and Range (d)	Number of Non-routine Results (f)
				Location (e)	Mean and Range (d)		
Fish	Sr-89 21	N/A	≤MDC	F-1 (Control)	8.55E+1 (1/12)	8.55E+1 (1/12)	None
ρCi/kg wet	Sr-90	N/A	≤MDC			≤MDC	None
	Gamma Spec. 21						
	Be-7	N/A	≤MDC			≤MDC	None
	K-40	N/A	3.17E+3 (9/9) 2.47E+3 to 3.66E+3	F-1 (Control)	3.25E+3 (3/4) 2.58E+3 to 3.62E+3	3.09E+3 (11/12) 2.47E+3 to 3.62E+3	None
	Mn-54	1.30E+2	≤MDC			≤MDC	None
	Co-58	1.30E+2	≤MDC			≤MDC	None
	Fe-59	2.60E+2	≤MDC			≤MDC	None
	Co-60	1.30E+2	≤MDC			≤MDC	None
	Zn-65	2.60E+2	≤MDC			≤MDC	None
	Zr-95	N/A	≤MDC				None
						≤MDC	
	Nb-95	N/A	≤MDC			≤MDC	None
	Ru-103	N/A	≤MDC			≤MDC	None
	Ru-106	N/A	≤MDC			≤MDC	None
	Cs-134	1.30E+2	≤MDC			≤MDC	None
	Cs-137	1.50E+2	≤MDC			≤MDC	None
	Ba-140	N/A	≤MDC			≤MDC	None
	La-140	N/A	≤MDC			≤MDC	None
	Ce-141	N/A	≤MDC			≤MDC	None
	Ce-144	N/A	≤MDC			≤MDC	None
	Th-228	N/A	≤MDC			≤MDC	

(a) Direct Radiation mean, range, and total analyses values are for off-site TLDs. Onsite TLDs are not included in this table.
(b) LLD = Fermi 2 ODCM LLD: nominal lower limit of detection based on 4.66 sigma error for background sample.
(c) ≤MDC = Less than or equal to the lab's minimum detectable activity which is less than the LLD.
(d) Mean and range based upon detectable measurements only, defined as cases of the result exceeding the MDC (see Appendix C for sample analysis results). Fraction of detectable measurements at specified locations is indicated in parentheses.
(e) Locations are specified by Fermi 2 ODCM and are described in Appendix A - Sampling Locations.
(f) Non-routine results are those which are reportable according to Fermi 2 ODCM control 3.12.1. `

Appendix C

Environmental Data Tables

Laboratory Qualifiers

U: Target isotope was analyzed for but not detected above the MDC and LLD.
UI: Uncertain identification for gamma spectroscopy.
The indicated nuclide is considered not to be detected with this qualifier.
M: Reported result is less than the LLD and greater than the MDC.
Radioactivity is considered to be detected in a sample with this qualifier.
DL: MDC > LLD
No qualifier: Radioactivity is detected in the sample, above the MDC.

API-1

A.C. Iodine

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-1(531321007) - A.C. Iodine	5-Jan-21	Iodine-131	-9.34E-04	2.64E-03	8.57E-03	7.00E-02	2.65E-03	pCi/m3	U
API-1(531955007) - A.C. Iodine	12-Jan-21	Iodine-131	-2.26E-04	2.80E-03	9.42E-03	7.00E-02	2.80E-03	pCi/m3	U
API-1(532751007) - A.C. Iodine	20-Jan-21	Iodine-131	1.98E-03	2.50E-03	9.24E-03	7.00E-02	2.54E-03	pCi/m3	U
API-1(533325007) - A.C. Iodine	26-Jan-21	Iodine-131	5.90E-03	3.78E-03	1.45E-02	7.00E-02	4.03E-03	pCi/m3	U
API-1(533897007) - A.C. Iodine	2-Feb-21	Iodine-131	-3.77E-03	3.37E-03	9.95E-03	7.00E-02	3.49E-03	pCi/m3	U
API-1(534741007) - A.C. Iodine	9-Feb-21	Iodine-131	6.51E-04	3.15E-03	1.07E-02	7.00E-02	3.16E-03	pCi/m3	U
API-1(536502007) - A.C. Iodine	17-Feb-21	Iodine-131	-4.37E-03	8.29E-03	2.67E-02	7.00E-02	8.35E-03	pCi/m3	U
API-1(535998007) - A.C. Iodine	23-Feb-21	Iodine-131	-3.29E-03	5.48E-03	1.69E-02	7.00E-02	5.53E-03	pCi/m3	U
API-1(536570007) - A.C. Iodine	2-Mar-21	Iodine-131	-2.18E-03	2.60E-03	8.14E-03	7.00E-02	2.65E-03	pCi/m3	U
API-1(537236007) - A.C. Iodine	9-Mar-21	Iodine-131	-1.29E-03	2.62E-03	8.20E-03	7.00E-02	2.64E-03	pCi/m3	U
API-1(538122007) - A.C. Iodine	16-Mar-21	Iodine-131	2.44E-03	4.15E-03	1.51E-02	7.00E-02	4.19E-03	pCi/m3	U
API-1(538744007) - A.C. Iodine	23-Mar-21	Iodine-131	-4.14E-03	3.15E-03	8.19E-03	7.00E-02	3.30E-03	pCi/m3	U
API-1(539290007) - A.C. Iodine	30-Mar-21	Iodine-131	-1.28E-03	3.78E-03	1.25E-02	7.00E-02	3.79E-03	pCi/m3	U
API-1(539973007) - A.C. Iodine	6-Apr-21	Iodine-131	1.78E-03	3.13E-03	1.14E-02	7.00E-02	3.16E-03	pCi/m3	U
API-1(541230007) - A.C. Iodine	13-Apr-21	Iodine-131	-1.33E-03	5.72E-03	1.78E-02	7.00E-02	5.73E-03	pCi/m3	U
API-1(541549007) - A.C. Iodine	20-Apr-21	Iodine-131	6.56E-03	9.47E-03	3.34E-02	7.00E-02	9.60E-03	pCi/m3	U
API-1(542691007) - A.C. Iodine	27-Apr-21	Iodine-131	5.05E-04	3.65E-03	1.25E-02	7.00E-02	3.65E-03	pCi/m3	U
API-1(543862007) - A.C. Iodine	4-May-21	Iodine-131	-1.61E-02	8.84E-03	1.95E-02	7.00E-02	9.61E-03	pCi/m3	U
API-1(544556007) - A.C. Iodine	11-May-21	Iodine-131	-2.28E-03	4.88E-03	1.55E-02	7.00E-02	4.90E-03	pCi/m3	U
API-1(544986007) - A.C. Iodine	18-May-21	Iodine-131	2.33E-04	3.69E-03	1.26E-02	7.00E-02	3.69E-03	pCi/m3	U
API-1(545784007) - A.C. Iodine	25-May-21	Iodine-131	3.02E-03	8.64E-03	3.01E-02	7.00E-02	8.67E-03	pCi/m3	U
API-1(546205007) - A.C. Iodine	1-Jun-21	Iodine-131	-1.16E-02	6.28E-03	1.81E-02	7.00E-02	6.84E-03	pCi/m3	U
API-1(546774007) - A.C. Iodine	8-Jun-21	Iodine-131	-6.34E-04	4.74E-03	1.54E-02	7.00E-02	4.75E-03	pCi/m3	U
API-1(547399007) - A.C. Iodine	15-Jun-21	Iodine-131	3.82E-03	4.91E-03	1.78E-02	7.00E-02	4.99E-03	pCi/m3	U
API-1(548375007) - A.C. Iodine	22-Jun-21	Iodine-131	6.59E-03	7.91E-03	2.95E-02	7.00E-02	8.06E-03	pCi/m3	U
API-1(548551007) - A.C. Iodine	29-Jun-21	Iodine-131	7.28E-04	4.35E-03	1.47E-02	7.00E-02	4.35E-03	pCi/m3	U
API-1(549016007) - A.C. Iodine	6-Jul-21	Iodine-131	1.59E-03	3.72E-03	1.30E-02	7.00E-02	3.74E-03	pCi/m3	U
API-1(549605007) - A.C. Iodine	13-Jul-21	Iodine-131	-8.97E-04	3.52E-03	9.76E-03	7.00E-02	3.52E-03	pCi/m3	U
API-1(550237007) - A.C. Iodine	20-Jul-21	Iodine-131	7.05E-04	4.18E-03	1.45E-02	7.00E-02	4.18E-03	pCi/m3	U
API-1(550833007) - A.C. Iodine	27-Jul-21	Iodine-131	5.74E-03	4.50E-03	1.73E-02	7.00E-02	4.70E-03	pCi/m3	U
API-1(551675007) - A.C. Iodine	3-Aug-21	Iodine-131	-5.38E-03	5.75E-03	1.71E-02	7.00E-02	5.89E-03	pCi/m3	U
API-1(552413007) - A.C. Iodine	10-Aug-21	Iodine-131	-1.71E-03	3.42E-03	9.53E-03	7.00E-02	3.45E-03	pCi/m3	U
API-1(553054007) - A.C. Iodine	11-Aug-21	Iodine-131	-1.72E-02	2.17E-02	6.72E-02	7.00E-02	2.20E-02	pCi/m3	U
API-1(553768007) - A.C. Iodine	24-Aug-21	Iodine-131	-3.36E-03	7.41E-03	2.32E-02	7.00E-02	7.45E-03	pCi/m3	U
API-1(554850007) - A.C. Iodine	31-Aug-21	Iodine-131	5.61E-03	3.84E-03	1.39E-02	7.00E-02	4.06E-03	pCi/m3	U
API-1(555058007) - A.C. Iodine	7-Sep-21	Iodine-131	6.99E-04	2.27E-03	7.92E-03	7.00E-02	2.28E-03	pCi/m3	U

API-1(555852007) - A.C. Iodine	14-Sep-21	Iodine-131	1.43E-04	2.71E-03	9.20E-03	7.00E-02	2.71E-03	pCi/m3	U
API-1(556501007) - A.C. Iodine	21-Sep-21	Iodine-131	-2.82E-03	3.34E-03	8.54E-03	7.00E-02	3.40E-03	pCi/m3	U
API-1(557195007) - A.C. Iodine	28-Sep-21	Iodine-131	-1.84E-03	4.21E-03	1.13E-02	7.00E-02	4.23E-03	pCi/m3	U
API-1(557995007) - A.C. Iodine	5-Oct-21	Iodine-131	-1.70E-03	5.23E-03	1.64E-02	7.00E-02	5.25E-03	pCi/m3	U
API-1(559006007) - A.C. Iodine	12-Oct-21	Iodine-131	-1.27E-03	3.32E-03	1.06E-02	7.00E-02	3.34E-03	pCi/m3	U
API-1(559466007) - A.C. Iodine	19-Oct-21	Iodine-131	6.25E-03	3.92E-03	6.25E-03	7.00E-02	3.95E-03	pCi/m3	UI
API-1(560248007) - A.C. Iodine	26-Oct-21	Iodine-131	2.30E-04	2.56E-03	8.31E-03	7.00E-02	2.56E-03	pCi/m3	U
API-1(561045007) - A.C. Iodine	2-Nov-21	Iodine-131	-5.65E-03	5.03E-03	1.50E-02	7.00E-02	5.21E-03	pCi/m3	U
API-1(561652007) - A.C. Iodine	9-Nov-21	Iodine-131	-2.66E-03	3.40E-03	1.07E-02	7.00E-02	3.45E-03	pCi/m3	U
API-1(562795007) - A.C. Iodine	16-Nov-21	Iodine-131	5.65E-03	3.99E-03	1.46E-02	7.00E-02	4.21E-03	pCi/m3	U
API-1(563578007) - A.C. Iodine	23-Nov-21	Iodine-131	1.36E-03	4.48E-03	1.55E-02	7.00E-02	4.50E-03	pCi/m3	U
API-1(563687007) - A.C. Iodine	30-Nov-21	Iodine-131	3.82E-03	2.59E-03	9.82E-03	7.00E-02	2.74E-03	pCi/m3	U
API-1(564729007) - A.C. Iodine	7-Dec-21	Iodine-131	4.34E-03	4.42E-03	1.61E-02	7.00E-02	4.53E-03	pCi/m3	U
API-1(565422007) - A.C. Iodine	14-Dec-21	Iodine-131	-2.28E-03	3.79E-03	1.16E-02	7.00E-02	3.83E-03	pCi/m3	U
API-1(565770007) - A.C. Iodine	21-Dec-21	Iodine-131	2.12E-03	2.64E-03	9.52E-03	7.00E-02	2.69E-03	pCi/m3	U
API-1(566010007) - A.C. Iodine	28-Dec-21	Iodine-131	6.39E-03	7.38E-03	2.61E-02	7.00E-02	7.53E-03	pCi/m3	U

API-1

A.P. Gross Beta

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Actinium-228	-1.84E-03	6.98E-04	1.84E-03		8.23E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Actinium-228	1.65E-03	6.80E-04	2.35E-03		7.84E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Actinium-228	-8.17E-04	8.71E-04	2.39E-03		8.92E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Actinium-228	5.16E-04	7.10E-04	2.58E-03		7.21E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Antimony-124	-2.21E-04	3.92E-04	1.15E-03		3.95E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Antimony-124	1.58E-03	5.60E-04	2.61E-03		6.72E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Antimony-124	2.96E-04	6.04E-04	2.12E-03		6.08E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Antimony-124	1.16E-03	6.95E-04	2.98E-03		7.46E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Antimony-125	-1.41E-04	3.41E-04	1.13E-03		3.43E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Antimony-125	3.71E-04	2.72E-04	1.02E-03		2.85E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Antimony-125	2.84E-04	3.45E-04	1.23E-03		3.52E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Antimony-125	2.84E-04	4.28E-04	1.49E-03		4.33E-04	pCi/m3	U
API-1(531321001) - A.P. Gross Beta	5-Jan-21	BETA	2.97E-02	2.49E-03	3.34E-03	1.00E-02	2.49E-03	pCi/m3	
API-1(531955001) - A.P. Gross Beta	12-Jan-21	BETA	4.00E-02	2.82E-03	3.42E-03	1.00E-02	2.82E-03	pCi/m3	
API-1(532751001) - A.P. Gross Beta	20-Jan-21	BETA	3.31E-02	2.36E-03	2.83E-03	1.00E-02	2.36E-03	pCi/m3	
API-1(533325001) - A.P. Gross Beta	26-Jan-21	BETA	3.03E-02	2.72E-03	3.86E-03	1.00E-02	2.72E-03	pCi/m3	
API-1(533897001) - A.P. Gross Beta	2-Feb-21	BETA	2.57E-02	2.31E-03	3.27E-03	1.00E-02	2.31E-03	pCi/m3	
API-1(534741001) - A.P. Gross Beta	9-Feb-21	BETA	4.96E-02	3.06E-03	3.28E-03	1.00E-02	3.07E-03	pCi/m3	
API-1(536502001) - A.P. Gross Beta	17-Feb-21	BETA	3.61E-02	2.43E-03	2.74E-03	1.00E-02	2.43E-03	pCi/m3	

API-1(535998001) - A.P. Gross Beta	23-Feb-21	BETA	5.07E-02	3.36E-03	3.68E-03	1.00E-02	3.37E-03	pCi/m3	
API-1(536570001) - A.P. Gross Beta	2-Mar-21	BETA	3.54E-02	2.68E-03	3.29E-03	1.00E-02	2.68E-03	pCi/m3	
API-1(537236001) - A.P. Gross Beta	9-Mar-21	BETA	3.60E-02	2.60E-03	3.02E-03	1.00E-02	2.60E-03	pCi/m3	
API-1(538122001) - A.P. Gross Beta	16-Mar-21	BETA	4.17E-02	2.80E-03	3.14E-03	1.00E-02	2.80E-03	pCi/m3	
API-1(538744001) - A.P. Gross Beta	23-Mar-21	BETA	3.89E-02	2.80E-03	3.33E-03	1.00E-02	2.80E-03	pCi/m3	
API-1(539290001) - A.P. Gross Beta	30-Mar-21	BETA	2.97E-02	2.45E-03	3.25E-03	1.00E-02	2.45E-03	pCi/m3	
API-1(539973001) - A.P. Gross Beta	6-Apr-21	BETA	3.78E-02	2.76E-03	3.30E-03	1.00E-02	2.76E-03	pCi/m3	
API-1(541230001) - A.P. Gross Beta	13-Apr-21	BETA	2.91E-02	2.36E-03	3.10E-03	1.00E-02	2.36E-03	pCi/m3	
API-1(541549001) - A.P. Gross Beta	20-Apr-21	BETA	2.48E-02	2.32E-03	3.40E-03	1.00E-02	2.32E-03	pCi/m3	
API-1(542691001) - A.P. Gross Beta	27-Apr-21	BETA	2.78E-02	2.43E-03	3.58E-03	1.00E-02	2.44E-03	pCi/m3	
API-1(543862001) - A.P. Gross Beta	4-May-21	BETA	2.93E-02	2.52E-03	3.49E-03	1.00E-02	2.52E-03	pCi/m3	
API-1(544556001) - A.P. Gross Beta	11-May-21	BETA	1.67E-02	1.97E-03	3.31E-03	1.00E-02	1.97E-03	pCi/m3	
API-1(544986001) - A.P. Gross Beta	18-May-21	BETA	2.18E-02	2.13E-03	3.09E-03	1.00E-02	2.13E-03	pCi/m3	
API-1(545784001) - A.P. Gross Beta	25-May-21	BETA	2.54E-02	2.24E-03	3.17E-03	1.00E-02	2.24E-03	pCi/m3	
API-1(546205001) - A.P. Gross Beta	1-Jun-21	BETA	2.92E-02	2.49E-03	3.49E-03	1.00E-02	2.49E-03	pCi/m3	
API-1(546774001) - A.P. Gross Beta	8-Jun-21	BETA	3.03E-02	2.46E-03	3.25E-03	1.00E-02	2.46E-03	pCi/m3	
API-1(547399001) - A.P. Gross Beta	15-Jun-21	BETA	3.02E-02	2.44E-03	3.10E-03	1.00E-02	2.44E-03	pCi/m3	
API-1(548375001) - A.P. Gross Beta	22-Jun-21	BETA	3.69E-02	3.25E-03	4.56E-03	1.00E-02	3.26E-03	pCi/m3	
API-1(548551001) - A.P. Gross Beta	29-Jun-21	BETA	3.73E-02	2.75E-03	3.41E-03	1.00E-02	2.75E-03	pCi/m3	
API-1(549016001) - A.P. Gross Beta	6-Jul-21	BETA	3.20E-02	2.48E-03	3.14E-03	1.00E-02	2.48E-03	pCi/m3	
API-1(549605001) - A.P. Gross Beta	13-Jul-21	BETA	3.62E-02	2.68E-03	3.27E-03	1.00E-02	2.69E-03	pCi/m3	
API-1(550237001) - A.P. Gross Beta	20-Jul-21	BETA	2.88E-02	2.39E-03	3.21E-03	1.00E-02	2.39E-03	pCi/m3	
API-1(550833001) - A.P. Gross Beta	27-Jul-21	BETA	4.04E-02	2.80E-03	3.14E-03	1.00E-02	2.80E-03	pCi/m3	
API-1(551675001) - A.P. Gross Beta	3-Aug-21	BETA	3.52E-02	2.67E-03	3.72E-03	1.00E-02	2.67E-03	pCi/m3	
API-1(552413001) - A.P. Gross Beta	10-Aug-21	BETA	5.18E-02	3.13E-03	3.15E-03	1.00E-02	3.14E-03	pCi/m3	
API-1(553054001) - A.P. Gross Beta	11-Aug-21	BETA	1.18E-01	1.23E-02	2.05E-02	1.00E-02	1.23E-02	pCi/m3	DL
API-1(553768001) - A.P. Gross Beta	24-Aug-21	BETA	6.92E-02	4.46E-03	5.48E-03	1.00E-02	4.47E-03	pCi/m3	
API-1(554850001) - A.P. Gross Beta	31-Aug-21	BETA	5.46E-02	3.17E-03	3.13E-03	1.00E-02	3.18E-03	pCi/m3	
API-1(555058001) - A.P. Gross Beta	7-Sep-21	BETA	3.76E-02	2.73E-03	3.23E-03	1.00E-02	2.74E-03	pCi/m3	
API-1(555852001) - A.P. Gross Beta	14-Sep-21	BETA	4.45E-02	2.84E-03	2.93E-03	1.00E-02	2.84E-03	pCi/m3	
API-1(556501001) - A.P. Gross Beta	21-Sep-21	BETA	4.96E-02	3.02E-03	3.16E-03	1.00E-02	3.02E-03	pCi/m3	
API-1(557195001) - A.P. Gross Beta	28-Sep-21	BETA	4.37E-02	2.92E-03	3.25E-03	1.00E-02	2.92E-03	pCi/m3	
API-1(557995001) - A.P. Gross Beta	5-Oct-21	BETA	3.90E-02	2.74E-03	3.24E-03	1.00E-02	2.74E-03	pCi/m3	
API-1(559006001) - A.P. Gross Beta	12-Oct-21	BETA	6.14E-02	3.28E-03	3.02E-03	1.00E-02	3.28E-03	pCi/m3	
API-1(559466001) - A.P. Gross Beta	19-Oct-21	BETA	4.79E-02	3.07E-03	3.54E-03	1.00E-02	3.07E-03	pCi/m3	
API-1(560248001) - A.P. Gross Beta	26-Oct-21	BETA	4.05E-02	2.77E-03	3.19E-03	1.00E-02	2.77E-03	pCi/m3	
API-1(561045001) - A.P. Gross Beta	2-Nov-21	BETA	2.89E-02	2.48E-03	3.55E-03	1.00E-02	2.48E-03	pCi/m3	
API-1(561652001) - A.P. Gross Beta	9-Nov-21	BETA	5.16E-02	3.07E-03	3.11E-03	1.00E-02	3.07E-03	pCi/m3	
API-1(562795001) - A.P. Gross Beta	16-Nov-21	BETA	4.02E-02	2.83E-03	3.30E-03	1.00E-02	2.83E-03	pCi/m3	

API-1(563578001) - A.P. Gross Beta	23-Nov-21	BETA	4.05E-02	2.81E-03	3.17E-03	1.00E-02	2.82E-03	pCi/m3	
API-1(563687001) - A.P. Gross Beta	30-Nov-21	BETA	3.97E-02	2.82E-03	3.22E-03	1.00E-02	2.82E-03	pCi/m3	
API-1(564729001) - A.P. Gross Beta	7-Dec-21	BETA	3.90E-02	2.68E-03	3.09E-03	1.00E-02	2.68E-03	pCi/m3	
API-1(565422001) - A.P. Gross Beta	14-Dec-21	BETA	5.47E-02	3.51E-03	3.85E-03	1.00E-02	3.52E-03	pCi/m3	
API-1(565770001) - A.P. Gross Beta	21-Dec-21	BETA	4.82E-02	2.96E-03	3.37E-03	1.00E-02	2.96E-03	pCi/m3	
API-1(566010001) - A.P. Gross Beta	28-Dec-21	BETA	6.92E-02	3.58E-03	3.56E-03	1.00E-02	3.58E-03	pCi/m3	
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Barium-140	-4.66E-03	3.28E-03	9.84E-03		3.46E-03	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Barium-140	-7.38E-03	4.11E-03	1.13E-02		4.46E-03	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Barium-140	4.16E-03	3.52E-03	1.29E-02		3.66E-03	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Barium-140	1.52E-03	3.04E-03	1.04E-02		3.06E-03	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Beryllium-7	6.02E-02	4.97E-03	5.43E-03		5.71E-03	pCi/m3	
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Beryllium-7	6.18E-02	5.12E-03	4.63E-03		5.95E-03	pCi/m3	
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Beryllium-7	8.52E-02	5.79E-03	4.90E-03		7.36E-03	pCi/m3	
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Beryllium-7	5.78E-02	5.91E-03	6.01E-03		6.63E-03	pCi/m3	
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Cerium-141	-4.33E-04	3.63E-04	9.87E-04		3.76E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Cerium-141	-2.66E-05	3.47E-04	1.05E-03		3.47E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Cerium-141	-9.22E-04	3.94E-04	1.02E-03		4.49E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Cerium-141	-3.28E-04	3.09E-04	8.18E-04		3.19E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Cerium-144	-2.76E-04	7.08E-04	2.26E-03		7.10E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Cerium-144	-3.50E-04	5.77E-04	1.84E-03		5.83E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Cerium-144	9.90E-04	6.57E-04	2.31E-03		6.96E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Cerium-144	-5.58E-04	5.84E-04	1.78E-03		5.99E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Cesium-134	1.46E-04	1.34E-04	4.85E-04	5.00E-02	1.38E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Cesium-134	-1.68E-04	1.22E-04	2.36E-04	5.00E-02	1.28E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Cesium-134	6.71E-05	1.70E-04	5.69E-04	5.00E-02	1.71E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Cesium-134	1.46E-04	2.08E-04	7.95E-04	5.00E-02	2.11E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Cesium-137	3.19E-04	2.04E-04	4.25E-04	6.00E-02	2.05E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Cesium-137	3.11E-04	1.43E-04	3.11E-04	6.00E-02	1.44E-04	pCi/m3	UI
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Cesium-137	2.00E-04	1.16E-04	4.51E-04	6.00E-02	1.25E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Cesium-137	-7.45E-05	2.37E-04	7.83E-04	6.00E-02	2.38E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Chromium-51	-7.50E-04	2.54E-03	7.73E-03		2.54E-03	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Chromium-51	2.41E-03	2.92E-03	9.70E-03		2.97E-03	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Chromium-51	2.37E-03	2.25E-03	8.19E-03		2.32E-03	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Chromium-51	1.43E-03	1.99E-03	7.07E-03		2.02E-03	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Cobalt-57	-8.43E-06	7.51E-05	2.44E-04		7.51E-05	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Cobalt-57	-8.70E-05	8.11E-05	2.26E-04		8.36E-05	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Cobalt-57	-6.32E-05	8.09E-05	2.51E-04		8.23E-05	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Cobalt-57	-7.18E-05	6.16E-05	1.84E-04		6.39E-05	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Cobalt-58	-3.20E-05	2.00E-04	6.40E-04		2.00E-04	pCi/m3	U

API-1(552150001) - A.P. Gross Beta	29-Jun-21	Cobalt-58	-9.85E-05	1.71E-04	5.16E-04		1.72E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Cobalt-58	-3.10E-04	1.57E-04	3.23E-04		1.74E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Cobalt-58	1.08E-04	2.18E-04	7.80E-04		2.20E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Iodine-131	4.55E-03	3.27E-03	1.19E-02		3.44E-03	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Iodine-131	-6.91E-04	6.11E-03	1.89E-02		6.11E-03	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Iodine-131	3.07E-03	3.59E-03	1.28E-02		3.66E-03	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Iodine-131	2.65E-03	1.45E-03	5.62E-03		1.58E-03	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Iron-59	-3.30E-04	5.33E-04	1.57E-03		5.38E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Iron-59	-3.31E-04	4.80E-04	1.48E-03		4.87E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Iron-59	-7.39E-04	4.74E-04	1.25E-03		5.05E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Iron-59	-3.46E-04	6.07E-04	1.83E-03		6.13E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Lanthanum-140	2.39E-05	1.23E-03	4.10E-03		1.23E-03	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Lanthanum-140	5.08E-04	1.65E-03	5.79E-03		1.65E-03	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Lanthanum-140	-6.27E-04	1.55E-03	4.69E-03		1.55E-03	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Lanthanum-140	8.53E-04	1.14E-03	4.36E-03		1.16E-03	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Manganese-54	2.94E-04	1.58E-04	5.93E-04		1.73E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Manganese-54	4.07E-05	1.39E-04	4.69E-04		1.39E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Manganese-54	-9.73E-06	1.84E-04	5.85E-04		1.84E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Manganese-54	-9.57E-05	1.92E-04	5.15E-04		1.93E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Niobium-95	-2.45E-04	2.04E-04	5.95E-04		2.12E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Niobium-95	8.62E-05	1.77E-04	6.15E-04		1.78E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Niobium-95	-1.64E-04	2.11E-04	6.19E-04		2.14E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Niobium-95	2.30E-04	2.67E-04	9.76E-04		2.73E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Potassium-40	1.10E-02	3.39E-03	4.50E-03		3.44E-03	pCi/m3	
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Potassium-40	1.12E-02	4.13E-03	5.61E-03		4.17E-03	pCi/m3	
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Potassium-40	1.23E-02	3.12E-03	6.68E-03		3.18E-03	pCi/m3	
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Potassium-40	7.69E-03	3.62E-03	7.69E-03		3.65E-03	pCi/m3	UI
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Ruthenium-103	-1.60E-04	2.37E-04	7.63E-04		2.40E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Ruthenium-103	3.44E-04	2.09E-04	8.00E-04		2.24E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Ruthenium-103	-5.17E-05	2.21E-04	7.21E-04		2.22E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Ruthenium-103	1.42E-04	2.03E-04	7.17E-04		2.06E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Ruthenium-106	-1.90E-03	1.20E-03	3.42E-03		1.28E-03	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Ruthenium-106	-5.74E-04	1.04E-03	3.27E-03		1.05E-03	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Ruthenium-106	-1.23E-03	1.59E-03	4.89E-03		1.62E-03	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Ruthenium-106	-3.06E-03	1.64E-03	3.98E-03		1.79E-03	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Selenium-75	1.48E-04	1.65E-04	5.48E-04		1.68E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Selenium-75	6.74E-05	1.57E-04	5.16E-04		1.58E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Selenium-75	2.09E-04	1.86E-04	6.27E-04		1.92E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Selenium-75	-1.34E-04	1.74E-04	5.69E-04		1.77E-04	pCi/m3	U

API-1(543402001) - A.P. Gross Beta	30-Mar-21	Silver-108m	4.30E-05	1.00E-04	3.49E-04		1.01E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Silver-108m	1.90E-04	1.05E-04	3.98E-04		1.14E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Silver-108m	2.63E-04	1.16E-04	4.46E-04		1.31E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Silver-108m	-1.40E-04	1.24E-04	3.66E-04		1.29E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Silver-110m	-7.04E-05	2.25E-04	7.05E-04		2.25E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Silver-110m	-1.30E-04	2.23E-04	6.78E-04		2.25E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Silver-110m	3.78E-05	2.56E-04	7.40E-04		2.56E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Silver-110m	-4.11E-05	3.15E-04	1.04E-03		3.15E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Zinc-65	1.63E-04	4.06E-04	1.22E-03		4.07E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Zinc-65	5.88E-04	3.51E-04	1.36E-03		3.77E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Zinc-65	-2.74E-04	4.45E-04	1.20E-03		4.50E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Zinc-65	4.38E-04	3.64E-04	1.44E-03		3.78E-04	pCi/m3	U
API-1(543402001) - A.P. Gross Beta	30-Mar-21	Zirconium-95	4.86E-04	3.40E-04	1.25E-03		3.58E-04	pCi/m3	U
API-1(552150001) - A.P. Gross Beta	29-Jun-21	Zirconium-95	3.74E-05	3.57E-04	1.19E-03		3.57E-04	pCi/m3	U
API-1(560833001) - A.P. Gross Beta	28-Sep-21	Zirconium-95	6.78E-04	5.91E-04	1.51E-03		6.13E-04	pCi/m3	U
API-1(568417001) - A.P. Gross Beta	28-Dec-21	Zirconium-95	3.43E-06	4.17E-04	1.42E-03		4.17E-04	pCi/m3	U

API-2

A.C. Iodine

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-2(531321008) - A.C. Iodine	5-Jan-21	Iodine-131	2.95E-03	3.04E-03	1.06E-02	7.00E-02	3.12E-03	pCi/m3	U
API-2(531955008) - A.C. Iodine	12-Jan-21	Iodine-131	-2.19E-03	3.27E-03	1.07E-02	7.00E-02	3.31E-03	pCi/m3	U
API-2(532751008) - A.C. Iodine	20-Jan-21	Iodine-131	1.06E-03	2.51E-03	8.70E-03	7.00E-02	2.52E-03	pCi/m3	U
API-2(533325008) - A.C. Iodine	26-Jan-21	Iodine-131	-5.07E-03	2.49E-03	5.74E-03	7.00E-02	2.76E-03	pCi/m3	U
API-2(533897008) - A.C. Iodine	2-Feb-21	Iodine-131	1.63E-03	2.80E-03	9.77E-03	7.00E-02	2.82E-03	pCi/m3	U
API-2(534741008) - A.C. Iodine	9-Feb-21	Iodine-131	5.50E-03	2.81E-03	1.11E-02	7.00E-02	3.09E-03	pCi/m3	U
API-2(536502008) - A.C. Iodine	17-Feb-21	Iodine-131	1.93E-02	9.31E-03	3.50E-02	7.00E-02	1.04E-02	pCi/m3	U
API-2(535998008) - A.C. Iodine	23-Feb-21	Iodine-131	5.83E-03	5.11E-03	2.01E-02	7.00E-02	5.29E-03	pCi/m3	U
API-2(536570008) - A.C. Iodine	2-Mar-21	Iodine-131	-1.86E-02	2.35E-02	6.99E-02	7.00E-02	2.39E-02	pCi/m3	U
API-2(537236008) - A.C. Iodine	9-Mar-21	Iodine-131	5.79E-03	2.22E-03	9.06E-03	7.00E-02	2.60E-03	pCi/m3	U
API-2(538122008) - A.C. Iodine	16-Mar-21	Iodine-131	-5.86E-03	4.14E-03	1.09E-02	7.00E-02	4.36E-03	pCi/m3	U
API-2(538744008) - A.C. Iodine	23-Mar-21	Iodine-131	2.68E-03	2.96E-03	1.02E-02	7.00E-02	3.03E-03	pCi/m3	U
API-2(539290008) - A.C. Iodine	30-Mar-21	Iodine-131	1.04E-02	4.44E-03	1.77E-02	7.00E-02	5.07E-03	pCi/m3	U
API-2(539973008) - A.C. Iodine	6-Apr-21	Iodine-131	5.29E-03	3.84E-03	1.39E-02	7.00E-02	4.03E-03	pCi/m3	U
API-2(541230008) - A.C. Iodine	13-Apr-21	Iodine-131	-7.44E-04	4.66E-03	1.55E-02	7.00E-02	4.67E-03	pCi/m3	U
API-2(541549008) - A.C. Iodine	20-Apr-21	Iodine-131	1.77E-03	7.83E-03	2.77E-02	7.00E-02	7.84E-03	pCi/m3	U
API-2(542691008) - A.C. Iodine	27-Apr-21	Iodine-131	-3.67E-04	5.16E-03	1.58E-02	7.00E-02	5.16E-03	pCi/m3	U
API-2(543862008) - A.C. Iodine	4-May-21	Iodine-131	1.18E-02	7.25E-03	3.02E-02	7.00E-02	7.75E-03	pCi/m3	U
API-2(544556008) - A.C. Iodine	11-May-21	Iodine-131	4.92E-03	5.58E-03	1.92E-02	7.00E-02	5.70E-03	pCi/m3	U

API-2(544986008) - A.C. Iodine	18-May-21	Iodine-131	9.76E-05	6.16E-03	2.02E-02	7.00E-02	6.16E-03	pCi/m3	U
API-2(545784008) - A.C. Iodine	25-May-21	Iodine-131	-5.15E-03	9.14E-03	2.87E-02	7.00E-02	9.22E-03	pCi/m3	U
API-2(546205008) - A.C. Iodine	1-Jun-21	Iodine-131	-3.85E-03	4.64E-03	1.37E-02	7.00E-02	4.73E-03	pCi/m3	U
API-2(546774008) - A.C. Iodine	8-Jun-21	Iodine-131	-2.80E-03	3.02E-03	7.18E-03	7.00E-02	3.09E-03	pCi/m3	U
API-2(547399008) - A.C. Iodine	15-Jun-21	Iodine-131	2.95E-03	2.61E-03	1.06E-02	7.00E-02	2.70E-03	pCi/m3	U
API-2(548375008) - A.C. Iodine	22-Jun-21	Iodine-131	6.00E-03	8.89E-03	2.96E-02	7.00E-02	9.00E-03	pCi/m3	U
API-2(548551008) - A.C. Iodine	29-Jun-21	Iodine-131	-5.78E-04	4.64E-03	1.47E-02	7.00E-02	4.65E-03	pCi/m3	U
API-2(549016008) - A.C. Iodine	6-Jul-21	Iodine-131	7.49E-04	3.91E-03	1.36E-02	7.00E-02	3.92E-03	pCi/m3	U
API-2(549605008) - A.C. Iodine	13-Jul-21	Iodine-131	-2.01E-03	2.86E-03	8.96E-03	7.00E-02	2.90E-03	pCi/m3	U
API-2(550237008) - A.C. Iodine	20-Jul-21	Iodine-131	-3.76E-03	3.76E-03	1.16E-02	7.00E-02	3.86E-03	pCi/m3	U
API-2(550833008) - A.C. Iodine	27-Jul-21	Iodine-131	2.63E-03	3.29E-03	1.20E-02	7.00E-02	3.35E-03	pCi/m3	U
API-2(551675008) - A.C. Iodine	3-Aug-21	Iodine-131	5.45E-04	4.75E-03	1.54E-02	7.00E-02	4.75E-03	pCi/m3	U
API-2(552413008) - A.C. Iodine	10-Aug-21	Iodine-131	-9.10E-05	3.00E-03	1.02E-02	7.00E-02	3.00E-03	pCi/m3	U
API-2(553054008) - A.C. Iodine	17-Aug-21	Iodine-131	-7.59E-04	3.01E-03	1.00E-02	7.00E-02	3.01E-03	pCi/m3	U
API-2(553768008) - A.C. Iodine	24-Aug-21	Iodine-131	-2.41E-03	4.41E-03	1.32E-02	7.00E-02	4.45E-03	pCi/m3	U
API-2(554850008) - A.C. Iodine	31-Aug-21	Iodine-131	6.26E-03	3.05E-03	1.23E-02	7.00E-02	3.38E-03	pCi/m3	U
API-2(555058008) - A.C. Iodine	7-Sep-21	Iodine-131	5.16E-03	4.51E-03	1.68E-02	7.00E-02	4.67E-03	pCi/m3	U
API-2(555852008) - A.C. Iodine	14-Sep-21	Iodine-131	-4.12E-03	2.96E-03	8.51E-03	7.00E-02	3.11E-03	pCi/m3	U
API-2(556501008) - A.C. Iodine	21-Sep-21	Iodine-131	3.26E-03	2.85E-03	9.88E-03	7.00E-02	2.95E-03	pCi/m3	U
API-2(557195008) - A.C. Iodine	28-Sep-21	Iodine-131	-3.32E-03	5.08E-03	1.56E-02	7.00E-02	5.14E-03	pCi/m3	U
API-2(557995008) - A.C. Iodine	5-Oct-21	Iodine-131	-8.14E-03	6.78E-03	2.04E-02	7.00E-02	7.04E-03	pCi/m3	U
API-2(559006008) - A.C. Iodine	12-Oct-21	Iodine-131	1.98E-03	3.93E-03	1.25E-02	7.00E-02	3.95E-03	pCi/m3	U
API-2(559466008) - A.C. Iodine	19-Oct-21	Iodine-131	4.34E-03	3.03E-03	1.14E-02	7.00E-02	3.19E-03	pCi/m3	U
API-2(560248008) - A.C. Iodine	26-Oct-21	Iodine-131	2.57E-03	3.18E-03	1.14E-02	7.00E-02	3.24E-03	pCi/m3	U
API-2(561045008) - A.C. Iodine	2-Nov-21	Iodine-131	6.82E-03	4.66E-03	1.68E-02	7.00E-02	4.93E-03	pCi/m3	U
API-2(561652008) - A.C. Iodine	9-Nov-21	Iodine-131	-4.84E-05	4.65E-03	1.57E-02	7.00E-02	4.65E-03	pCi/m3	U
API-2(562795008) - A.C. Iodine	16-Nov-21	Iodine-131	1.55E-03	3.09E-03	1.06E-02	7.00E-02	3.11E-03	pCi/m3	U
API-2(563578008) - A.C. Iodine	23-Nov-21	Iodine-131	-4.86E-03	4.09E-03	1.19E-02	7.00E-02	4.25E-03	pCi/m3	U
API-2(563687008) - A.C. Iodine	30-Nov-21	Iodine-131	-7.06E-05	3.04E-03	9.77E-03	7.00E-02	3.04E-03	pCi/m3	U
API-2(564729008) - A.C. Iodine	7-Dec-21	Iodine-131	5.87E-04	4.93E-03	1.61E-02	7.00E-02	4.93E-03	pCi/m3	U
API-2(565422008) - A.C. Iodine	14-Dec-21	Iodine-131	-2.93E-03	3.95E-03	1.27E-02	7.00E-02	4.01E-03	pCi/m3	U
API-2(565770008) - A.C. Iodine	21-Dec-21	Iodine-131	1.26E-03	2.18E-03	7.74E-03	7.00E-02	2.20E-03	pCi/m3	U
API-2(566010008) - A.C. Iodine	28-Dec-21	Iodine-131	-1.45E-03	5.13E-03	1.36E-02	7.00E-02	5.14E-03	pCi/m3	U

API-2

A.P. Gross Beta

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Actinium-228	-6.15E-04	5.33E-04	1.62E-03		5.52E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Actinium-228	4.98E-04	6.79E-04	2.42E-03		6.89E-04	pCi/m3	U

API-2(560833002) - A.P. Gross Beta	28-Sep-21	Actinium-228	1.81E-03	7.53E-04	2.78E-03		8.66E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Actinium-228	5.93E-04	8.79E-04	2.46E-03		8.90E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Antimony-124	1.83E-04	4.13E-04	1.47E-03		4.15E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Antimony-124	-4.67E-04	4.71E-04	1.11E-03		4.84E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Antimony-124	-1.14E-03	7.64E-04	2.06E-03		8.09E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Antimony-124	3.37E-04	4.59E-04	1.66E-03		4.65E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Antimony-125	3.79E-04	2.64E-04	9.82E-04		2.79E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Antimony-125	-2.43E-04	4.34E-04	1.23E-03		4.38E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Antimony-125	3.59E-04	3.19E-04	1.15E-03		3.30E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Antimony-125	-1.09E-04	3.36E-04	1.10E-03		3.37E-04	pCi/m3	U
API-2(531321002) - A.P. Gross Beta	5-Jan-21	BETA	3.35E-02	2.59E-03	3.36E-03	1.00E-02	2.59E-03	pCi/m3	
API-2(531955002) - A.P. Gross Beta	12-Jan-21	BETA	4.15E-02	2.82E-03	3.44E-03	1.00E-02	2.82E-03	pCi/m3	
API-2(532751002) - A.P. Gross Beta	20-Jan-21	BETA	3.94E-02	2.50E-03	2.65E-03	1.00E-02	2.51E-03	pCi/m3	
API-2(533325002) - A.P. Gross Beta	26-Jan-21	BETA	2.71E-02	2.61E-03	3.78E-03	1.00E-02	2.61E-03	pCi/m3	
API-2(533897002) - A.P. Gross Beta	2-Feb-21	BETA	2.71E-02	2.31E-03	3.08E-03	1.00E-02	2.31E-03	pCi/m3	
API-2(534741002) - A.P. Gross Beta	9-Feb-21	BETA	4.96E-02	3.00E-03	3.07E-03	1.00E-02	3.00E-03	pCi/m3	
API-2(536502002) - A.P. Gross Beta	17-Feb-21	BETA	3.70E-02	2.51E-03	2.87E-03	1.00E-02	2.51E-03	pCi/m3	
API-2(535998002) - A.P. Gross Beta	23-Feb-21	BETA	7.71E-02	4.01E-03	3.76E-03	1.00E-02	4.01E-03	pCi/m3	
API-2(536570002) - A.P. Gross Beta	2-Mar-21	BETA	5.22E-02	3.12E-03	3.21E-03	1.00E-02	3.13E-03	pCi/m3	
API-2(537236002) - A.P. Gross Beta	9-Mar-21	BETA	6.62E-02	3.50E-03	3.40E-03	1.00E-02	3.51E-03	pCi/m3	
API-2(538122002) - A.P. Gross Beta	16-Mar-21	BETA	6.63E-02	3.58E-03	3.57E-03	1.00E-02	3.59E-03	pCi/m3	
API-2(538744002) - A.P. Gross Beta	23-Mar-21	BETA	5.55E-02	3.21E-03	3.19E-03	1.00E-02	3.22E-03	pCi/m3	
API-2(539290002) - A.P. Gross Beta	30-Mar-21	BETA	3.87E-02	2.68E-03	3.08E-03	1.00E-02	2.69E-03	pCi/m3	
API-2(539973002) - A.P. Gross Beta	6-Apr-21	BETA	8.97E-02	4.08E-03	3.29E-03	1.00E-02	4.09E-03	pCi/m3	
API-2(541230002) - A.P. Gross Beta	13-Apr-21	BETA	6.36E-02	3.43E-03	3.32E-03	1.00E-02	3.44E-03	pCi/m3	
API-2(541549002) - A.P. Gross Beta	20-Apr-21	BETA	4.48E-02	2.92E-03	3.27E-03	1.00E-02	2.93E-03	pCi/m3	
API-2(542691002) - A.P. Gross Beta	27-Apr-21	BETA	7.76E-02	3.81E-03	3.29E-03	1.00E-02	3.82E-03	pCi/m3	
API-2(543862002) - A.P. Gross Beta	4-May-21	BETA	6.20E-02	3.40E-03	3.35E-03	1.00E-02	3.40E-03	pCi/m3	
API-2(544556002) - A.P. Gross Beta	11-May-21	BETA	4.00E-02	2.77E-03	3.28E-03	1.00E-02	2.78E-03	pCi/m3	
API-2(544986002) - A.P. Gross Beta	18-May-21	BETA	6.82E-02	3.56E-03	3.32E-03	1.00E-02	3.57E-03	pCi/m3	
API-2(545784002) - A.P. Gross Beta	25-May-21	BETA	8.38E-02	3.91E-03	3.49E-03	1.00E-02	3.93E-03	pCi/m3	
API-2(546205002) - A.P. Gross Beta	1-Jun-21	BETA	6.33E-02	3.49E-03	3.47E-03	1.00E-02	3.50E-03	pCi/m3	
API-2(546774002) - A.P. Gross Beta	8-Jun-21	BETA	9.31E-02	4.02E-03	3.16E-03	1.00E-02	4.03E-03	pCi/m3	
API-2(547399002) - A.P. Gross Beta	15-Jun-21	BETA	6.75E-02	3.55E-03	3.45E-03	1.00E-02	3.56E-03	pCi/m3	
API-2(548375002) - A.P. Gross Beta	22-Jun-21	BETA	1.21E-01	5.94E-03	5.07E-03	1.00E-02	5.96E-03	pCi/m3	
API-2(548551002) - A.P. Gross Beta	29-Jun-21	BETA	6.62E-02	3.55E-03	3.43E-03	1.00E-02	3.56E-03	pCi/m3	
API-2(549016002) - A.P. Gross Beta	6-Jul-21	BETA	6.65E-02	3.42E-03	3.15E-03	1.00E-02	3.43E-03	pCi/m3	
API-2(549605002) - A.P. Gross Beta	13-Jul-21	BETA	6.88E-02	3.51E-03	3.20E-03	1.00E-02	3.51E-03	pCi/m3	
API-2(550237002) - A.P. Gross Beta	20-Jul-21	BETA	6.52E-02	3.38E-03	3.10E-03	1.00E-02	3.39E-03	pCi/m3	

API-2(550833002) - A.P. Gross Beta	27-Jul-21	BETA	8.64E-02	3.88E-03	2.99E-03	1.00E-02	3.89E-03	pCi/m3	
API-2(551675002) - A.P. Gross Beta	3-Aug-21	BETA	8.73E-02	3.99E-03	3.04E-03	1.00E-02	4.00E-03	pCi/m3	
API-2(552413002) - A.P. Gross Beta	10-Aug-21	BETA	1.18E-01	4.51E-03	3.00E-03	1.00E-02	4.53E-03	pCi/m3	
API-2(553054002) - A.P. Gross Beta	17-Aug-21	BETA	9.05E-02	4.11E-03	3.22E-03	1.00E-02	4.12E-03	pCi/m3	
API-2(553768002) - A.P. Gross Beta	24-Aug-21	BETA	1.31E-01	4.88E-03	3.30E-03	1.00E-02	4.91E-03	pCi/m3	
API-2(554850002) - A.P. Gross Beta	31-Aug-21	BETA	1.26E-01	4.63E-03	3.01E-03	1.00E-02	4.64E-03	pCi/m3	
API-2(555058002) - A.P. Gross Beta	7-Sep-21	BETA	8.76E-02	3.95E-03	3.03E-03	1.00E-02	3.96E-03	pCi/m3	
API-2(555852002) - A.P. Gross Beta	14-Sep-21	BETA	1.15E-01	4.54E-03	3.62E-03	1.00E-02	4.56E-03	pCi/m3	
API-2(556501002) - A.P. Gross Beta	21-Sep-21	BETA	1.09E-01	4.31E-03	2.99E-03	1.00E-02	4.32E-03	pCi/m3	
API-2(557195002) - A.P. Gross Beta	28-Sep-21	BETA	9.32E-02	4.07E-03	3.15E-03	1.00E-02	4.08E-03	pCi/m3	
API-2(557995002) - A.P. Gross Beta	5-Oct-21	BETA	8.66E-02	4.01E-03	3.65E-03	1.00E-02	4.02E-03	pCi/m3	
API-2(559006002) - A.P. Gross Beta	12-Oct-21	BETA	1.34E-01	4.88E-03	3.48E-03	1.00E-02	4.90E-03	pCi/m3	
API-2(559466002) - A.P. Gross Beta	19-Oct-21	BETA	1.07E-01	4.45E-03	3.20E-03	1.00E-02	4.46E-03	pCi/m3	
API-2(560248002) - A.P. Gross Beta	26-Oct-21	BETA	1.06E-01	4.26E-03	3.06E-03	1.00E-02	4.27E-03	pCi/m3	
API-2(561045002) - A.P. Gross Beta	2-Nov-21	BETA	7.75E-02	3.79E-03	3.17E-03	1.00E-02	3.80E-03	pCi/m3	
API-2(561652002) - A.P. Gross Beta	9-Nov-21	BETA	1.28E-01	4.78E-03	3.12E-03	1.00E-02	4.81E-03	pCi/m3	
API-2(562795002) - A.P. Gross Beta	16-Nov-21	BETA	9.93E-02	4.18E-03	3.04E-03	1.00E-02	4.20E-03	pCi/m3	
API-2(563578002) - A.P. Gross Beta	23-Nov-21	BETA	9.51E-02	4.11E-03	3.09E-03	1.00E-02	4.13E-03	pCi/m3	
API-2(563687002) - A.P. Gross Beta	30-Nov-21	BETA	9.70E-02	4.15E-03	3.09E-03	1.00E-02	4.16E-03	pCi/m3	
API-2(564729002) - A.P. Gross Beta	7-Dec-21	BETA	1.10E-01	4.42E-03	3.30E-03	1.00E-02	4.44E-03	pCi/m3	
API-2(565422002) - A.P. Gross Beta	14-Dec-21	BETA	1.29E-01	4.80E-03	3.35E-03	1.00E-02	4.82E-03	pCi/m3	
API-2(565770002) - A.P. Gross Beta	21-Dec-21	BETA	7.46E-02	3.67E-03	3.28E-03	1.00E-02	3.68E-03	pCi/m3	
API-2(566010002) - A.P. Gross Beta	28-Dec-21	BETA	1.81E-01	5.65E-03	3.34E-03	1.00E-02	5.68E-03	pCi/m3	
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Barium-140	2.81E-03	2.66E-03	9.63E-03		2.74E-03	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Barium-140	5.46E-03	5.45E-03	1.95E-02		5.60E-03	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Barium-140	-1.79E-03	4.26E-03	1.17E-02		4.28E-03	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Barium-140	4.68E-03	2.19E-03	8.37E-03		2.45E-03	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Beryllium-7	9.33E-02	5.55E-03	3.40E-03		7.38E-03	pCi/m3	
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Beryllium-7	1.99E-01	9.78E-03	6.91E-03		1.37E-02	pCi/m3	
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Beryllium-7	1.94E-01	8.15E-03	5.63E-03		1.21E-02	pCi/m3	
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Beryllium-7	1.57E-01	6.59E-03	4.79E-03		1.04E-02	pCi/m3	
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Cerium-141	-4.27E-04	2.81E-04	8.29E-04		2.98E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Cerium-141	-2.96E-04	3.61E-04	1.07E-03		3.68E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Cerium-141	1.09E-03	5.26E-04	1.12E-03		5.28E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Cerium-141	2.17E-05	2.72E-04	8.85E-04		2.72E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Cerium-144	-6.26E-04	5.06E-04	1.51E-03		5.27E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Cerium-144	-1.54E-04	5.98E-04	1.96E-03		5.99E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Cerium-144	-1.27E-04	7.22E-04	2.33E-03		7.23E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Cerium-144	7.68E-04	6.32E-04	2.17E-03		6.57E-04	pCi/m3	U

API-2(543402002) - A.P. Gross Beta	30-Mar-21	Cesium-134	-3.09E-05	1.28E-04	4.05E-04	5.00E-02	1.29E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Cesium-134	1.53E-04	2.10E-04	6.85E-04	5.00E-02	2.13E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Cesium-134	-3.38E-05	1.48E-04	4.90E-04	5.00E-02	1.48E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Cesium-134	1.23E-04	1.20E-04	4.35E-04	5.00E-02	1.24E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Cesium-137	2.20E-04	1.11E-04	4.32E-04	6.00E-02	1.22E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Cesium-137	4.71E-05	1.50E-04	4.97E-04	6.00E-02	1.50E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Cesium-137	2.09E-04	1.34E-04	4.99E-04	6.00E-02	1.43E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Cesium-137	-7.57E-05	1.88E-04	6.02E-04	6.00E-02	1.88E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Chromium-51	-8.70E-04	1.99E-03	6.63E-03		2.00E-03	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Chromium-51	-1.14E-03	3.46E-03	1.04E-02		3.47E-03	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Chromium-51	-5.23E-04	2.70E-03	9.08E-03		2.71E-03	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Chromium-51	-1.93E-03	1.90E-03	6.12E-03		1.95E-03	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Cobalt-57	-4.57E-05	6.85E-05	2.13E-04		6.93E-05	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Cobalt-57	8.87E-06	8.26E-05	2.79E-04		8.26E-05	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Cobalt-57	-3.15E-05	8.77E-05	2.82E-04		8.80E-05	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Cobalt-57	4.17E-05	6.65E-05	2.25E-04		6.72E-05	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Cobalt-58	9.55E-05	1.55E-04	5.37E-04		1.57E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Cobalt-58	4.40E-06	2.57E-04	7.66E-04		2.57E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Cobalt-58	2.30E-05	1.86E-04	6.36E-04		1.86E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Cobalt-58	-1.00E-04	1.92E-04	5.76E-04		1.93E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Iodine-131	-3.93E-04	2.16E-03	7.25E-03		2.16E-03	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Iodine-131	4.68E-03	6.33E-03	2.24E-02		6.42E-03	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Iodine-131	1.46E-03	4.05E-03	1.39E-02		4.06E-03	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Iodine-131	-2.21E-03	1.90E-03	5.29E-03		1.97E-03	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Iron-59	3.41E-04	4.72E-04	1.63E-03		4.79E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Iron-59	-7.10E-04	7.40E-04	2.14E-03		7.59E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Iron-59	1.36E-03	5.28E-04	2.23E-03		6.19E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Iron-59	-2.46E-05	4.01E-04	1.33E-03		4.01E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Lanthanum-140	3.22E-04	9.40E-04	3.31E-03		9.43E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Lanthanum-140	-5.25E-03	2.27E-03	3.64E-03		2.58E-03	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Lanthanum-140	1.98E-03	2.08E-03	8.08E-03		2.13E-03	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Lanthanum-140	-2.90E-04	8.55E-04	2.60E-03		8.58E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Manganese-54	5.06E-05	1.48E-04	4.93E-04		1.48E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Manganese-54	8.07E-05	1.84E-04	5.79E-04		1.85E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Manganese-54	9.68E-05	1.31E-04	4.78E-04		1.33E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Manganese-54	1.79E-04	1.29E-04	4.74E-04		1.35E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Niobium-95	4.46E-04	1.57E-04	6.52E-04		1.89E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Niobium-95	-2.38E-04	2.37E-04	7.24E-04		2.44E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Niobium-95	8.10E-05	1.93E-04	6.83E-04		1.94E-04	pCi/m3	U

API-2(568417002) - A.P. Gross Beta	28-Dec-21	Niobium-95	-4.56E-05	1.87E-04	5.85E-04		1.88E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Potassium-40	1.06E-02	3.63E-03	4.49E-03		3.67E-03	pCi/m3	
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Potassium-40	5.53E-03	3.26E-03	1.28E-02		3.51E-03	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Potassium-40	8.44E-03	4.08E-03	8.53E-03		4.10E-03	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Potassium-40	4.08E-03	3.32E-03	4.08E-03		3.34E-03	pCi/m3	UI
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Ruthenium-103	5.39E-05	1.61E-04	5.55E-04		1.62E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Ruthenium-103	-8.30E-05	2.79E-04	8.93E-04		2.79E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Ruthenium-103	-1.13E-04	2.17E-04	6.76E-04		2.18E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Ruthenium-103	2.16E-05	1.70E-04	5.68E-04		1.70E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Ruthenium-106	-1.43E-03	9.64E-04	2.67E-03		1.02E-03	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Ruthenium-106	-1.41E-03	1.84E-03	5.54E-03		1.87E-03	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Ruthenium-106	-4.55E-03	1.49E-03	3.32E-03		1.84E-03	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Ruthenium-106	-6.71E-04	1.26E-03	3.91E-03		1.27E-03	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Selenium-75	-5.97E-05	1.67E-04	5.10E-04		1.68E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Selenium-75	2.26E-04	2.19E-04	7.37E-04		2.26E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Selenium-75	-7.54E-05	2.10E-04	7.10E-04		2.11E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Selenium-75	-1.13E-04	1.87E-04	5.62E-04		1.89E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Silver-108m	1.77E-04	9.42E-05	3.56E-04		1.03E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Silver-108m	4.42E-04	2.97E-04	4.42E-04		3.49E-04	pCi/m3	UI
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Silver-108m	8.45E-05	1.09E-04	3.83E-04		1.11E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Silver-108m	-5.85E-05	1.10E-04	3.56E-04		1.11E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Silver-110m	1.57E-04	2.14E-04	7.38E-04		2.17E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Silver-110m	3.32E-04	2.05E-04	8.15E-04		2.19E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Silver-110m	-1.48E-04	1.94E-04	5.93E-04		1.97E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Silver-110m	-2.90E-04	1.83E-04	5.15E-04		1.96E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Zinc-65	-2.65E-05	4.42E-04	1.32E-03		4.42E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Zinc-65	7.09E-05	3.21E-04	9.69E-04		3.21E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Zinc-65	-4.93E-05	4.29E-04	1.40E-03		4.29E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Zinc-65	3.80E-04	2.88E-04	1.11E-03		3.01E-04	pCi/m3	U
API-2(543402002) - A.P. Gross Beta	30-Mar-21	Zirconium-95	-2.22E-04	3.47E-04	1.06E-03		3.51E-04	pCi/m3	U
API-2(552150002) - A.P. Gross Beta	29-Jun-21	Zirconium-95	5.76E-05	4.15E-04	1.43E-03		4.15E-04	pCi/m3	U
API-2(560833002) - A.P. Gross Beta	28-Sep-21	Zirconium-95	-2.26E-04	3.93E-04	1.16E-03		3.96E-04	pCi/m3	U
API-2(568417002) - A.P. Gross Beta	28-Dec-21	Zirconium-95	2.33E-04	2.72E-04	9.58E-04		2.77E-04	pCi/m3	U

API-3

A.C. Iodine

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-3(531321009) - A.C. Iodine	5-Jan-21	Iodine-131	3.43E-03	2.83E-03	1.04E-02	7.00E-02	2.95E-03	pCi/m3	U
API-3(531955009) - A.C. Iodine	12-Jan-21	Iodine-131	-3.54E-04	2.38E-03	7.29E-03	7.00E-02	2.39E-03	pCi/m3	U

API-3(532751009) - A.C. Iodine	20-Jan-21	Iodine-131	-3.96E-03	2.37E-03	6.73E-03	7.00E-02	2.55E-03	pCi/m3	U
API-3(533325009) - A.C. Iodine	26-Jan-21	Iodine-131	6.38E-03	4.52E-03	1.66E-02	7.00E-02	4.76E-03	pCi/m3	U
API-3(533897009) - A.C. Iodine	2-Feb-21	Iodine-131	-2.03E-03	2.85E-03	9.08E-03	7.00E-02	2.89E-03	pCi/m3	U
API-3(534741009) - A.C. Iodine	9-Feb-21	Iodine-131	3.02E-04	3.73E-03	1.21E-02	7.00E-02	3.73E-03	pCi/m3	U
API-3(536502009) - A.C. Iodine	17-Feb-21	Iodine-131	7.09E-03	9.52E-03	3.42E-02	7.00E-02	9.66E-03	pCi/m3	U
API-3(535998009) - A.C. Iodine	23-Feb-21	Iodine-131	8.40E-03	6.10E-03	2.35E-02	7.00E-02	6.41E-03	pCi/m3	U
API-3(536570009) - A.C. Iodine	2-Mar-21	Iodine-131	4.21E-03	3.47E-03	1.29E-02	7.00E-02	3.60E-03	pCi/m3	U
API-3(537236009) - A.C. Iodine	9-Mar-21	Iodine-131	-7.41E-04	3.01E-03	1.00E-02	7.00E-02	3.02E-03	pCi/m3	U
API-3(538122009) - A.C. Iodine	16-Mar-21	Iodine-131	2.87E-03	5.22E-03	1.91E-02	7.00E-02	5.26E-03	pCi/m3	U
API-3(538744009) - A.C. Iodine	23-Mar-21	Iodine-131	-2.77E-03	3.03E-03	9.50E-03	7.00E-02	3.10E-03	pCi/m3	U
API-3(539290009) - A.C. Iodine	30-Mar-21	Iodine-131	-1.50E-03	5.00E-03	1.57E-02	7.00E-02	5.01E-03	pCi/m3	U
API-3(539973009) - A.C. Iodine	6-Apr-21	Iodine-131	4.92E-03	3.63E-03	1.36E-02	7.00E-02	3.81E-03	pCi/m3	U
API-3(541230009) - A.C. Iodine	13-Apr-21	Iodine-131	1.13E-03	4.47E-03	1.55E-02	7.00E-02	4.48E-03	pCi/m3	U
API-3(541549009) - A.C. Iodine	20-Apr-21	Iodine-131	4.73E-04	8.80E-03	2.98E-02	7.00E-02	8.80E-03	pCi/m3	U
API-3(542691009) - A.C. Iodine	27-Apr-21	Iodine-131	4.98E-03	4.19E-03	1.53E-02	7.00E-02	4.35E-03	pCi/m3	U
API-3(543862009) - A.C. Iodine	4-May-21	Iodine-131	1.21E-03	7.24E-03	2.51E-02	7.00E-02	7.25E-03	pCi/m3	U
API-3(544556009) - A.C. Iodine	11-May-21	Iodine-131	3.24E-03	5.67E-03	2.04E-02	7.00E-02	5.72E-03	pCi/m3	U
API-3(544986009) - A.C. Iodine	18-May-21	Iodine-131	4.59E-03	4.55E-03	1.71E-02	7.00E-02	4.67E-03	pCi/m3	U
API-3(545784009) - A.C. Iodine	25-May-21	Iodine-131	5.09E-03	7.18E-03	2.66E-02	7.00E-02	7.28E-03	pCi/m3	U
API-3(546205009) - A.C. Iodine	1-Jun-21	Iodine-131	1.32E-03	4.39E-03	1.55E-02	7.00E-02	4.40E-03	pCi/m3	U
API-3(546774009) - A.C. Iodine	8-Jun-21	Iodine-131	-7.19E-03	4.88E-03	1.30E-02	7.00E-02	5.16E-03	pCi/m3	U
API-3(547399009) - A.C. Iodine	15-Jun-21	Iodine-131	2.71E-03	4.27E-03	1.55E-02	7.00E-02	4.31E-03	pCi/m3	U
API-3(548375009) - A.C. Iodine	22-Jun-21	Iodine-131	2.08E-03	7.05E-03	2.54E-02	7.00E-02	7.07E-03	pCi/m3	U
API-3(548551009) - A.C. Iodine	29-Jun-21	Iodine-131	8.18E-03	6.21E-03	2.28E-02	7.00E-02	6.50E-03	pCi/m3	U
API-3(549016009) - A.C. Iodine	6-Jul-21	Iodine-131	-4.95E-03	3.90E-03	1.11E-02	7.00E-02	4.07E-03	pCi/m3	U
API-3(549605009) - A.C. Iodine	13-Jul-21	Iodine-131	-4.93E-03	3.90E-03	1.12E-02	7.00E-02	4.07E-03	pCi/m3	U
API-3(550237009) - A.C. Iodine	20-Jul-21	Iodine-131	-2.07E-04	3.06E-03	1.03E-02	7.00E-02	3.06E-03	pCi/m3	U
API-3(550833009) - A.C. Iodine	27-Jul-21	Iodine-131	1.85E-03	6.36E-03	2.08E-02	7.00E-02	6.37E-03	pCi/m3	U
API-3(551675009) - A.C. Iodine	3-Aug-21	Iodine-131	2.67E-03	5.53E-03	1.95E-02	7.00E-02	5.57E-03	pCi/m3	U
API-3(552413009) - A.C. Iodine	10-Aug-21	Iodine-131	1.75E-03	4.18E-03	1.45E-02	7.00E-02	4.20E-03	pCi/m3	U
API-3(553054009) - A.C. Iodine	17-Aug-21	Iodine-131	2.58E-03	2.45E-03	9.09E-03	7.00E-02	2.52E-03	pCi/m3	U
API-3(553768009) - A.C. Iodine	24-Aug-21	Iodine-131	1.41E-03	3.66E-03	1.23E-02	7.00E-02	3.68E-03	pCi/m3	U
API-3(554850009) - A.C. Iodine	31-Aug-21	Iodine-131	7.74E-03	5.13E-03	7.74E-03	7.00E-02	5.16E-03	pCi/m3	UI
API-3(555058009) - A.C. Iodine	7-Sep-21	Iodine-131	-3.63E-03	2.47E-03	5.66E-03	7.00E-02	2.62E-03	pCi/m3	U
API-3(555852009) - A.C. Iodine	14-Sep-21	Iodine-131	1.46E-03	3.49E-03	1.20E-02	7.00E-02	3.51E-03	pCi/m3	U
API-3(556501009) - A.C. Iodine	21-Sep-21	Iodine-131	2.85E-03	3.41E-03	1.22E-02	7.00E-02	3.48E-03	pCi/m3	U
API-3(557195009) - A.C. Iodine	28-Sep-21	Iodine-131	8.09E-05	3.50E-03	1.18E-02	7.00E-02	3.50E-03	pCi/m3	U
API-3(557995009) - A.C. Iodine	5-Oct-21	Iodine-131	3.76E-04	7.07E-03	2.33E-02	7.00E-02	7.07E-03	pCi/m3	U
API-3(559006009) - A.C. Iodine	12-Oct-21	Iodine-131	-8.67E-04	3.15E-03	1.04E-02	7.00E-02	3.15E-03	pCi/m3	U

API-3(559466009) - A.C. Iodine	19-Oct-21	Iodine-131	-2.96E-03	3.23E-03	9.44E-03	7.00E-02	3.30E-03	pCi/m3	U
API-3(560248009) - A.C. Iodine	26-Oct-21	Iodine-131	4.83E-04	2.55E-03	8.54E-03	7.00E-02	2.55E-03	pCi/m3	U
API-3(561045009) - A.C. Iodine	2-Nov-21	Iodine-131	-2.45E-03	4.34E-03	1.35E-02	7.00E-02	4.38E-03	pCi/m3	U
API-3(561652009) - A.C. Iodine	9-Nov-21	Iodine-131	-5.01E-03	3.94E-03	1.15E-02	7.00E-02	4.11E-03	pCi/m3	U
API-3(562795009) - A.C. Iodine	16-Nov-21	Iodine-131	3.04E-04	3.19E-03	1.08E-02	7.00E-02	3.19E-03	pCi/m3	U
API-3(563578009) - A.C. Iodine	23-Nov-21	Iodine-131	2.11E-03	5.02E-03	1.58E-02	7.00E-02	5.04E-03	pCi/m3	U
API-3(563687009) - A.C. Iodine	30-Nov-21	Iodine-131	6.17E-03	6.23E-03	9.54E-03	7.00E-02	6.24E-03	pCi/m3	U
API-3(564729009) - A.C. Iodine	7-Dec-21	Iodine-131	-3.72E-03	4.76E-03	1.40E-02	7.00E-02	4.84E-03	pCi/m3	U
API-3(565422009) - A.C. Iodine	14-Dec-21	Iodine-131	-1.02E-03	7.13E-03	2.33E-02	7.00E-02	7.13E-03	pCi/m3	U
API-3(565770009) - A.C. Iodine	21-Dec-21	Iodine-131	-2.94E-03	2.73E-03	7.89E-03	7.00E-02	2.82E-03	pCi/m3	U
API-3(566010009) - A.C. Iodine	28-Dec-21	Iodine-131	1.70E-03	6.50E-03	2.25E-02	7.00E-02	6.51E-03	pCi/m3	U

API-3

A.P. Gross Beta

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Actinium-228	-1.23E-03	1.43E-03	4.41E-03		1.46E-03	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Actinium-228	-1.64E-03	1.53E-03	4.62E-03		1.58E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Actinium-228	2.90E-04	8.81E-04	2.98E-03		8.84E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Actinium-228	-1.55E-03	6.19E-04	1.81E-03		7.19E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Antimony-124	-9.78E-04	5.90E-04	4.54E-04		6.33E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Antimony-124	-4.38E-04	1.09E-03	3.44E-03		1.10E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Antimony-124	6.04E-04	5.44E-04	2.11E-03		5.62E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Antimony-124	4.64E-06	3.25E-04	1.08E-03		3.25E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Antimony-125	-4.00E-04	4.81E-04	1.31E-03		4.90E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Antimony-125	-1.22E-03	8.00E-04	2.36E-03		8.49E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Antimony-125	6.30E-05	3.93E-04	1.29E-03		3.94E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Antimony-125	3.71E-04	3.27E-04	1.19E-03		3.39E-04	pCi/m3	U
API-3(531321003) - A.P. Gross Beta	5-Jan-21	BETA	2.97E-02	2.44E-03	3.42E-03	1.00E-02	2.45E-03	pCi/m3	
API-3(531955003) - A.P. Gross Beta	12-Jan-21	BETA	4.06E-02	2.83E-03	3.46E-03	1.00E-02	2.83E-03	pCi/m3	
API-3(532751003) - A.P. Gross Beta	20-Jan-21	BETA	4.48E-02	2.73E-03	2.92E-03	1.00E-02	2.74E-03	pCi/m3	
API-3(533325003) - A.P. Gross Beta	26-Jan-21	BETA	3.10E-02	2.73E-03	3.81E-03	1.00E-02	2.73E-03	pCi/m3	
API-3(533897003) - A.P. Gross Beta	2-Feb-21	BETA	2.70E-02	2.37E-03	3.32E-03	1.00E-02	2.38E-03	pCi/m3	
API-3(534741003) - A.P. Gross Beta	9-Feb-21	BETA	5.13E-02	3.12E-03	3.31E-03	1.00E-02	3.12E-03	pCi/m3	
API-3(536502003) - A.P. Gross Beta	17-Feb-21	BETA	4.15E-02	2.66E-03	2.89E-03	1.00E-02	2.67E-03	pCi/m3	
API-3(535998003) - A.P. Gross Beta	23-Feb-21	BETA	7.44E-02	4.01E-03	3.81E-03	1.00E-02	4.02E-03	pCi/m3	
API-3(536570003) - A.P. Gross Beta	2-Mar-21	BETA	2.52E-02	2.25E-03	3.13E-03	1.00E-02	2.25E-03	pCi/m3	
API-3(537236003) - A.P. Gross Beta	9-Mar-21	BETA	3.66E-02	2.74E-03	3.47E-03	1.00E-02	2.74E-03	pCi/m3	
API-3(538122003) - A.P. Gross Beta	16-Mar-21	BETA	3.59E-02	2.76E-03	3.45E-03	1.00E-02	2.76E-03	pCi/m3	
API-3(538744003) - A.P. Gross Beta	23-Mar-21	BETA	3.64E-02	2.62E-03	3.12E-03	1.00E-02	2.62E-03	pCi/m3	

API-3(539290003) - A.P. Gross Beta	30-Mar-21	BETA	2.51E-02	2.28E-03	3.11E-03	1.00E-02	2.28E-03	pCi/m3	
API-3(539973003) - A.P. Gross Beta	6-Apr-21	BETA	3.66E-02	2.67E-03	3.21E-03	1.00E-02	2.67E-03	pCi/m3	
API-3(541230003) - A.P. Gross Beta	13-Apr-21	BETA	3.54E-02	2.70E-03	3.48E-03	1.00E-02	2.70E-03	pCi/m3	
API-3(541549003) - A.P. Gross Beta	20-Apr-21	BETA	2.26E-02	2.17E-03	3.25E-03	1.00E-02	2.17E-03	pCi/m3	
API-3(542691003) - A.P. Gross Beta	27-Apr-21	BETA	2.97E-02	2.45E-03	3.28E-03	1.00E-02	2.45E-03	pCi/m3	
API-3(543862003) - A.P. Gross Beta	4-May-21	BETA	2.93E-02	2.40E-03	3.16E-03	1.00E-02	2.40E-03	pCi/m3	
API-3(544556003) - A.P. Gross Beta	11-May-21	BETA	2.02E-02	2.03E-03	2.98E-03	1.00E-02	2.03E-03	pCi/m3	
API-3(544986003) - A.P. Gross Beta	18-May-21	BETA	2.37E-02	2.27E-03	3.25E-03	1.00E-02	2.27E-03	pCi/m3	
API-3(545784003) - A.P. Gross Beta	25-May-21	BETA	3.20E-02	2.59E-03	3.46E-03	1.00E-02	2.59E-03	pCi/m3	
API-3(546205003) - A.P. Gross Beta	1-Jun-21	BETA	2.11E-02	2.15E-03	3.32E-03	1.00E-02	2.15E-03	pCi/m3	
API-3(546774003) - A.P. Gross Beta	8-Jun-21	BETA	2.98E-02	2.48E-03	3.42E-03	1.00E-02	2.49E-03	pCi/m3	
API-3(547399003) - A.P. Gross Beta	15-Jun-21	BETA	2.50E-02	2.33E-03	3.40E-03	1.00E-02	2.33E-03	pCi/m3	
API-3(548375003) - A.P. Gross Beta	22-Jun-21	BETA	2.94E-02	3.05E-03	4.76E-03	1.00E-02	3.05E-03	pCi/m3	
API-3(548551003) - A.P. Gross Beta	29-Jun-21	BETA	2.69E-02	2.36E-03	3.28E-03	1.00E-02	2.36E-03	pCi/m3	
API-3(549016003) - A.P. Gross Beta	6-Jul-21	BETA	2.41E-02	2.27E-03	3.44E-03	1.00E-02	2.27E-03	pCi/m3	
API-3(549605003) - A.P. Gross Beta	13-Jul-21	BETA	3.15E-02	2.55E-03	3.47E-03	1.00E-02	2.55E-03	pCi/m3	
API-3(550237003) - A.P. Gross Beta	20-Jul-21	BETA	2.40E-02	2.25E-03	3.31E-03	1.00E-02	2.25E-03	pCi/m3	
API-3(550833003) - A.P. Gross Beta	27-Jul-21	BETA	3.26E-02	2.62E-03	3.79E-03	1.00E-02	2.62E-03	pCi/m3	
API-3(551675003) - A.P. Gross Beta	3-Aug-21	BETA	3.41E-02	2.57E-03	3.08E-03	1.00E-02	2.57E-03	pCi/m3	
API-3(552413003) - A.P. Gross Beta	10-Aug-21	BETA	4.10E-02	2.88E-03	3.80E-03	1.00E-02	2.89E-03	pCi/m3	
API-3(553054003) - A.P. Gross Beta	17-Aug-21	BETA	3.26E-02	2.55E-03	3.18E-03	1.00E-02	2.55E-03	pCi/m3	
API-3(553768003) - A.P. Gross Beta	24-Aug-21	BETA	5.13E-02	3.10E-03	3.14E-03	1.00E-02	3.10E-03	pCi/m3	
API-3(554850003) - A.P. Gross Beta	31-Aug-21	BETA	4.20E-02	2.90E-03	3.74E-03	1.00E-02	2.90E-03	pCi/m3	
API-3(555058003) - A.P. Gross Beta	7-Sep-21	BETA	3.03E-02	2.40E-03	2.94E-03	1.00E-02	2.40E-03	pCi/m3	
API-3(555852003) - A.P. Gross Beta	14-Sep-21	BETA	4.20E-02	2.87E-03	3.22E-03	1.00E-02	2.87E-03	pCi/m3	
API-3(556501003) - A.P. Gross Beta	21-Sep-21	BETA	3.42E-02	2.63E-03	3.54E-03	1.00E-02	2.64E-03	pCi/m3	
API-3(557195003) - A.P. Gross Beta	28-Sep-21	BETA	3.54E-02	2.59E-03	3.16E-03	1.00E-02	2.59E-03	pCi/m3	
API-3(557995003) - A.P. Gross Beta	5-Oct-21	BETA	3.89E-02	2.80E-03	3.29E-03	1.00E-02	2.80E-03	pCi/m3	
API-3(559006003) - A.P. Gross Beta	12-Oct-21	BETA	4.31E-02	2.90E-03	3.16E-03	1.00E-02	2.90E-03	pCi/m3	
API-3(559466003) - A.P. Gross Beta	19-Oct-21	BETA	3.30E-02	2.57E-03	3.27E-03	1.00E-02	2.57E-03	pCi/m3	
API-3(560248003) - A.P. Gross Beta	26-Oct-21	BETA	3.11E-02	2.53E-03	3.49E-03	1.00E-02	2.53E-03	pCi/m3	
API-3(561045003) - A.P. Gross Beta	2-Nov-21	BETA	2.47E-02	2.26E-03	3.24E-03	1.00E-02	2.26E-03	pCi/m3	
API-3(561652003) - A.P. Gross Beta	9-Nov-21	BETA	3.38E-02	2.57E-03	3.20E-03	1.00E-02	2.57E-03	pCi/m3	
API-3(562795003) - A.P. Gross Beta	16-Nov-21	BETA	3.41E-02	2.54E-03	3.10E-03	1.00E-02	2.54E-03	pCi/m3	
API-3(563578003) - A.P. Gross Beta	23-Nov-21	BETA	3.28E-02	2.49E-03	3.00E-03	1.00E-02	2.49E-03	pCi/m3	
API-3(563687003) - A.P. Gross Beta	30-Nov-21	BETA	3.38E-02	2.52E-03	2.99E-03	1.00E-02	2.52E-03	pCi/m3	
API-3(564729003) - A.P. Gross Beta	7-Dec-21	BETA	3.32E-02	2.60E-03	3.32E-03	1.00E-02	2.60E-03	pCi/m3	
API-3(565422003) - A.P. Gross Beta	14-Dec-21	BETA	3.73E-02	2.74E-03	3.33E-03	1.00E-02	2.74E-03	pCi/m3	
API-3(565770003) - A.P. Gross Beta	21-Dec-21	BETA	1.23E-01	4.71E-03	3.38E-03	1.00E-02	4.73E-03	pCi/m3	

API-3(566010003) - A.P. Gross Beta	28-Dec-21	BETA	5.86E-02	3.36E-03	3.43E-03	1.00E-02	3.37E-03	pCi/m3	
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Barium-140	5.93E-03	6.24E-03	2.23E-02		6.40E-03	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Barium-140	-1.01E-02	1.21E-02	3.64E-02		1.23E-02	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Barium-140	-3.37E-03	4.24E-03	1.25E-02		4.32E-03	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Barium-140	-2.47E-03	1.90E-03	5.57E-03		1.99E-03	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Beryllium-7	6.84E-02	7.32E-03	1.09E-02		7.99E-03	pCi/m3	
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Beryllium-7	5.04E-02	7.09E-03	1.32E-02		7.49E-03	pCi/m3	
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Beryllium-7	6.68E-02	7.31E-03	7.21E-03		8.04E-03	pCi/m3	
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Beryllium-7	6.44E-02	4.61E-03	4.52E-03		5.50E-03	pCi/m3	
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Cerium-141	4.48E-04	5.00E-04	1.72E-03		5.11E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Cerium-141	-1.70E-03	8.11E-04	2.38E-03		9.05E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Cerium-141	6.00E-04	4.02E-04	1.44E-03		4.25E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Cerium-141	2.18E-05	2.42E-04	7.93E-04		2.42E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Cerium-144	-8.63E-04	9.37E-04	2.97E-03		9.59E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Cerium-144	3.58E-03	1.30E-03	4.69E-03		1.55E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Cerium-144	3.15E-04	7.24E-04	2.50E-03		7.28E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Cerium-144	4.92E-04	5.48E-04	1.89E-03		5.60E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Cesium-134	2.21E-04	3.43E-04	1.17E-03	5.00E-02	3.47E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Cesium-134	1.79E-04	3.87E-04	1.32E-03	5.00E-02	3.89E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Cesium-134	6.44E-05	2.06E-04	6.38E-04	5.00E-02	2.07E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Cesium-134	-3.12E-05	1.20E-04	3.32E-04	5.00E-02	1.21E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Cesium-137	2.20E-04	2.86E-04	1.00E-03	6.00E-02	2.91E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Cesium-137	4.53E-04	3.48E-04	1.26E-03	6.00E-02	3.64E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Cesium-137	-1.18E-04	1.84E-04	5.50E-04	6.00E-02	1.86E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Cesium-137	-6.61E-05	1.39E-04	3.83E-04	6.00E-02	1.39E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Chromium-51	-3.20E-03	4.07E-03	1.20E-02		4.13E-03	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Chromium-51	1.80E-03	5.97E-03	2.02E-02		5.98E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Chromium-51	5.71E-03	3.01E-03	1.09E-02		3.29E-03	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Chromium-51	3.32E-03	1.85E-03	6.57E-03		2.01E-03	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Cobalt-57	1.21E-04	1.25E-04	4.35E-04		1.28E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Cobalt-57	2.40E-05	1.56E-04	5.16E-04		1.56E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Cobalt-57	7.95E-05	9.93E-05	3.49E-04		1.01E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Cobalt-57	-1.30E-04	6.53E-05	1.87E-04		7.21E-05	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Cobalt-58	-2.83E-04	3.99E-04	1.20E-03		4.05E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Cobalt-58	-5.74E-05	4.43E-04	1.44E-03		4.43E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Cobalt-58	4.48E-05	2.41E-04	7.37E-04		2.42E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Cobalt-58	-1.25E-04	1.51E-04	4.40E-04		1.54E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Iodine-131	-6.61E-03	4.61E-03	1.44E-02		4.86E-03	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Iodine-131	-2.19E-02	1.21E-02	3.59E-02		1.32E-02	pCi/m3	U

API-3(560833003) - A.P. Gross Beta	28-Sep-21	Iodine-131	1.86E-04	3.73E-03	1.09E-02		3.73E-03	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Iodine-131	1.15E-03	1.44E-03	5.20E-03		1.47E-03	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Iron-59	7.52E-04	8.22E-04	3.06E-03		8.41E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Iron-59	9.47E-04	1.26E-03	4.51E-03		1.28E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Iron-59	-7.02E-05	7.09E-04	2.34E-03		7.10E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Iron-59	1.96E-04	5.25E-04	1.58E-03		5.27E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Lanthanum-140	1.27E-03	2.35E-03	8.34E-03		2.37E-03	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Lanthanum-140	-7.69E-03	5.38E-03	1.44E-02		5.68E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Lanthanum-140	-2.55E-03	1.73E-03	4.05E-03		1.83E-03	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Lanthanum-140	1.84E-04	9.22E-04	3.15E-03		9.23E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Manganese-54	1.39E-04	3.41E-04	1.14E-03		3.43E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Manganese-54	4.76E-04	2.89E-04	1.01E-03		2.90E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Manganese-54	9.80E-05	1.81E-04	6.38E-04		1.83E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Manganese-54	2.13E-04	1.31E-04	5.02E-04		1.41E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Niobium-95	-3.72E-04	4.36E-04	1.12E-03		4.45E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Niobium-95	6.81E-04	4.93E-04	1.79E-03		5.19E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Niobium-95	3.19E-04	2.08E-04	8.00E-04		2.21E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Niobium-95	7.76E-08	1.80E-04	5.90E-04		1.80E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Potassium-40	5.23E-03	4.42E-03	9.25E-03		4.43E-03	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Potassium-40	-2.05E-04	5.31E-03	1.81E-02		5.31E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Potassium-40	1.33E-02	5.04E-03	7.77E-03		5.08E-03	pCi/m3	
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Potassium-40	1.17E-02	3.92E-03	6.22E-03		3.97E-03	pCi/m3	
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Ruthenium-103	-1.10E-04	3.78E-04	1.24E-03		3.79E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Ruthenium-103	-7.10E-04	5.93E-04	1.75E-03		6.17E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Ruthenium-103	1.60E-04	3.41E-04	1.04E-03		3.43E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Ruthenium-103	-2.16E-05	1.69E-04	5.64E-04		1.69E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Ruthenium-106	1.30E-03	2.18E-03	6.95E-03		2.20E-03	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Ruthenium-106	-2.43E-03	3.24E-03	1.04E-02		3.29E-03	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Ruthenium-106	-8.48E-04	1.64E-03	4.99E-03		1.66E-03	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Ruthenium-106	-6.96E-04	1.19E-03	3.76E-03		1.20E-03	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Selenium-75	6.07E-04	3.92E-04	9.60E-04		4.17E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Selenium-75	-5.13E-04	3.88E-04	1.23E-03		4.07E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Selenium-75	-3.26E-04	2.14E-04	5.52E-04		2.27E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Selenium-75	-1.01E-04	1.57E-04	4.27E-04		1.58E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Silver-108m	4.64E-05	1.67E-04	5.79E-04		1.67E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Silver-108m	-2.69E-04	2.63E-04	8.07E-04		2.71E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Silver-108m	-3.43E-07	1.29E-04	4.19E-04		1.29E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Silver-108m	5.39E-05	9.57E-05	3.39E-04		9.66E-05	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Silver-110m	-7.14E-05	3.44E-04	1.07E-03		3.44E-04	pCi/m3	U

API-3(552150003) - A.P. Gross Beta	29-Jun-21	Silver-110m	9.81E-04	4.56E-04	1.77E-03		5.14E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Silver-110m	1.09E-04	2.13E-04	7.56E-04		2.15E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Silver-110m	1.19E-04	1.48E-04	5.36E-04		1.51E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Zinc-65	3.21E-04	6.18E-04	2.20E-03		6.22E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Zinc-65	-1.48E-04	7.92E-04	2.61E-03		7.92E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Zinc-65	-4.42E-04	4.43E-04	1.32E-03		4.55E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Zinc-65	9.25E-05	2.96E-04	9.86E-04		2.97E-04	pCi/m3	U
API-3(543402003) - A.P. Gross Beta	30-Mar-21	Zirconium-95	2.03E-04	6.89E-04	2.08E-03		6.91E-04	pCi/m3	U
API-3(552150003) - A.P. Gross Beta	29-Jun-21	Zirconium-95	1.50E-03	8.22E-04	3.11E-03		8.96E-04	pCi/m3	U
API-3(560833003) - A.P. Gross Beta	28-Sep-21	Zirconium-95	-4.07E-04	3.71E-04	1.12E-03		3.84E-04	pCi/m3	U
API-3(568417003) - A.P. Gross Beta	28-Dec-21	Zirconium-95	-2.68E-04	2.99E-04	8.80E-04		3.05E-04	pCi/m3	U

API-4

A.C. Iodine

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-4(531321010) - A.C. Iodine	5-Jan-21	Iodine-131	1.71E-03	3.01E-03	1.05E-02	7.00E-02	3.03E-03	pCi/m3	U
API-4(531955010) - A.C. Iodine	12-Jan-21	Iodine-131	-5.21E-04	2.34E-03	7.31E-03	7.00E-02	2.34E-03	pCi/m3	U
API-4(532751010) - A.C. Iodine	20-Jan-21	Iodine-131	-4.97E-03	2.85E-03	8.21E-03	7.00E-02	3.08E-03	pCi/m3	U
API-4(533325010) - A.C. Iodine	26-Jan-21	Iodine-131	-2.60E-03	3.58E-03	1.16E-02	7.00E-02	3.63E-03	pCi/m3	U
API-4(533897010) - A.C. Iodine	2-Feb-21	Iodine-131	1.47E-03	2.59E-03	9.20E-03	7.00E-02	2.61E-03	pCi/m3	U
API-4(534741010) - A.C. Iodine	9-Feb-21	Iodine-131	3.32E-03	2.38E-03	8.73E-03	7.00E-02	2.50E-03	pCi/m3	U
API-4(536502010) - A.C. Iodine	17-Feb-21	Iodine-131	2.98E-03	6.36E-03	2.26E-02	7.00E-02	6.40E-03	pCi/m3	U
API-4(535998010) - A.C. Iodine	23-Feb-21	Iodine-131	-3.04E-03	4.16E-03	1.26E-02	7.00E-02	4.22E-03	pCi/m3	U
API-4(536570010) - A.C. Iodine	2-Mar-21	Iodine-131	-5.90E-03	3.32E-03	9.33E-03	7.00E-02	3.60E-03	pCi/m3	U
API-4(537236010) - A.C. Iodine	9-Mar-21	Iodine-131	5.63E-03	3.67E-03	8.38E-03	7.00E-02	3.68E-03	pCi/m3	U
API-4(538122010) - A.C. Iodine	16-Mar-21	Iodine-131	-5.34E-05	2.60E-03	8.81E-03	7.00E-02	2.60E-03	pCi/m3	U
API-4(538744010) - A.C. Iodine	23-Mar-21	Iodine-131	-2.24E-04	4.92E-03	1.69E-02	7.00E-02	4.92E-03	pCi/m3	U
API-4(539290010) - A.C. Iodine	30-Mar-21	Iodine-131	-2.87E-04	4.34E-03	1.39E-02	7.00E-02	4.34E-03	pCi/m3	U
API-4(539973010) - A.C. Iodine	6-Apr-21	Iodine-131	-1.83E-03	2.93E-03	9.36E-03	7.00E-02	2.96E-03	pCi/m3	U
API-4(541230010) - A.C. Iodine	13-Apr-21	Iodine-131	-7.80E-03	6.46E-03	1.95E-02	7.00E-02	6.72E-03	pCi/m3	U
API-4(541549010) - A.C. Iodine	20-Apr-21	Iodine-131	1.51E-04	1.16E-02	3.64E-02	7.00E-02	1.16E-02	pCi/m3	U
API-4(542691010) - A.C. Iodine	27-Apr-21	Iodine-131	1.07E-02	4.14E-03	1.66E-02	7.00E-02	4.84E-03	pCi/m3	U
API-4(543862010) - A.C. Iodine	4-May-21	Iodine-131	-1.78E-03	8.64E-03	2.86E-02	7.00E-02	8.65E-03	pCi/m3	U
API-4(544556010) - A.C. Iodine	11-May-21	Iodine-131	-3.59E-03	4.90E-03	1.53E-02	7.00E-02	4.97E-03	pCi/m3	U
API-4(544986010) - A.C. Iodine	18-May-21	Iodine-131	-3.23E-03	3.69E-03	8.65E-03	7.00E-02	3.77E-03	pCi/m3	U
API-4(545784010) - A.C. Iodine	25-May-21	Iodine-131	1.60E-02	7.02E-03	2.98E-02	7.00E-02	7.96E-03	pCi/m3	U
API-4(546205010) - A.C. Iodine	1-Jun-21	Iodine-131	-2.13E-03	4.78E-03	1.55E-02	7.00E-02	4.81E-03	pCi/m3	U
API-4(546774010) - A.C. Iodine	8-Jun-21	Iodine-131	-1.99E-03	6.59E-03	2.07E-02	7.00E-02	6.60E-03	pCi/m3	U
API-4(547399010) - A.C. Iodine	15-Jun-21	Iodine-131	-3.18E-03	4.01E-03	1.18E-02	7.00E-02	4.08E-03	pCi/m3	U

API-4(548375010) - A.C. Iodine	22-Jun-21	Iodine-131	9.40E-03	8.58E-03	3.00E-02	7.00E-02	8.59E-03	pCi/m3	U
API-4(548551010) - A.C. Iodine	29-Jun-21	Iodine-131	8.28E-03	4.61E-03	1.80E-02	7.00E-02	5.00E-03	pCi/m3	U
API-4(549016010) - A.C. Iodine	6-Jul-21	Iodine-131	2.53E-03	2.96E-03	1.08E-02	7.00E-02	3.02E-03	pCi/m3	U
API-4(549605010) - A.C. Iodine	13-Jul-21	Iodine-131	7.83E-04	2.22E-03	7.80E-03	7.00E-02	2.23E-03	pCi/m3	U
API-4(550237010) - A.C. Iodine	20-Jul-21	Iodine-131	2.25E-03	3.97E-03	1.33E-02	7.00E-02	4.01E-03	pCi/m3	U
API-4(550833010) - A.C. Iodine	27-Jul-21	Iodine-131	-3.28E-03	3.88E-03	1.11E-02	7.00E-02	3.95E-03	pCi/m3	U
API-4(551675010) - A.C. Iodine	3-Aug-21	Iodine-131	-5.43E-03	5.99E-03	1.92E-02	7.00E-02	6.12E-03	pCi/m3	U
API-4(552413010) - A.C. Iodine	10-Aug-21	Iodine-131	-4.35E-03	4.31E-03	1.27E-02	7.00E-02	4.43E-03	pCi/m3	U
API-4(553054010) - A.C. Iodine	17-Aug-21	Iodine-131	2.61E-03	6.06E-03	2.13E-02	7.00E-02	6.09E-03	pCi/m3	U
API-4(553768010) - A.C. Iodine	24-Aug-21	Iodine-131	-3.35E-03	3.94E-03	1.17E-02	7.00E-02	4.02E-03	pCi/m3	U
API-4(554850010) - A.C. Iodine	31-Aug-21	Iodine-131	4.87E-03	3.01E-03	1.12E-02	7.00E-02	3.22E-03	pCi/m3	U
API-4(555058010) - A.C. Iodine	7-Sep-21	Iodine-131	-5.87E-03	3.33E-03	9.60E-03	7.00E-02	3.60E-03	pCi/m3	U
API-4(555852010) - A.C. Iodine	14-Sep-21	Iodine-131	4.74E-03	3.17E-03	1.20E-02	7.00E-02	3.36E-03	pCi/m3	U
API-4(556501010) - A.C. Iodine	21-Sep-21	Iodine-131	-1.84E-05	3.48E-03	1.14E-02	7.00E-02	3.48E-03	pCi/m3	U
API-4(557195010) - A.C. Iodine	22-Sep-21	Iodine-131	2.57E-02	1.64E-02	5.66E-02	7.00E-02	1.75E-02	pCi/m3	U
API-4(557995010) - A.C. Iodine	5-Oct-21	Iodine-131	4.07E-03	3.89E-03	1.46E-02	7.00E-02	4.01E-03	pCi/m3	U
API-4(559006010) - A.C. Iodine	12-Oct-21	Iodine-131	1.74E-03	3.71E-03	1.27E-02	7.00E-02	3.73E-03	pCi/m3	U
API-4(559466010) - A.C. Iodine	19-Oct-21	Iodine-131	2.99E-03	2.45E-03	9.40E-03	7.00E-02	2.55E-03	pCi/m3	U
API-4(560248010) - A.C. Iodine	26-Oct-21	Iodine-131	9.69E-03	5.56E-03	9.69E-03	7.00E-02	5.58E-03	pCi/m3	UI
API-4(561045010) - A.C. Iodine	2-Nov-21	Iodine-131	-6.69E-03	6.64E-03	2.11E-02	7.00E-02	6.83E-03	pCi/m3	U
API-4(561652010) - A.C. Iodine	9-Nov-21	Iodine-131	-5.48E-03	5.52E-03	1.47E-02	7.00E-02	5.67E-03	pCi/m3	U
API-4(562795010) - A.C. Iodine	16-Nov-21	Iodine-131	4.71E-03	2.69E-03	1.07E-02	7.00E-02	2.91E-03	pCi/m3	U
API-4(563578010) - A.C. Iodine	23-Nov-21	Iodine-131	-1.19E-03	5.01E-03	1.58E-02	7.00E-02	5.02E-03	pCi/m3	U
API-4(563687010) - A.C. Iodine	30-Nov-21	Iodine-131	3.02E-04	3.26E-03	1.09E-02	7.00E-02	3.26E-03	pCi/m3	U
API-4(564729010) - A.C. Iodine	7-Dec-21	Iodine-131	3.08E-03	4.35E-03	1.58E-02	7.00E-02	4.41E-03	pCi/m3	U
API-4(565422010) - A.C. Iodine	14-Dec-21	Iodine-131	-3.38E-04	3.30E-03	1.05E-02	7.00E-02	3.30E-03	pCi/m3	U
API-4(565770010) - A.C. Iodine	21-Dec-21	Iodine-131	3.28E-04	2.46E-03	8.29E-03	7.00E-02	2.46E-03	pCi/m3	U
API-4(566010010) - A.C. Iodine	28-Dec-21	Iodine-131	3.16E-03	4.84E-03	1.74E-02	7.00E-02	4.89E-03	pCi/m3	U

API-4

A.P. Gross Beta

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Actinium-228	2.31E-04	8.59E-04	2.76E-03		8.61E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Actinium-228	7.81E-04	6.23E-04	2.32E-03		6.50E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Actinium-228	4.53E-04	1.20E-03	3.39E-03		1.20E-03	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Actinium-228	-5.52E-04	6.57E-04	2.06E-03		6.70E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Antimony-124	9.34E-04	5.01E-04	2.15E-03		5.47E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Antimony-124	-9.37E-04	5.87E-04	1.35E-03		6.26E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Antimony-124	-1.12E-03	7.35E-04	2.05E-03		7.81E-04	pCi/m3	U

API-4(568417004) - A.P. Gross Beta	28-Dec-21	Antimony-124	1.05E-04	4.48E-04	1.52E-03		4.49E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Antimony-125	2.67E-04	3.83E-04	1.34E-03		3.88E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Antimony-125	1.24E-04	3.79E-04	1.29E-03		3.80E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Antimony-125	1.38E-04	4.59E-04	1.54E-03		4.61E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Antimony-125	2.30E-04	3.39E-04	1.12E-03		3.43E-04	pCi/m3	U
API-4(531321004) - A.P. Gross Beta	5-Jan-21	BETA	3.60E-02	2.70E-03	3.45E-03	1.00E-02	2.70E-03	pCi/m3	
API-4(531955004) - A.P. Gross Beta	12-Jan-21	BETA	5.16E-02	3.19E-03	3.45E-03	1.00E-02	3.19E-03	pCi/m3	
API-4(532751004) - A.P. Gross Beta	20-Jan-21	BETA	4.38E-02	2.71E-03	2.80E-03	1.00E-02	2.71E-03	pCi/m3	
API-4(533325004) - A.P. Gross Beta	26-Jan-21	BETA	2.67E-02	2.52E-03	3.58E-03	1.00E-02	2.52E-03	pCi/m3	
API-4(533897004) - A.P. Gross Beta	2-Feb-21	BETA	2.88E-02	2.44E-03	3.24E-03	1.00E-02	2.45E-03	pCi/m3	
API-4(534741004) - A.P. Gross Beta	9-Feb-21	BETA	5.95E-02	3.36E-03	3.26E-03	1.00E-02	3.37E-03	pCi/m3	
API-4(536502004) - A.P. Gross Beta	17-Feb-21	BETA	4.74E-02	2.78E-03	2.81E-03	1.00E-02	2.78E-03	pCi/m3	
API-4(535998004) - A.P. Gross Beta	23-Feb-21	BETA	6.89E-02	3.94E-03	3.99E-03	1.00E-02	3.94E-03	pCi/m3	
API-4(536570004) - A.P. Gross Beta	2-Mar-21	BETA	2.75E-02	2.38E-03	3.27E-03	1.00E-02	2.38E-03	pCi/m3	
API-4(537236004) - A.P. Gross Beta	9-Mar-21	BETA	3.92E-02	2.77E-03	3.27E-03	1.00E-02	2.78E-03	pCi/m3	
API-4(538122004) - A.P. Gross Beta	16-Mar-21	BETA	4.03E-02	2.80E-03	3.22E-03	1.00E-02	2.80E-03	pCi/m3	
API-4(538744004) - A.P. Gross Beta	23-Mar-21	BETA	3.32E-02	2.60E-03	3.45E-03	1.00E-02	2.60E-03	pCi/m3	
API-4(539290004) - A.P. Gross Beta	30-Mar-21	BETA	2.97E-02	2.48E-03	3.31E-03	1.00E-02	2.48E-03	pCi/m3	
API-4(539973004) - A.P. Gross Beta	6-Apr-21	BETA	4.29E-02	2.84E-03	3.20E-03	1.00E-02	2.85E-03	pCi/m3	
API-4(541230004) - A.P. Gross Beta	13-Apr-21	BETA	3.45E-02	2.61E-03	3.30E-03	1.00E-02	2.61E-03	pCi/m3	
API-4(541549004) - A.P. Gross Beta	20-Apr-21	BETA	2.65E-02	2.37E-03	3.40E-03	1.00E-02	2.37E-03	pCi/m3	
API-4(542691004) - A.P. Gross Beta	27-Apr-21	BETA	3.85E-02	2.68E-03	3.11E-03	1.00E-02	2.68E-03	pCi/m3	
API-4(543862004) - A.P. Gross Beta	4-May-21	BETA	3.77E-02	2.78E-03	3.49E-03	1.00E-02	2.78E-03	pCi/m3	
API-4(544556004) - A.P. Gross Beta	11-May-21	BETA	1.46E-02	1.93E-03	3.79E-03	1.00E-02	1.93E-03	pCi/m3	
API-4(544986004) - A.P. Gross Beta	18-May-21	BETA	2.92E-02	2.45E-03	3.26E-03	1.00E-02	2.45E-03	pCi/m3	
API-4(545784004) - A.P. Gross Beta	25-May-21	BETA	3.45E-02	2.60E-03	3.26E-03	1.00E-02	2.60E-03	pCi/m3	
API-4(546205004) - A.P. Gross Beta	1-Jun-21	BETA	2.79E-02	2.37E-03	3.22E-03	1.00E-02	2.37E-03	pCi/m3	
API-4(546774004) - A.P. Gross Beta	8-Jun-21	BETA	3.25E-02	2.58E-03	3.41E-03	1.00E-02	2.58E-03	pCi/m3	
API-4(547399004) - A.P. Gross Beta	15-Jun-21	BETA	3.18E-02	2.54E-03	3.29E-03	1.00E-02	2.54E-03	pCi/m3	
API-4(548375004) - A.P. Gross Beta	22-Jun-21	BETA	3.57E-02	3.05E-03	4.20E-03	1.00E-02	3.05E-03	pCi/m3	
API-4(548551004) - A.P. Gross Beta	29-Jun-21	BETA	3.21E-02	2.49E-03	3.10E-03	1.00E-02	2.50E-03	pCi/m3	
API-4(549016004) - A.P. Gross Beta	6-Jul-21	BETA	2.74E-02	2.37E-03	3.22E-03	1.00E-02	2.38E-03	pCi/m3	
API-4(549605004) - A.P. Gross Beta	13-Jul-21	BETA	4.18E-02	2.89E-03	3.31E-03	1.00E-02	2.89E-03	pCi/m3	
API-4(550237004) - A.P. Gross Beta	20-Jul-21	BETA	3.06E-02	2.51E-03	3.41E-03	1.00E-02	2.51E-03	pCi/m3	
API-4(550833004) - A.P. Gross Beta	27-Jul-21	BETA	4.41E-02	2.92E-03	3.06E-03	1.00E-02	2.92E-03	pCi/m3	
API-4(551675004) - A.P. Gross Beta	3-Aug-21	BETA	3.69E-02	2.62E-03	2.97E-03	1.00E-02	2.62E-03	pCi/m3	
API-4(552413004) - A.P. Gross Beta	10-Aug-21	BETA	5.60E-02	3.28E-03	3.10E-03	1.00E-02	3.28E-03	pCi/m3	
API-4(553054004) - A.P. Gross Beta	17-Aug-21	BETA	3.72E-02	2.81E-03	3.50E-03	1.00E-02	2.82E-03	pCi/m3	
API-4(553768004) - A.P. Gross Beta	24-Aug-21	BETA	7.61E-02	3.69E-03	3.08E-03	1.00E-02	3.69E-03	pCi/m3	

API-4(554850004) - A.P. Gross Beta	31-Aug-21	BETA	5.54E-02	3.23E-03	3.24E-03	1.00E-02	3.23E-03	pCi/m3	
API-4(555058004) - A.P. Gross Beta	7-Sep-21	BETA	3.95E-02	2.82E-03	3.64E-03	1.00E-02	2.82E-03	pCi/m3	
API-4(555852004) - A.P. Gross Beta	14-Sep-21	BETA	4.57E-02	2.92E-03	3.04E-03	1.00E-02	2.93E-03	pCi/m3	
API-4(556501004) - A.P. Gross Beta	21-Sep-21	BETA	5.45E-02	3.20E-03	3.11E-03	1.00E-02	3.21E-03	pCi/m3	
API-4(557195004) - A.P. Gross Beta	22-Sep-21	BETA	1.16E-01	1.36E-02	2.41E-02	1.00E-02	1.36E-02	pCi/m3	DL
API-4(557995004) - A.P. Gross Beta	5-Oct-21	BETA	3.80E-02	2.72E-03	3.20E-03	1.00E-02	2.73E-03	pCi/m3	
API-4(559006004) - A.P. Gross Beta	12-Oct-21	BETA	4.67E-02	2.96E-03	3.20E-03	1.00E-02	2.96E-03	pCi/m3	
API-4(559466004) - A.P. Gross Beta	19-Oct-21	BETA	4.18E-02	2.79E-03	3.09E-03	1.00E-02	2.79E-03	pCi/m3	
API-4(560248004) - A.P. Gross Beta	26-Oct-21	BETA	3.70E-02	2.70E-03	3.15E-03	1.00E-02	2.70E-03	pCi/m3	
API-4(561045004) - A.P. Gross Beta	2-Nov-21	BETA	3.14E-02	2.47E-03	3.10E-03	1.00E-02	2.47E-03	pCi/m3	
API-4(561652004) - A.P. Gross Beta	9-Nov-21	BETA	4.66E-02	2.88E-03	2.99E-03	1.00E-02	2.89E-03	pCi/m3	
API-4(562795004) - A.P. Gross Beta	16-Nov-21	BETA	2.93E-02	2.46E-03	3.46E-03	1.00E-02	2.46E-03	pCi/m3	
API-4(563578004) - A.P. Gross Beta	23-Nov-21	BETA	4.01E-02	2.85E-03	3.78E-03	1.00E-02	2.86E-03	pCi/m3	
API-4(563687004) - A.P. Gross Beta	30-Nov-21	BETA	4.38E-02	2.96E-03	3.78E-03	1.00E-02	2.96E-03	pCi/m3	
API-4(564729004) - A.P. Gross Beta	7-Dec-21	BETA	5.16E-02	3.12E-03	3.40E-03	1.00E-02	3.12E-03	pCi/m3	
API-4(565422004) - A.P. Gross Beta	14-Dec-21	BETA	6.70E-02	3.53E-03	3.43E-03	1.00E-02	3.54E-03	pCi/m3	
API-4(565770004) - A.P. Gross Beta	21-Dec-21	BETA	3.57E-02	2.62E-03	3.17E-03	1.00E-02	2.62E-03	pCi/m3	
API-4(566010004) - A.P. Gross Beta	28-Dec-21	BETA	5.85E-02	3.32E-03	3.28E-03	1.00E-02	3.33E-03	pCi/m3	
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Barium-140	2.70E-03	3.54E-03	1.14E-02		3.60E-03	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Barium-140	6.58E-03	3.83E-03	1.49E-02		4.12E-03	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Barium-140	1.61E-02	6.80E-03	2.48E-02		7.78E-03	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Barium-140	6.34E-03	2.28E-03	8.72E-03		2.72E-03	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Beryllium-7	6.77E-02	5.43E-03	6.32E-03		6.26E-03	pCi/m3	
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Beryllium-7	9.39E-02	6.05E-03	5.39E-03		7.43E-03	pCi/m3	
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Beryllium-7	8.83E-02	6.66E-03	9.37E-03		7.87E-03	pCi/m3	
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Beryllium-7	5.09E-02	4.11E-03	4.95E-03		4.82E-03	pCi/m3	
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Cerium-141	-8.26E-04	3.78E-04	1.04E-03		4.24E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Cerium-141	-4.61E-05	4.14E-04	1.23E-03		4.14E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Cerium-141	2.93E-04	6.29E-04	2.05E-03		6.33E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Cerium-141	-6.76E-04	3.48E-04	9.15E-04		3.82E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Cerium-144	1.22E-03	6.85E-04	2.40E-03		7.43E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Cerium-144	-9.61E-05	6.52E-04	2.10E-03		6.52E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Cerium-144	1.05E-03	1.07E-03	3.39E-03		1.10E-03	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Cerium-144	3.63E-04	7.35E-04	2.37E-03		7.40E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Cesium-134	-1.17E-04	1.73E-04	5.11E-04	5.00E-02	1.75E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Cesium-134	-2.30E-05	1.46E-04	4.86E-04	5.00E-02	1.46E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Cesium-134	4.40E-04	2.25E-04	8.15E-04	5.00E-02	2.48E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Cesium-134	1.46E-04	1.63E-04	5.59E-04	5.00E-02	1.67E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Cesium-137	2.88E-04	1.70E-04	6.27E-04	6.00E-02	1.83E-04	pCi/m3	U

API-4(552150004) - A.P. Gross Beta	29-Jun-21	Cesium-137	3.72E-05	1.38E-04	4.56E-04	6.00E-02	1.38E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Cesium-137	-4.02E-05	2.04E-04	6.76E-04	6.00E-02	2.04E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Cesium-137	-1.79E-04	1.47E-04	4.44E-04	6.00E-02	1.53E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Chromium-51	-1.21E-03	2.38E-03	7.41E-03		2.40E-03	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Chromium-51	-3.16E-03	2.87E-03	9.08E-03		2.96E-03	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Chromium-51	8.92E-03	4.13E-03	1.50E-02		4.63E-03	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Chromium-51	-4.88E-04	1.95E-03	6.25E-03		1.95E-03	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Cobalt-57	-8.08E-05	8.93E-05	2.70E-04		9.13E-05	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Cobalt-57	3.71E-05	9.78E-05	3.26E-04		9.82E-05	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Cobalt-57	2.97E-05	1.30E-04	4.46E-04		1.30E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Cobalt-57	-1.35E-04	8.95E-05	2.61E-04		9.49E-05	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Cobalt-58	-7.70E-05	1.97E-04	6.01E-04		1.98E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Cobalt-58	-1.26E-04	1.89E-04	5.91E-04		1.91E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Cobalt-58	4.04E-04	2.71E-04	9.68E-04		2.88E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Cobalt-58	1.54E-04	1.79E-04	6.12E-04		1.83E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Iodine-131	-5.56E-03	3.57E-03	9.32E-03		3.80E-03	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Iodine-131	1.73E-02	6.60E-03	1.73E-02		6.65E-03	pCi/m3	UI
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Iodine-131	9.30E-03	8.98E-03	3.12E-02		9.24E-03	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Iodine-131	-1.48E-03	1.55E-03	4.70E-03		1.59E-03	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Iron-59	-2.04E-04	4.75E-04	1.51E-03		4.77E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Iron-59	-2.23E-04	5.75E-04	1.80E-03		5.77E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Iron-59	-7.69E-04	6.27E-04	1.88E-03		6.53E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Iron-59	3.69E-04	3.64E-04	1.32E-03		3.74E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Lanthanum-140	-5.20E-05	1.54E-03	5.03E-03		1.54E-03	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Lanthanum-140	3.04E-03	2.62E-03	9.94E-03		2.71E-03	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Lanthanum-140	2.68E-03	2.79E-03	1.00E-02		2.86E-03	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Lanthanum-140	-5.19E-04	7.87E-04	2.40E-03		7.96E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Manganese-54	2.52E-04	1.69E-04	6.23E-04		1.80E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Manganese-54	-4.59E-05	1.75E-04	5.23E-04		1.76E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Manganese-54	1.45E-04	2.25E-04	7.62E-04		2.28E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Manganese-54	9.31E-05	1.38E-04	4.65E-04		1.39E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Niobium-95	3.96E-04	3.48E-04	6.97E-04		3.48E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Niobium-95	-2.12E-05	2.32E-04	7.27E-04		2.32E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Niobium-95	3.43E-04	3.39E-04	1.04E-03		3.49E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Niobium-95	-1.60E-04	1.81E-04	5.44E-04		1.84E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Potassium-40	1.36E-02	3.91E-03	6.08E-03		3.98E-03	pCi/m3	
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Potassium-40	1.69E-02	3.63E-03	5.42E-03		3.75E-03	pCi/m3	
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Potassium-40	1.61E-02	4.32E-03	5.18E-03		4.39E-03	pCi/m3	
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Potassium-40	5.48E-03	4.35E-03	5.48E-03		4.36E-03	pCi/m3	UI

API-4(543402004) - A.P. Gross Beta	30-Mar-21	Ruthenium-103	2.72E-04	2.34E-04	8.42E-04		2.42E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Ruthenium-103	-2.34E-04	3.92E-04	8.12E-04		3.96E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Ruthenium-103	-1.82E-04	3.56E-04	1.13E-03		3.59E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Ruthenium-103	1.58E-04	1.83E-04	6.44E-04		1.87E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Ruthenium-106	-2.03E-03	1.42E-03	3.99E-03		1.50E-03	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Ruthenium-106	-4.03E-04	1.38E-03	4.33E-03		1.39E-03	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Ruthenium-106	1.72E-03	1.65E-03	5.82E-03		1.70E-03	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Ruthenium-106	7.87E-04	1.21E-03	4.14E-03		1.22E-03	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Selenium-75	-3.78E-04	2.16E-04	6.21E-04		2.33E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Selenium-75	-1.79E-04	1.71E-04	5.51E-04		1.76E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Selenium-75	-3.31E-04	3.07E-04	9.45E-04		3.17E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Selenium-75	-6.34E-05	1.75E-04	5.69E-04		1.76E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Silver-108m	-1.94E-04	1.19E-04	3.46E-04		1.27E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Silver-108m	2.21E-05	1.29E-04	4.32E-04		1.29E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Silver-108m	9.51E-05	1.70E-04	5.71E-04		1.71E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Silver-108m	-1.10E-04	1.01E-04	3.22E-04		1.04E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Silver-110m	-2.27E-05	2.39E-04	7.53E-04		2.39E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Silver-110m	-1.16E-04	2.52E-04	8.10E-04		2.53E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Silver-110m	-2.15E-04	2.87E-04	8.87E-04		2.92E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Silver-110m	-6.86E-05	2.01E-04	6.60E-04		2.01E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Zinc-65	-3.91E-04	4.03E-04	1.21E-03		4.13E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Zinc-65	4.96E-05	4.13E-04	1.38E-03		4.14E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Zinc-65	-4.88E-04	5.53E-04	1.74E-03		5.65E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Zinc-65	5.50E-04	3.96E-04	1.43E-03		4.17E-04	pCi/m3	U
API-4(543402004) - A.P. Gross Beta	30-Mar-21	Zirconium-95	-5.52E-05	3.76E-04	1.05E-03		3.77E-04	pCi/m3	U
API-4(552150004) - A.P. Gross Beta	29-Jun-21	Zirconium-95	-3.03E-05	4.63E-04	1.29E-03		4.63E-04	pCi/m3	U
API-4(560833004) - A.P. Gross Beta	22-Sep-21	Zirconium-95	1.41E-04	4.80E-04	1.61E-03		4.81E-04	pCi/m3	U
API-4(568417004) - A.P. Gross Beta	28-Dec-21	Zirconium-95	-1.60E-04	3.00E-04	9.28E-04		3.02E-04	pCi/m3	U

API-5

A.C. Iodine

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-5(531321011) - A.C. Iodine	5-Jan-21	Iodine-131	-2.29E-04	2.58E-03	8.27E-03	7.00E-02	2.58E-03	pCi/m3	U
API-5(531955011) - A.C. Iodine	12-Jan-21	Iodine-131	-4.65E-03	2.61E-03	7.11E-03	7.00E-02	2.82E-03	pCi/m3	U
API-5(532751011) - A.C. Iodine	20-Jan-21	Iodine-131	1.75E-03	2.10E-03	7.60E-03	7.00E-02	2.14E-03	pCi/m3	U
API-5(533325011) - A.C. Iodine	26-Jan-21	Iodine-131	-5.71E-03	5.70E-03	1.79E-02	7.00E-02	5.86E-03	pCi/m3	U
API-5(533897011) - A.C. Iodine	2-Feb-21	Iodine-131	3.37E-03	3.40E-03	1.23E-02	7.00E-02	3.49E-03	pCi/m3	U
API-5(534741011) - A.C. Iodine	9-Feb-21	Iodine-131	4.27E-04	3.75E-03	1.17E-02	7.00E-02	3.75E-03	pCi/m3	U
API-5(536502011) - A.C. Iodine	17-Feb-21	Iodine-131	1.21E-03	6.00E-03	2.08E-02	7.00E-02	6.01E-03	pCi/m3	U

API-5(535998011) - A.C. Iodine	23-Feb-21	Iodine-131	-1.88E-03	5.30E-03	1.67E-02	7.00E-02	5.31E-03	pCi/m3	U
API-5(536570011) - A.C. Iodine	2-Mar-21	Iodine-131	4.42E-03	3.32E-03	1.25E-02	7.00E-02	3.48E-03	pCi/m3	U
API-5(537236011) - A.C. Iodine	9-Mar-21	Iodine-131	-4.41E-03	3.30E-03	1.01E-02	7.00E-02	3.46E-03	pCi/m3	U
API-5(538122011) - A.C. Iodine	16-Mar-21	Iodine-131	7.50E-03	3.85E-03	1.63E-02	7.00E-02	4.23E-03	pCi/m3	U
API-5(538744011) - A.C. Iodine	23-Mar-21	Iodine-131	2.62E-03	2.82E-03	1.04E-02	7.00E-02	2.88E-03	pCi/m3	U
API-5(539290011) - A.C. Iodine	30-Mar-21	Iodine-131	-6.00E-03	4.18E-03	1.19E-02	7.00E-02	4.41E-03	pCi/m3	U
API-5(539973011) - A.C. Iodine	6-Apr-21	Iodine-131	-1.85E-03	3.21E-03	1.04E-02	7.00E-02	3.24E-03	pCi/m3	U
API-5(541230011) - A.C. Iodine	13-Apr-21	Iodine-131	1.94E-03	3.49E-03	1.23E-02	7.00E-02	3.52E-03	pCi/m3	U
API-5(541549011) - A.C. Iodine	20-Apr-21	Iodine-131	1.77E-02	1.01E-02	4.04E-02	7.00E-02	1.09E-02	pCi/m3	U
API-5(542691011) - A.C. Iodine	27-Apr-21	Iodine-131	5.86E-03	4.63E-03	2.16E-02	7.00E-02	4.83E-03	pCi/m3	U
API-5(543862011) - A.C. Iodine	4-May-21	Iodine-131	5.57E-04	9.30E-03	3.16E-02	7.00E-02	9.30E-03	pCi/m3	U
API-5(544556011) - A.C. Iodine	11-May-21	Iodine-131	-2.60E-03	4.32E-03	1.32E-02	7.00E-02	4.36E-03	pCi/m3	U
API-5(544986011) - A.C. Iodine	18-May-21	Iodine-131	-1.33E-03	4.47E-03	1.42E-02	7.00E-02	4.48E-03	pCi/m3	U
API-5(545784011) - A.C. Iodine	25-May-21	Iodine-131	-2.08E-03	4.65E-03	1.44E-02	7.00E-02	4.68E-03	pCi/m3	U
API-5(546205011) - A.C. Iodine	1-Jun-21	Iodine-131	5.97E-03	4.22E-03	1.43E-02	7.00E-02	4.23E-03	pCi/m3	U
API-5(546774011) - A.C. Iodine	8-Jun-21	Iodine-131	2.72E-03	4.37E-03	1.59E-02	7.00E-02	4.42E-03	pCi/m3	U
API-5(547399011) - A.C. Iodine	15-Jun-21	Iodine-131	5.55E-03	5.36E-03	1.95E-02	7.00E-02	5.52E-03	pCi/m3	U
API-5(548375011) - A.C. Iodine	22-Jun-21	Iodine-131	7.36E-03	5.26E-03	1.96E-02	7.00E-02	5.53E-03	pCi/m3	U
API-5(548551011) - A.C. Iodine	29-Jun-21	Iodine-131	-3.20E-03	3.68E-03	1.11E-02	7.00E-02	3.75E-03	pCi/m3	U
API-5(549016011) - A.C. Iodine	6-Jul-21	Iodine-131	2.91E-03	4.01E-03	1.39E-02	7.00E-02	4.07E-03	pCi/m3	U
API-5(549605011) - A.C. Iodine	13-Jul-21	Iodine-131	3.59E-03	3.57E-03	1.33E-02	7.00E-02	3.67E-03	pCi/m3	U
API-5(550237011) - A.C. Iodine	20-Jul-21	Iodine-131	8.20E-03	4.57E-03	1.76E-02	7.00E-02	4.96E-03	pCi/m3	U
API-5(550833011) - A.C. Iodine	27-Jul-21	Iodine-131	-2.81E-03	3.83E-03	1.13E-02	7.00E-02	3.88E-03	pCi/m3	U
API-5(551675011) - A.C. Iodine	3-Aug-21	Iodine-131	4.43E-03	5.35E-03	1.91E-02	7.00E-02	5.45E-03	pCi/m3	U
API-5(552413011) - A.C. Iodine	10-Aug-21	Iodine-131	1.13E-03	4.48E-03	1.44E-02	7.00E-02	4.49E-03	pCi/m3	U
API-5(553054011) - A.C. Iodine	17-Aug-21	Iodine-131	-1.98E-03	3.69E-03	1.18E-02	7.00E-02	3.72E-03	pCi/m3	U
API-5(553768011) - A.C. Iodine	24-Aug-21	Iodine-131	-7.38E-03	6.32E-03	1.81E-02	7.00E-02	6.55E-03	pCi/m3	U
API-5(554850011) - A.C. Iodine	31-Aug-21	Iodine-131	2.70E-04	2.90E-03	9.91E-03	7.00E-02	2.90E-03	pCi/m3	U
API-5(555058011) - A.C. Iodine	7-Sep-21	Iodine-131	4.58E-03	3.20E-03	1.19E-02	7.00E-02	3.37E-03	pCi/m3	U
API-5(555852011) - A.C. Iodine	14-Sep-21	Iodine-131	4.95E-03	3.83E-03	1.35E-02	7.00E-02	4.00E-03	pCi/m3	U
API-5(556501011) - A.C. Iodine	21-Sep-21	Iodine-131	2.56E-03	2.76E-03	9.79E-03	7.00E-02	2.82E-03	pCi/m3	U
API-5(557195011) - A.C. Iodine	28-Sep-21	Iodine-131	-4.59E-03	3.63E-03	9.25E-03	7.00E-02	3.78E-03	pCi/m3	U
API-5(557995011) - A.C. Iodine	5-Oct-21	Iodine-131	3.86E-03	6.35E-03	2.19E-02	7.00E-02	6.41E-03	pCi/m3	U
API-5(559006011) - A.C. Iodine	12-Oct-21	Iodine-131	-2.97E-03	3.31E-03	1.02E-02	7.00E-02	3.38E-03	pCi/m3	U
API-5(559466011) - A.C. Iodine	19-Oct-21	Iodine-131	-2.84E-03	3.15E-03	9.34E-03	7.00E-02	3.22E-03	pCi/m3	U
API-5(560248011) - A.C. Iodine	26-Oct-21	Iodine-131	-3.17E-03	2.65E-03	8.04E-03	7.00E-02	2.75E-03	pCi/m3	U
API-5(561045011) - A.C. Iodine	2-Nov-21	Iodine-131	-1.41E-03	5.18E-03	1.63E-02	7.00E-02	5.19E-03	pCi/m3	U
API-5(561652011) - A.C. Iodine	9-Nov-21	Iodine-131	2.08E-03	4.75E-03	1.67E-02	7.00E-02	4.77E-03	pCi/m3	U
API-5(562795011) - A.C. Iodine	16-Nov-21	Iodine-131	4.62E-03	3.50E-03	1.23E-02	7.00E-02	3.66E-03	pCi/m3	U

API-5(563578011) - A.C. Iodine	23-Nov-21	Iodine-131	-3.69E-03	8.03E-03	2.62E-02	7.00E-02	8.08E-03	pCi/m3	U
API-5(563687011) - A.C. Iodine	30-Nov-21	Iodine-131	4.56E-03	3.67E-03	1.38E-02	7.00E-02	3.82E-03	pCi/m3	U
API-5(564729011) - A.C. Iodine	7-Dec-21	Iodine-131	-3.07E-03	4.91E-03	1.55E-02	7.00E-02	4.96E-03	pCi/m3	U
API-5(565422011) - A.C. Iodine	14-Dec-21	Iodine-131	-4.71E-03	4.17E-03	1.26E-02	7.00E-02	4.31E-03	pCi/m3	U
API-5(565770011) - A.C. Iodine	21-Dec-21	Iodine-131	-1.57E-03	2.37E-03	7.31E-03	7.00E-02	2.40E-03	pCi/m3	U
API-5(566010011) - A.C. Iodine	28-Dec-21	Iodine-131	9.45E-04	5.20E-03	1.75E-02	7.00E-02	5.20E-03	pCi/m3	U

API-5

A.P. Gross Beta

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Actinium-228	-2.13E-03	1.08E-03	3.05E-03		1.19E-03	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Actinium-228	6.18E-04	1.51E-03	2.60E-03		1.52E-03	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Actinium-228	2.21E-04	5.71E-04	1.99E-03		5.73E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Actinium-228	2.52E-04	9.08E-04	2.74E-03		9.10E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Antimony-124	3.03E-04	5.48E-04	2.06E-03		5.53E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Antimony-124	-2.42E-04	4.36E-04	1.21E-03		4.40E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Antimony-124	6.74E-04	7.27E-04	2.72E-03		7.44E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Antimony-124	5.06E-04	5.45E-04	2.02E-03		5.58E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Antimony-125	-2.32E-04	3.97E-04	1.28E-03		4.01E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Antimony-125	-1.14E-05	3.34E-04	1.12E-03		3.34E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Antimony-125	-2.54E-04	3.52E-04	1.11E-03		3.57E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Antimony-125	2.91E-04	4.09E-04	1.31E-03		4.15E-04	pCi/m3	U
API-5(531321005) - A.P. Gross Beta	5-Jan-21	BETA	3.54E-02	2.69E-03	3.41E-03	1.00E-02	2.70E-03	pCi/m3	
API-5(531955005) - A.P. Gross Beta	12-Jan-21	BETA	3.95E-02	2.78E-03	3.37E-03	1.00E-02	2.78E-03	pCi/m3	
API-5(532751005) - A.P. Gross Beta	20-Jan-21	BETA	3.39E-02	2.41E-03	2.87E-03	1.00E-02	2.41E-03	pCi/m3	
API-5(533325005) - A.P. Gross Beta	26-Jan-21	BETA	2.85E-02	2.65E-03	3.85E-03	1.00E-02	2.66E-03	pCi/m3	
API-5(533897005) - A.P. Gross Beta	2-Feb-21	BETA	2.33E-02	2.23E-03	3.28E-03	1.00E-02	2.24E-03	pCi/m3	
API-5(534741005) - A.P. Gross Beta	9-Feb-21	BETA	4.45E-02	2.91E-03	3.28E-03	1.00E-02	2.92E-03	pCi/m3	
API-5(536502005) - A.P. Gross Beta	17-Feb-21	BETA	3.99E-02	2.54E-03	2.74E-03	1.00E-02	2.54E-03	pCi/m3	
API-5(535998005) - A.P. Gross Beta	23-Feb-21	BETA	7.10E-02	3.91E-03	3.68E-03	1.00E-02	3.91E-03	pCi/m3	
API-5(536570005) - A.P. Gross Beta	2-Mar-21	BETA	2.93E-02	2.47E-03	3.30E-03	1.00E-02	2.47E-03	pCi/m3	
API-5(537236005) - A.P. Gross Beta	9-Mar-21	BETA	3.80E-02	2.65E-03	3.01E-03	1.00E-02	2.66E-03	pCi/m3	
API-5(538122005) - A.P. Gross Beta	16-Mar-21	BETA	3.53E-02	2.64E-03	3.23E-03	1.00E-02	2.64E-03	pCi/m3	
API-5(538744005) - A.P. Gross Beta	23-Mar-21	BETA	4.12E-02	2.86E-03	3.33E-03	1.00E-02	2.86E-03	pCi/m3	
API-5(539290005) - A.P. Gross Beta	30-Mar-21	BETA	2.34E-02	2.23E-03	3.26E-03	1.00E-02	2.23E-03	pCi/m3	
API-5(539973005) - A.P. Gross Beta	6-Apr-21	BETA	4.00E-02	2.79E-03	3.24E-03	1.00E-02	2.80E-03	pCi/m3	
API-5(541230005) - A.P. Gross Beta	13-Apr-21	BETA	3.41E-02	2.55E-03	3.14E-03	1.00E-02	2.55E-03	pCi/m3	
API-5(541549005) - A.P. Gross Beta	20-Apr-21	BETA	2.30E-02	2.26E-03	3.42E-03	1.00E-02	2.26E-03	pCi/m3	
API-5(542691005) - A.P. Gross Beta	27-Apr-21	BETA	3.02E-02	2.52E-03	3.58E-03	1.00E-02	2.52E-03	pCi/m3	

API-5(543862005) - A.P. Gross Beta	4-May-21	BETA	2.98E-02	2.51E-03	3.42E-03	1.00E-02	2.51E-03	pCi/m3	
API-5(544556005) - A.P. Gross Beta	11-May-21	BETA	2.22E-02	2.21E-03	3.36E-03	1.00E-02	2.21E-03	pCi/m3	
API-5(544986005) - A.P. Gross Beta	18-May-21	BETA	2.55E-02	2.25E-03	3.04E-03	1.00E-02	2.25E-03	pCi/m3	
API-5(545784005) - A.P. Gross Beta	25-May-21	BETA	4.04E-02	2.75E-03	3.22E-03	1.00E-02	2.75E-03	pCi/m3	
API-5(546205005) - A.P. Gross Beta	1-Jun-21	BETA	2.68E-02	2.39E-03	3.44E-03	1.00E-02	2.39E-03	pCi/m3	
API-5(546774005) - A.P. Gross Beta	8-Jun-21	BETA	3.40E-02	2.60E-03	3.30E-03	1.00E-02	2.60E-03	pCi/m3	
API-5(547399005) - A.P. Gross Beta	15-Jun-21	BETA	2.80E-02	2.34E-03	3.05E-03	1.00E-02	2.34E-03	pCi/m3	
API-5(548375005) - A.P. Gross Beta	22-Jun-21	BETA	2.62E-02	2.33E-03	3.26E-03	1.00E-02	2.33E-03	pCi/m3	
API-5(548551005) - A.P. Gross Beta	29-Jun-21	BETA	2.86E-02	2.45E-03	3.37E-03	1.00E-02	2.45E-03	pCi/m3	
API-5(549016005) - A.P. Gross Beta	6-Jul-21	BETA	3.01E-02	2.44E-03	3.17E-03	1.00E-02	2.44E-03	pCi/m3	
API-5(549605005) - A.P. Gross Beta	13-Jul-21	BETA	2.90E-02	2.42E-03	3.23E-03	1.00E-02	2.42E-03	pCi/m3	
API-5(550237005) - A.P. Gross Beta	20-Jul-21	BETA	2.53E-02	2.28E-03	3.25E-03	1.00E-02	2.28E-03	pCi/m3	
API-5(550833005) - A.P. Gross Beta	27-Jul-21	BETA	3.70E-02	2.67E-03	3.08E-03	1.00E-02	2.67E-03	pCi/m3	
API-5(551675005) - A.P. Gross Beta	3-Aug-21	BETA	2.99E-02	2.52E-03	3.77E-03	1.00E-02	2.53E-03	pCi/m3	
API-5(552413005) - A.P. Gross Beta	10-Aug-21	BETA	4.25E-02	2.84E-03	3.10E-03	1.00E-02	2.85E-03	pCi/m3	
API-5(553054005) - A.P. Gross Beta	17-Aug-21	BETA	3.45E-02	2.96E-03	4.37E-03	1.00E-02	2.97E-03	pCi/m3	
API-5(553768005) - A.P. Gross Beta	24-Aug-21	BETA	5.16E-02	3.18E-03	3.77E-03	1.00E-02	3.19E-03	pCi/m3	
API-5(554850005) - A.P. Gross Beta	31-Aug-21	BETA	4.48E-02	2.90E-03	3.12E-03	1.00E-02	2.91E-03	pCi/m3	
API-5(555058005) - A.P. Gross Beta	7-Sep-21	BETA	3.48E-02	2.64E-03	3.23E-03	1.00E-02	2.65E-03	pCi/m3	
API-5(555852005) - A.P. Gross Beta	14-Sep-21	BETA	3.69E-02	2.61E-03	2.93E-03	1.00E-02	2.61E-03	pCi/m3	
API-5(556501005) - A.P. Gross Beta	21-Sep-21	BETA	4.27E-02	2.84E-03	3.20E-03	1.00E-02	2.85E-03	pCi/m3	
API-5(557195005) - A.P. Gross Beta	28-Sep-21	BETA	3.90E-02	2.78E-03	3.25E-03	1.00E-02	2.78E-03	pCi/m3	
API-5(557995005) - A.P. Gross Beta	5-Oct-21	BETA	4.07E-02	2.77E-03	3.20E-03	1.00E-02	2.77E-03	pCi/m3	
API-5(559006005) - A.P. Gross Beta	12-Oct-21	BETA	3.95E-02	2.71E-03	3.07E-03	1.00E-02	2.71E-03	pCi/m3	
API-5(559466005) - A.P. Gross Beta	19-Oct-21	BETA	3.45E-02	2.66E-03	3.53E-03	1.00E-02	2.66E-03	pCi/m3	
API-5(560248005) - A.P. Gross Beta	26-Oct-21	BETA	3.59E-02	2.65E-03	3.24E-03	1.00E-02	2.65E-03	pCi/m3	
API-5(561045005) - A.P. Gross Beta	2-Nov-21	BETA	2.77E-02	2.42E-03	3.50E-03	1.00E-02	2.42E-03	pCi/m3	
API-5(561652005) - A.P. Gross Beta	9-Nov-21	BETA	4.85E-02	3.01E-03	3.16E-03	1.00E-02	3.01E-03	pCi/m3	
API-5(562795005) - A.P. Gross Beta	16-Nov-21	BETA	3.47E-02	2.65E-03	3.29E-03	1.00E-02	2.65E-03	pCi/m3	
API-5(563578005) - A.P. Gross Beta	23-Nov-21	BETA	3.85E-02	2.76E-03	3.18E-03	1.00E-02	2.77E-03	pCi/m3	
API-5(563687005) - A.P. Gross Beta	30-Nov-21	BETA	3.31E-02	2.58E-03	3.16E-03	1.00E-02	2.58E-03	pCi/m3	
API-5(564729005) - A.P. Gross Beta	7-Dec-21	BETA	3.77E-02	2.66E-03	3.14E-03	1.00E-02	2.66E-03	pCi/m3	
API-5(565422005) - A.P. Gross Beta	14-Dec-21	BETA	3.99E-02	2.74E-03	3.17E-03	1.00E-02	2.74E-03	pCi/m3	
API-5(565770005) - A.P. Gross Beta	21-Dec-21	BETA	3.64E-02	2.64E-03	3.43E-03	1.00E-02	2.64E-03	pCi/m3	
API-5(566010005) - A.P. Gross Beta	28-Dec-21	BETA	6.12E-02	3.37E-03	3.52E-03	1.00E-02	3.37E-03	pCi/m3	
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Barium-140	-7.66E-03	4.66E-03	1.26E-02		5.00E-03	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Barium-140	-5.15E-03	5.19E-03	1.57E-02		5.33E-03	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Barium-140	8.70E-03	4.66E-03	1.75E-02		5.09E-03	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Barium-140	1.55E-03	2.43E-03	8.46E-03		2.46E-03	pCi/m3	U

API-5(543402005) - A.P. Gross Beta	30-Mar-21	Beryllium-7	5.68E-02	6.29E-03	7.55E-03		6.84E-03	pCi/m3	
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Beryllium-7	6.92E-02	5.66E-03	5.49E-03		6.62E-03	pCi/m3	
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Beryllium-7	6.68E-02	4.91E-03	5.44E-03		5.92E-03	pCi/m3	
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Beryllium-7	4.37E-02	3.93E-03	6.09E-03		4.50E-03	pCi/m3	
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Cerium-141	-4.51E-05	3.72E-04	1.22E-03		3.72E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Cerium-141	3.52E-04	3.43E-04	1.17E-03		3.52E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Cerium-141	1.76E-04	3.22E-04	1.10E-03		3.24E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Cerium-141	-2.42E-04	2.78E-04	8.55E-04		2.83E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Cerium-144	2.34E-04	7.83E-04	2.64E-03		7.85E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Cerium-144	-6.34E-04	6.57E-04	2.03E-03		6.74E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Cerium-144	1.80E-03	8.81E-04	1.80E-03		8.86E-04	pCi/m3	UI
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Cerium-144	6.07E-04	6.77E-04	2.29E-03		6.91E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Cesium-134	9.69E-05	1.75E-04	6.18E-04	5.00E-02	1.76E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Cesium-134	2.08E-05	1.70E-04	5.50E-04	5.00E-02	1.71E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Cesium-134	3.31E-06	1.73E-04	5.86E-04	5.00E-02	1.73E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Cesium-134	-9.59E-05	2.18E-04	5.94E-04	5.00E-02	2.19E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Cesium-137	-5.14E-05	2.00E-04	6.66E-04	6.00E-02	2.01E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Cesium-137	3.36E-04	1.59E-04	4.18E-04	6.00E-02	1.60E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Cesium-137	2.99E-04	3.60E-04	2.99E-04	6.00E-02	3.63E-04	pCi/m3	UI
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Cesium-137	1.37E-04	1.54E-04	5.42E-04	6.00E-02	1.58E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Chromium-51	3.33E-04	3.16E-03	1.00E-02		3.16E-03	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Chromium-51	-1.70E-03	2.73E-03	8.99E-03		2.76E-03	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Chromium-51	-7.90E-04	2.57E-03	8.63E-03		2.57E-03	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Chromium-51	-1.77E-03	2.09E-03	6.83E-03		2.13E-03	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Cobalt-57	2.16E-04	9.64E-05	3.58E-04		1.09E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Cobalt-57	-1.03E-04	8.12E-05	2.48E-04		8.46E-05	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Cobalt-57	5.92E-05	8.35E-05	2.77E-04		8.47E-05	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Cobalt-57	1.47E-04	8.50E-05	3.00E-04		9.17E-05	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Cobalt-58	-3.74E-05	2.88E-04	9.21E-04		2.89E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Cobalt-58	1.79E-04	2.19E-04	7.55E-04		2.23E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Cobalt-58	2.39E-04	2.07E-04	7.79E-04		2.15E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Cobalt-58	1.85E-04	2.05E-04	7.18E-04		2.10E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Iodine-131	-9.52E-04	4.04E-03	1.23E-02		4.04E-03	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Iodine-131	5.41E-04	5.31E-03	1.81E-02		5.31E-03	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Iodine-131	-3.21E-03	3.22E-03	1.00E-02		3.31E-03	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Iodine-131	1.47E-04	1.65E-03	5.65E-03		1.65E-03	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Iron-59	-6.42E-04	5.86E-04	1.62E-03		6.05E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Iron-59	6.62E-04	5.69E-04	2.12E-03		5.90E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Iron-59	4.25E-05	5.30E-04	1.76E-03		5.30E-04	pCi/m3	U

API-5(568417005) - A.P. Gross Beta	28-Dec-21	Iron-59	1.29E-04	4.23E-04	1.48E-03		4.24E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Lanthanum-140	-2.20E-03	1.76E-03	4.82E-03		1.84E-03	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Lanthanum-140	-1.00E-03	1.63E-03	4.58E-03		1.65E-03	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Lanthanum-140	-2.25E-03	1.64E-03	3.94E-03		1.72E-03	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Lanthanum-140	-2.90E-04	7.57E-04	2.31E-03		7.60E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Manganese-54	3.61E-05	2.45E-04	8.06E-04		2.45E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Manganese-54	-1.39E-05	1.39E-04	4.36E-04		1.39E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Manganese-54	9.96E-05	1.70E-04	6.04E-04		1.72E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Manganese-54	-1.15E-04	1.68E-04	5.06E-04		1.71E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Niobium-95	1.21E-04	2.79E-04	9.55E-04		2.80E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Niobium-95	1.52E-05	2.63E-04	7.81E-04		2.63E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Niobium-95	-4.47E-06	2.26E-04	7.63E-04		2.26E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Niobium-95	2.48E-04	2.55E-04	8.12E-04		2.61E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Potassium-40	-1.14E-03	4.27E-03	1.44E-02		4.27E-03	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Potassium-40	1.29E-02	3.82E-03	5.10E-03		3.88E-03	pCi/m3	
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Potassium-40	1.78E-02	3.77E-03	7.19E-03		3.88E-03	pCi/m3	
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Potassium-40	1.15E-02	3.01E-03	2.96E-03		3.07E-03	pCi/m3	
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Ruthenium-103	-1.41E-04	3.07E-04	9.94E-04		3.09E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Ruthenium-103	1.97E-04	2.42E-04	8.51E-04		2.47E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Ruthenium-103	6.47E-04	2.58E-04	1.01E-03		2.99E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Ruthenium-103	1.71E-04	1.94E-04	6.91E-04		1.99E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Ruthenium-106	1.00E-03	1.30E-03	4.74E-03		1.32E-03	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Ruthenium-106	-1.34E-03	1.41E-03	4.20E-03		1.44E-03	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Ruthenium-106	2.71E-03	1.51E-03	5.64E-03		1.64E-03	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Ruthenium-106	3.28E-04	1.30E-03	4.38E-03		1.31E-03	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Selenium-75	-2.57E-05	2.40E-04	7.57E-04		2.40E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Selenium-75	-1.94E-04	2.01E-04	5.88E-04		2.06E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Selenium-75	7.53E-05	1.74E-04	5.68E-04		1.75E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Selenium-75	2.15E-04	1.96E-04	6.52E-04		2.02E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Silver-108m	-6.76E-06	1.48E-04	5.02E-04		1.48E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Silver-108m	8.64E-05	9.77E-05	3.48E-04		9.98E-05	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Silver-108m	6.35E-05	1.15E-04	4.00E-04		1.16E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Silver-108m	2.45E-04	2.26E-04	4.44E-04		2.34E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Silver-110m	-1.21E-04	2.67E-04	7.96E-04		2.68E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Silver-110m	3.68E-04	1.98E-04	7.88E-04		2.17E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Silver-110m	-5.30E-04	2.49E-04	6.28E-04		2.79E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Silver-110m	3.84E-05	2.16E-04	7.07E-04		2.16E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Zinc-65	7.91E-05	4.26E-04	1.48E-03		4.26E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Zinc-65	5.27E-04	4.12E-04	1.42E-03		4.31E-04	pCi/m3	U

API-5(560833005) - A.P. Gross Beta	28-Sep-21	Zinc-65	-6.45E-04	4.36E-04	1.15E-03		4.62E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Zinc-65	-2.37E-04	3.72E-04	9.97E-04		3.76E-04	pCi/m3	U
API-5(543402005) - A.P. Gross Beta	30-Mar-21	Zirconium-95	6.03E-04	4.29E-04	1.65E-03		4.52E-04	pCi/m3	U
API-5(552150005) - A.P. Gross Beta	29-Jun-21	Zirconium-95	-3.15E-06	3.54E-04	1.13E-03		3.54E-04	pCi/m3	U
API-5(560833005) - A.P. Gross Beta	28-Sep-21	Zirconium-95	1.08E-04	3.74E-04	1.31E-03		3.75E-04	pCi/m3	U
API-5(568417005) - A.P. Gross Beta	28-Dec-21	Zirconium-95	-5.22E-04	3.79E-04	1.07E-03		3.99E-04	pCi/m3	U

API-6

A.C. Iodine

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-6(531321012) - A.C. Iodine	5-Jan-21	Iodine-131	1.63E-03	3.05E-03	1.08E-02	7.00E-02	3.07E-03	pCi/m3	U
API-6(531955012) - A.C. Iodine	12-Jan-21	Iodine-131	2.76E-03	2.29E-03	8.13E-03	7.00E-02	2.38E-03	pCi/m3	U
API-6(532751012) - A.C. Iodine	20-Jan-21	Iodine-131	1.89E-03	2.12E-03	7.60E-03	7.00E-02	2.17E-03	pCi/m3	U
API-6(533325012) - A.C. Iodine	26-Jan-21	Iodine-131	9.02E-03	4.48E-03	9.02E-03	7.00E-02	4.51E-03	pCi/m3	UI
API-6(533897012) - A.C. Iodine	2-Feb-21	Iodine-131	-3.56E-04	3.89E-03	1.19E-02	7.00E-02	3.89E-03	pCi/m3	U
API-6(534741012) - A.C. Iodine	9-Feb-21	Iodine-131	9.99E-04	4.50E-03	1.44E-02	7.00E-02	4.51E-03	pCi/m3	U
API-6(536502012) - A.C. Iodine	17-Feb-21	Iodine-131	-5.59E-03	1.37E-02	4.54E-02	7.00E-02	1.37E-02	pCi/m3	U
API-6(535998012) - A.C. Iodine	23-Feb-21	Iodine-131	9.64E-03	4.76E-03	2.03E-02	7.00E-02	5.27E-03	pCi/m3	U
API-6(536570012) - A.C. Iodine	2-Mar-21	Iodine-131	4.55E-03	3.27E-03	1.22E-02	7.00E-02	3.44E-03	pCi/m3	U
API-6(537236012) - A.C. Iodine	9-Mar-21	Iodine-131	-5.34E-03	2.53E-03	6.67E-03	7.00E-02	2.82E-03	pCi/m3	U
API-6(538122012) - A.C. Iodine	16-Mar-21	Iodine-131	-4.75E-03	5.21E-03	1.48E-02	7.00E-02	5.33E-03	pCi/m3	U
API-6(538744012) - A.C. Iodine	23-Mar-21	Iodine-131	-1.90E-03	3.17E-03	9.07E-03	7.00E-02	3.20E-03	pCi/m3	U
API-6(539290012) - A.C. Iodine	30-Mar-21	Iodine-131	-3.39E-03	4.47E-03	1.25E-02	7.00E-02	4.54E-03	pCi/m3	U
API-6(539973012) - A.C. Iodine	6-Apr-21	Iodine-131	-2.39E-04	2.69E-03	9.07E-03	7.00E-02	2.69E-03	pCi/m3	U
API-6(541230012) - A.C. Iodine	13-Apr-21	Iodine-131	-7.67E-03	5.19E-03	1.34E-02	7.00E-02	5.50E-03	pCi/m3	U
API-6(541549012) - A.C. Iodine	20-Apr-21	Iodine-131	-1.77E-02	9.35E-03	2.37E-02	7.00E-02	1.02E-02	pCi/m3	U
API-6(542691012) - A.C. Iodine	27-Apr-21	Iodine-131	-3.27E-02	1.28E-02	1.84E-02	7.00E-02	1.50E-02	pCi/m3	U
API-6(543862012) - A.C. Iodine	4-May-21	Iodine-131	1.20E-03	9.03E-03	3.11E-02	7.00E-02	9.04E-03	pCi/m3	U
API-6(544556012) - A.C. Iodine	11-May-21	Iodine-131	-3.39E-03	4.19E-03	1.33E-02	7.00E-02	4.26E-03	pCi/m3	U
API-6(544986012) - A.C. Iodine	18-May-21	Iodine-131	-5.60E-03	3.95E-03	1.07E-02	7.00E-02	4.16E-03	pCi/m3	U
API-6(545784012) - A.C. Iodine	25-May-21	Iodine-131	1.58E-02	9.50E-03	3.77E-02	7.00E-02	1.02E-02	pCi/m3	U
API-6(546205012) - A.C. Iodine	1-Jun-21	Iodine-131	6.99E-04	5.91E-03	2.01E-02	7.00E-02	5.91E-03	pCi/m3	U
API-6(546774012) - A.C. Iodine	8-Jun-21	Iodine-131	-4.17E-03	3.87E-03	9.73E-03	7.00E-02	3.99E-03	pCi/m3	U
API-6(547399012) - A.C. Iodine	15-Jun-21	Iodine-131	-2.03E-03	4.12E-03	1.29E-02	7.00E-02	4.14E-03	pCi/m3	U
API-6(548375012) - A.C. Iodine	22-Jun-21	Iodine-131	-3.16E-03	5.39E-03	1.64E-02	7.00E-02	5.44E-03	pCi/m3	U
API-6(548551012) - A.C. Iodine	29-Jun-21	Iodine-131	2.04E-02	1.14E-02	2.69E-02	7.00E-02	1.14E-02	pCi/m3	U
API-6(549016012) - A.C. Iodine	6-Jul-21	Iodine-131	3.39E-03	6.16E-03	2.26E-02	7.00E-02	6.22E-03	pCi/m3	U
API-6(549605012) - A.C. Iodine	13-Jul-21	Iodine-131	3.35E-04	3.36E-03	1.11E-02	7.00E-02	3.36E-03	pCi/m3	U
API-6(550237012) - A.C. Iodine	17-Jul-21	Iodine-131	6.12E-03	1.05E-02	3.76E-02	7.00E-02	1.06E-02	pCi/m3	U

API-6(550833012) - A.C. Iodine	27-Jul-21	Iodine-131	-1.91E-03	2.79E-03	8.10E-03	7.00E-02	2.83E-03	pCi/m3	U
API-6(551675012) - A.C. Iodine	3-Aug-21	Iodine-131	-4.27E-03	4.95E-03	1.45E-02	7.00E-02	5.05E-03	pCi/m3	U
API-6(552413012) - A.C. Iodine	10-Aug-21	Iodine-131	8.06E-05	4.31E-03	1.40E-02	7.00E-02	4.31E-03	pCi/m3	U
API-6(553054012) - A.C. Iodine	17-Aug-21	Iodine-131	-8.59E-04	3.26E-03	1.06E-02	7.00E-02	3.27E-03	pCi/m3	U
API-6(553768012) - A.C. Iodine	24-Aug-21	Iodine-131	8.69E-04	3.65E-03	1.27E-02	7.00E-02	3.66E-03	pCi/m3	U
API-6(554850012) - A.C. Iodine	31-Aug-21	Iodine-131	2.10E-03	3.18E-03	1.14E-02	7.00E-02	3.22E-03	pCi/m3	U
API-6(555058012) - A.C. Iodine	7-Sep-21	Iodine-131	2.34E-03	2.94E-03	1.06E-02	7.00E-02	2.99E-03	pCi/m3	U
API-6(555852012) - A.C. Iodine	14-Sep-21	Iodine-131	3.49E-03	3.32E-03	1.24E-02	7.00E-02	3.42E-03	pCi/m3	U
API-6(556501012) - A.C. Iodine	21-Sep-21	Iodine-131	-2.45E-03	2.89E-03	8.04E-03	7.00E-02	2.95E-03	pCi/m3	U
API-6(557195012) - A.C. Iodine	28-Sep-21	Iodine-131	-1.78E-03	3.54E-03	1.10E-02	7.00E-02	3.56E-03	pCi/m3	U
API-6(557995012) - A.C. Iodine	5-Oct-21	Iodine-131	8.67E-03	5.97E-03	2.12E-02	7.00E-02	6.31E-03	pCi/m3	U
API-6(559006012) - A.C. Iodine	12-Oct-21	Iodine-131	-9.97E-04	3.47E-03	1.08E-02	7.00E-02	3.47E-03	pCi/m3	U
API-6(559466012) - A.C. Iodine	19-Oct-21	Iodine-131	2.79E-04	3.69E-03	1.26E-02	7.00E-02	3.69E-03	pCi/m3	U
API-6(560248012) - A.C. Iodine	26-Oct-21	Iodine-131	3.20E-04	2.45E-03	8.34E-03	7.00E-02	2.45E-03	pCi/m3	U
API-6(561045012) - A.C. Iodine	2-Nov-21	Iodine-131	4.53E-03	4.06E-03	1.48E-02	7.00E-02	4.20E-03	pCi/m3	U
API-6(561652012) - A.C. Iodine	9-Nov-21	Iodine-131	-2.34E-03	3.70E-03	1.14E-02	7.00E-02	3.74E-03	pCi/m3	U
API-6(562795012) - A.C. Iodine	16-Nov-21	Iodine-131	7.01E-04	2.50E-03	8.70E-03	7.00E-02	2.51E-03	pCi/m3	U
API-6(563578012) - A.C. Iodine	23-Nov-21	Iodine-131	-1.37E-02	7.89E-03	1.93E-02	7.00E-02	8.52E-03	pCi/m3	U
API-6(563687012) - A.C. Iodine	30-Nov-21	Iodine-131	-7.94E-05	4.69E-03	1.33E-02	7.00E-02	4.69E-03	pCi/m3	U
API-6(564729012) - A.C. Iodine	7-Dec-21	Iodine-131	1.29E-02	6.81E-03	2.60E-02	7.00E-02	7.45E-03	pCi/m3	U
API-6(565422012) - A.C. Iodine	14-Dec-21	Iodine-131	-1.71E-03	5.32E-03	1.76E-02	7.00E-02	5.34E-03	pCi/m3	U
API-6(565770012) - A.C. Iodine	21-Dec-21	Iodine-131	-2.48E-03	2.49E-03	7.17E-03	7.00E-02	2.55E-03	pCi/m3	U
API-6(566010012) - A.C. Iodine	28-Dec-21	Iodine-131	6.91E-03	4.61E-03	1.68E-02	7.00E-02	4.88E-03	pCi/m3	U

API-6

A.P. Gross Beta

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Actinium-228	9.36E-04	7.88E-04	2.81E-03		8.18E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Actinium-228	3.37E-03	1.02E-03	3.37E-03		1.31E-03	pCi/m3	UI
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Actinium-228	-8.50E-04	7.59E-04	2.24E-03		7.85E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Actinium-228	4.31E-04	6.55E-04	2.18E-03		6.63E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Antimony-124	-8.18E-04	5.70E-04	1.28E-03		6.01E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Antimony-124	6.40E-04	6.39E-04	2.43E-03		6.56E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Antimony-124	1.84E-04	5.72E-04	1.97E-03		5.74E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Antimony-124	7.65E-04	3.88E-04	1.70E-03		4.27E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Antimony-125	-1.01E-04	3.54E-04	1.14E-03		3.54E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Antimony-125	1.72E-04	3.85E-04	1.33E-03		3.87E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Antimony-125	-3.36E-04	4.09E-04	1.27E-03		4.16E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Antimony-125	3.18E-04	3.57E-04	1.13E-03		3.65E-04	pCi/m3	U

API-6(531321006) - A.P. Gross Beta	5-Jan-21	BETA	2.72E-02	2.38E-03	3.36E-03	1.00E-02	2.38E-03	pCi/m3	
API-6(531955006) - A.P. Gross Beta	12-Jan-21	BETA	3.44E-02	2.60E-03	3.43E-03	1.00E-02	2.60E-03	pCi/m3	
API-6(532751006) - A.P. Gross Beta	20-Jan-21	BETA	3.63E-02	2.42E-03	2.66E-03	1.00E-02	2.43E-03	pCi/m3	
API-6(533325006) - A.P. Gross Beta	26-Jan-21	BETA	2.67E-02	2.60E-03	3.78E-03	1.00E-02	2.60E-03	pCi/m3	
API-6(533897006) - A.P. Gross Beta	2-Feb-21	BETA	2.06E-02	2.07E-03	3.08E-03	1.00E-02	2.07E-03	pCi/m3	
API-6(534741006) - A.P. Gross Beta	9-Feb-21	BETA	3.63E-02	2.62E-03	3.07E-03	1.00E-02	2.62E-03	pCi/m3	
API-6(536502006) - A.P. Gross Beta	17-Feb-21	BETA	3.00E-02	2.29E-03	2.87E-03	1.00E-02	2.29E-03	pCi/m3	
API-6(535998006) - A.P. Gross Beta	23-Feb-21	BETA	5.16E-02	3.34E-03	3.76E-03	1.00E-02	3.34E-03	pCi/m3	
API-6(536570006) - A.P. Gross Beta	2-Mar-21	BETA	2.49E-02	2.27E-03	3.22E-03	1.00E-02	2.28E-03	pCi/m3	
API-6(537236006) - A.P. Gross Beta	9-Mar-21	BETA	3.30E-02	2.58E-03	3.40E-03	1.00E-02	2.59E-03	pCi/m3	
API-6(538122006) - A.P. Gross Beta	16-Mar-21	BETA	3.54E-02	2.73E-03	3.57E-03	1.00E-02	2.73E-03	pCi/m3	
API-6(538744006) - A.P. Gross Beta	23-Mar-21	BETA	3.30E-02	2.55E-03	3.19E-03	1.00E-02	2.55E-03	pCi/m3	
API-6(539290006) - A.P. Gross Beta	30-Mar-21	BETA	2.01E-02	2.04E-03	3.08E-03	1.00E-02	2.05E-03	pCi/m3	
API-6(539973006) - A.P. Gross Beta	6-Apr-21	BETA	3.33E-02	2.61E-03	3.29E-03	1.00E-02	2.61E-03	pCi/m3	
API-6(541230006) - A.P. Gross Beta	13-Apr-21	BETA	2.81E-02	2.40E-03	3.33E-03	1.00E-02	2.41E-03	pCi/m3	
API-6(541549006) - A.P. Gross Beta	20-Apr-21	BETA	1.72E-02	1.98E-03	3.27E-03	1.00E-02	1.98E-03	pCi/m3	
API-6(542691006) - A.P. Gross Beta	27-Apr-21	BETA	2.73E-02	2.40E-03	3.29E-03	1.00E-02	2.41E-03	pCi/m3	
API-6(543862006) - A.P. Gross Beta	4-May-21	BETA	2.42E-02	2.27E-03	3.35E-03	1.00E-02	2.27E-03	pCi/m3	
API-6(544556006) - A.P. Gross Beta	11-May-21	BETA	2.04E-02	2.10E-03	3.29E-03	1.00E-02	2.10E-03	pCi/m3	
API-6(544986006) - A.P. Gross Beta	18-May-21	BETA	2.05E-02	2.12E-03	3.32E-03	1.00E-02	2.12E-03	pCi/m3	
API-6(545784006) - A.P. Gross Beta	25-May-21	BETA	3.08E-02	2.52E-03	3.50E-03	1.00E-02	2.52E-03	pCi/m3	
API-6(546205006) - A.P. Gross Beta	1-Jun-21	BETA	2.39E-02	2.30E-03	3.46E-03	1.00E-02	2.30E-03	pCi/m3	
API-6(546774006) - A.P. Gross Beta	8-Jun-21	BETA	2.76E-02	2.33E-03	3.16E-03	1.00E-02	2.34E-03	pCi/m3	
API-6(547399006) - A.P. Gross Beta	15-Jun-21	BETA	2.29E-02	2.24E-03	3.45E-03	1.00E-02	2.24E-03	pCi/m3	
API-6(548375006) - A.P. Gross Beta	22-Jun-21	BETA	1.80E-02	1.95E-03	3.05E-03	1.00E-02	1.95E-03	pCi/m3	
API-6(548551006) - A.P. Gross Beta	29-Jun-21	BETA	3.69E-02	3.87E-03	6.13E-03	1.00E-02	3.87E-03	pCi/m3	
API-6(549016006) - A.P. Gross Beta	6-Jul-21	BETA	2.66E-02	2.85E-03	4.53E-03	1.00E-02	2.85E-03	pCi/m3	
API-6(549605006) - A.P. Gross Beta	13-Jul-21	BETA	2.29E-02	2.17E-03	3.20E-03	1.00E-02	2.18E-03	pCi/m3	
API-6(550237006) - A.P. Gross Beta	17-Jul-21	BETA	3.60E-02	3.70E-03	5.67E-03	1.00E-02	3.70E-03	pCi/m3	
API-6(550833006) - A.P. Gross Beta	27-Jul-21	BETA	2.52E-02	2.26E-03	3.06E-03	1.00E-02	2.26E-03	pCi/m3	
API-6(551675006) - A.P. Gross Beta	3-Aug-21	BETA	3.09E-02	2.49E-03	3.04E-03	1.00E-02	2.49E-03	pCi/m3	
API-6(552413006) - A.P. Gross Beta	10-Aug-21	BETA	3.86E-02	2.68E-03	2.99E-03	1.00E-02	2.68E-03	pCi/m3	
API-6(553054006) - A.P. Gross Beta	17-Aug-21	BETA	2.84E-02	2.44E-03	3.23E-03	1.00E-02	2.45E-03	pCi/m3	
API-6(553768006) - A.P. Gross Beta	24-Aug-21	BETA	3.38E-02	2.63E-03	3.30E-03	1.00E-02	2.63E-03	pCi/m3	
API-6(554850006) - A.P. Gross Beta	31-Aug-21	BETA	3.28E-02	2.49E-03	3.02E-03	1.00E-02	2.49E-03	pCi/m3	
API-6(555058006) - A.P. Gross Beta	7-Sep-21	BETA	2.23E-02	2.15E-03	3.04E-03	1.00E-02	2.15E-03	pCi/m3	
API-6(555852006) - A.P. Gross Beta	14-Sep-21	BETA	3.60E-02	2.71E-03	3.62E-03	1.00E-02	2.71E-03	pCi/m3	
API-6(556501006) - A.P. Gross Beta	21-Sep-21	BETA	3.40E-02	2.52E-03	2.99E-03	1.00E-02	2.52E-03	pCi/m3	
API-6(557195006) - A.P. Gross Beta	28-Sep-21	BETA	3.99E-02	2.76E-03	3.15E-03	1.00E-02	2.76E-03	pCi/m3	

API-6(557995006) - A.P. Gross Beta	5-Oct-21	BETA	4.10E-02	2.87E-03	3.64E-03	1.00E-02	2.88E-03	pCi/m3	
API-6(559006006) - A.P. Gross Beta	12-Oct-21	BETA	4.65E-02	3.00E-03	3.49E-03	1.00E-02	3.00E-03	pCi/m3	
API-6(559466006) - A.P. Gross Beta	19-Oct-21	BETA	4.32E-02	2.92E-03	3.20E-03	1.00E-02	2.93E-03	pCi/m3	
API-6(560248006) - A.P. Gross Beta	26-Oct-21	BETA	4.02E-02	2.73E-03	3.07E-03	1.00E-02	2.73E-03	pCi/m3	
API-6(561045006) - A.P. Gross Beta	2-Nov-21	BETA	3.51E-02	2.65E-03	3.17E-03	1.00E-02	2.65E-03	pCi/m3	
API-6(561652006) - A.P. Gross Beta	9-Nov-21	BETA	4.97E-02	3.07E-03	3.12E-03	1.00E-02	3.08E-03	pCi/m3	
API-6(562795006) - A.P. Gross Beta	16-Nov-21	BETA	3.69E-02	2.66E-03	3.05E-03	1.00E-02	2.66E-03	pCi/m3	
API-6(563578006) - A.P. Gross Beta	23-Nov-21	BETA	3.97E-02	2.76E-03	3.10E-03	1.00E-02	2.76E-03	pCi/m3	
API-6(563687006) - A.P. Gross Beta	30-Nov-21	BETA	3.30E-02	2.54E-03	3.09E-03	1.00E-02	2.54E-03	pCi/m3	
API-6(564729006) - A.P. Gross Beta	7-Dec-21	BETA	4.31E-02	2.88E-03	3.32E-03	1.00E-02	2.89E-03	pCi/m3	
API-6(565422006) - A.P. Gross Beta	14-Dec-21	BETA	4.95E-02	3.07E-03	3.33E-03	1.00E-02	3.08E-03	pCi/m3	
API-6(565770006) - A.P. Gross Beta	21-Dec-21	BETA	5.01E-02	3.07E-03	3.29E-03	1.00E-02	3.07E-03	pCi/m3	
API-6(566010006) - A.P. Gross Beta	28-Dec-21	BETA	6.69E-02	3.53E-03	3.34E-03	1.00E-02	3.54E-03	pCi/m3	
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Barium-140	-4.71E-04	3.39E-03	1.09E-02		3.39E-03	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Barium-140	4.51E-03	5.54E-03	1.95E-02		5.64E-03	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Barium-140	-1.67E-03	5.04E-03	1.60E-02		5.05E-03	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Barium-140	2.43E-03	2.23E-03	7.80E-03		2.30E-03	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Beryllium-7	6.53E-02	4.51E-03	5.31E-03		5.60E-03	pCi/m3	
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Beryllium-7	5.09E-02	4.77E-03	5.35E-03		5.35E-03	pCi/m3	
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Beryllium-7	4.33E-02	5.15E-03	6.10E-03		5.59E-03	pCi/m3	
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Beryllium-7	6.37E-02	4.23E-03	4.96E-03		5.25E-03	pCi/m3	
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Cerium-141	3.69E-05	2.95E-04	9.29E-04		2.95E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Cerium-141	-5.06E-04	4.22E-04	1.22E-03		4.38E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Cerium-141	-1.54E-03	4.99E-04	1.23E-03		6.15E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Cerium-141	8.15E-05	2.74E-04	8.65E-04		2.74E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Cerium-144	-6.25E-04	5.57E-04	1.63E-03		5.77E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Cerium-144	7.09E-04	6.70E-04	2.32E-03		6.91E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Cerium-144	1.03E-03	8.05E-04	2.72E-03		8.41E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Cerium-144	-2.95E-05	6.15E-04	1.92E-03		6.15E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Cesium-134	1.97E-04	1.49E-04	5.59E-04	5.00E-02	1.56E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Cesium-134	-2.26E-04	1.95E-04	5.33E-04	5.00E-02	2.02E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Cesium-134	6.46E-05	1.72E-04	5.73E-04	5.00E-02	1.73E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Cesium-134	2.54E-05	1.33E-04	4.57E-04	5.00E-02	1.33E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Cesium-137	-1.58E-04	1.61E-04	4.68E-04	6.00E-02	1.66E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Cesium-137	-2.29E-04	1.41E-04	3.60E-04	6.00E-02	1.51E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Cesium-137	-2.82E-05	1.79E-04	5.69E-04	6.00E-02	1.80E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Cesium-137	-1.32E-04	1.49E-04	4.34E-04	6.00E-02	1.52E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Chromium-51	1.46E-03	2.15E-03	7.47E-03		2.17E-03	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Chromium-51	1.95E-03	2.79E-03	9.96E-03		2.83E-03	pCi/m3	U

API-6(560833006) - A.P. Gross Beta	28-Sep-21	Chromium-51	3.25E-03	2.75E-03	9.89E-03		2.85E-03	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Chromium-51	1.32E-03	1.70E-03	5.93E-03		1.73E-03	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Cobalt-57	8.59E-05	7.18E-05	2.42E-04		7.48E-05	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Cobalt-57	-7.54E-05	7.40E-05	2.27E-04		7.61E-05	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Cobalt-57	5.09E-05	9.91E-05	3.23E-04		9.98E-05	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Cobalt-57	-2.75E-05	7.30E-05	2.24E-04		7.33E-05	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Cobalt-58	-3.13E-04	2.12E-04	6.24E-04		2.25E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Cobalt-58	-8.45E-05	2.07E-04	5.31E-04		2.08E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Cobalt-58	-1.06E-04	2.66E-04	8.09E-04		2.67E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Cobalt-58	3.16E-05	1.34E-04	4.63E-04		1.34E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Iodine-131	-4.76E-03	2.40E-03	6.66E-03		2.65E-03	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Iodine-131	-1.71E-03	6.41E-03	2.13E-02		6.42E-03	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Iodine-131	-4.10E-03	4.07E-03	1.26E-02		4.19E-03	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Iodine-131	4.97E-04	1.28E-03	4.34E-03		1.28E-03	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Iron-59	2.43E-04	4.12E-04	1.48E-03		4.16E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Iron-59	1.42E-03	6.50E-04	2.57E-03		7.32E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Iron-59	-1.29E-03	5.85E-04	1.50E-03		6.60E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Iron-59	-1.35E-04	3.38E-04	1.05E-03		3.39E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Lanthanum-140	-1.50E-03	1.37E-03	3.51E-03		1.41E-03	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Lanthanum-140	4.32E-03	2.97E-03	1.14E-02		3.14E-03	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Lanthanum-140	1.41E-03	1.48E-03	5.67E-03		1.52E-03	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Lanthanum-140	-2.84E-04	8.58E-04	2.77E-03		8.61E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Manganese-54	-2.81E-04	1.51E-04	4.15E-04		1.65E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Manganese-54	-1.10E-05	1.52E-04	4.75E-04		1.52E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Manganese-54	1.86E-05	1.87E-04	5.72E-04		1.87E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Manganese-54	1.36E-05	1.14E-04	3.88E-04		1.14E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Niobium-95	5.58E-04	3.15E-04	6.44E-04		3.17E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Niobium-95	2.40E-04	2.41E-04	8.53E-04		2.47E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Niobium-95	2.36E-04	2.95E-04	1.00E-03		3.00E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Niobium-95	-1.61E-04	1.66E-04	5.13E-04		1.71E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Potassium-40	1.02E-02	3.91E-03	6.44E-03		3.94E-03	pCi/m3	
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Potassium-40	1.67E-02	3.44E-03	3.76E-03		3.55E-03	pCi/m3	
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Potassium-40	1.18E-02	4.09E-03	4.46E-03		4.14E-03	pCi/m3	
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Potassium-40	1.28E-02	2.99E-03	4.42E-03		3.06E-03	pCi/m3	
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Ruthenium-103	4.14E-05	2.52E-04	8.31E-04		2.52E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Ruthenium-103	2.15E-04	3.13E-04	1.09E-03		3.17E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Ruthenium-103	1.65E-04	2.66E-04	9.17E-04		2.69E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Ruthenium-103	7.65E-05	1.70E-04	5.71E-04		1.71E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Ruthenium-106	-8.03E-04	1.50E-03	4.43E-03		1.51E-03	pCi/m3	U

API-6(552150006) - A.P. Gross Beta	29-Jun-21	Ruthenium-106	-2.92E-04	1.32E-03	4.20E-03		1.33E-03	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Ruthenium-106	-4.30E-03	1.64E-03	3.93E-03		1.93E-03	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Ruthenium-106	-1.52E-03	1.18E-03	3.27E-03		1.24E-03	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Selenium-75	-7.29E-05	1.67E-04	5.34E-04		1.68E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Selenium-75	-3.13E-05	2.14E-04	6.62E-04		2.14E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Selenium-75	2.62E-05	2.02E-04	6.90E-04		2.03E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Selenium-75	3.14E-05	1.38E-04	4.68E-04		1.38E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Silver-108m	-1.63E-04	1.22E-04	3.64E-04		1.28E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Silver-108m	1.95E-04	1.25E-04	4.62E-04		1.33E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Silver-108m	9.26E-05	1.19E-04	4.17E-04		1.21E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Silver-108m	3.23E-04	1.82E-04	3.23E-04		2.13E-04	pCi/m3	UI
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Silver-110m	-2.26E-04	1.97E-04	5.77E-04		2.04E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Silver-110m	6.57E-04	1.90E-04	8.21E-04		2.46E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Silver-110m	-8.31E-05	2.36E-04	7.73E-04		2.37E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Silver-110m	2.58E-05	1.96E-04	6.63E-04		1.96E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Zinc-65	4.55E-05	4.23E-04	1.26E-03		4.23E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Zinc-65	-3.70E-05	3.37E-04	1.10E-03		3.37E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Zinc-65	-3.60E-04	4.53E-04	1.39E-03		4.61E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Zinc-65	-2.42E-04	3.35E-04	1.01E-03		3.39E-04	pCi/m3	U
API-6(543402006) - A.P. Gross Beta	30-Mar-21	Zirconium-95	3.91E-04	3.62E-04	1.28E-03		3.74E-04	pCi/m3	U
API-6(552150006) - A.P. Gross Beta	29-Jun-21	Zirconium-95	2.00E-05	4.25E-04	1.22E-03		4.26E-04	pCi/m3	U
API-6(560833006) - A.P. Gross Beta	28-Sep-21	Zirconium-95	-1.44E-04	4.33E-04	1.36E-03		4.34E-04	pCi/m3	U
API-6(568417006) - A.P. Gross Beta	28-Dec-21	Zirconium-95	-6.45E-07	3.19E-04	1.08E-03		3.19E-04	pCi/m3	U

DW-1

Drinking Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
DW-1(533330001) - Drinking Water	26-Jan-21	Actinium-228	-2.33E+00	2.96E+00	7.22E+00		3.01E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Actinium-228	3.17E-01	5.29E+00	7.85E+00		5.29E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Actinium-228	-1.98E+00	3.27E+00	8.55E+00		3.31E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Actinium-228	3.80E-01	5.41E+00	9.68E+00		5.41E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Actinium-228	9.65E-01	4.80E+00	7.59E+00		4.81E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Actinium-228	8.38E-02	5.04E+00	7.43E+00		5.04E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Actinium-228	-1.58E+00	4.53E+00	1.06E+01		4.55E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Actinium-228	-1.59E+00	3.34E+00	7.50E+00		3.36E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Actinium-228	2.08E+00	4.99E+00	7.14E+00		5.02E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Actinium-228	-3.59E+00	3.90E+00	6.56E+00		3.99E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Actinium-228	-3.88E+00	4.35E+00	8.75E+00		4.45E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Actinium-228	-3.46E+00	3.15E+00	7.22E+00		3.26E+00	pCi/L	U

DW-1(533330001) - Drinking Water	26-Jan-21	Antimony-124	-3.00E-02	1.03E+00	3.33E+00		1.03E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Antimony-124	-6.21E-01	1.29E+00	4.22E+00		1.30E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Antimony-124	-1.13E+00	1.29E+00	3.85E+00		1.32E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Antimony-124	-2.44E+00	1.81E+00	5.43E+00		1.90E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Antimony-124	-4.48E-02	1.26E+00	4.08E+00		1.26E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Antimony-124	-1.22E+00	1.54E+00	4.31E+00		1.57E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Antimony-124	7.73E-01	2.10E+00	6.89E+00		2.11E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Antimony-124	-1.61E+00	1.24E+00	3.56E+00		1.29E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Antimony-124	-6.75E-01	1.41E+00	3.85E+00		1.42E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Antimony-124	-1.42E+00	1.03E+00	3.07E+00		1.09E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Antimony-124	-6.48E-01	1.44E+00	4.64E+00		1.45E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Antimony-124	3.61E-01	1.14E+00	3.80E+00		1.14E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Antimony-125	2.11E-01	1.18E+00	3.94E+00		1.18E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Antimony-125	9.45E-01	1.35E+00	4.57E+00		1.37E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Antimony-125	-1.33E+00	1.32E+00	4.24E+00		1.35E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Antimony-125	-1.39E+00	1.72E+00	5.39E+00		1.75E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Antimony-125	-2.12E+00	1.27E+00	3.88E+00		1.36E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Antimony-125	2.66E-02	1.21E+00	3.86E+00		1.21E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Antimony-125	-3.37E-01	1.58E+00	5.17E+00		1.59E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Antimony-125	-5.76E-02	1.29E+00	4.33E+00		1.29E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Antimony-125	1.60E+00	1.28E+00	4.45E+00		1.34E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Antimony-125	2.87E-01	1.09E+00	3.73E+00		1.09E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Antimony-125	-4.65E-01	1.37E+00	4.45E+00		1.37E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Antimony-125	1.41E-01	1.32E+00	4.01E+00		1.33E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	BETA	-1.45E+00	9.11E-01	3.18E+00	4.00E+00	9.11E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	BETA	2.81E+00	1.05E+00	2.94E+00	4.00E+00	1.08E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	BETA	2.71E+00	1.22E+00	3.51E+00	4.00E+00	1.24E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	BETA	6.13E-01	1.13E+00	3.59E+00	4.00E+00	1.14E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	BETA	-1.99E-01	1.04E+00	3.44E+00	4.00E+00	1.04E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	BETA	7.72E-01	8.74E-01	2.69E+00	4.00E+00	8.76E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	BETA	2.95E+00	1.21E+00	3.39E+00	4.00E+00	1.24E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	BETA	-1.11E+00	8.29E-01	2.99E+00	4.00E+00	8.29E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	BETA	1.68E+00	8.95E-01	2.50E+00	4.00E+00	9.07E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	BETA	2.60E+00	1.02E+00	2.83E+00	4.00E+00	1.04E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	BETA	9.66E-01	1.04E+00	3.24E+00	4.00E+00	1.05E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	BETA	1.59E+00	9.42E-01	2.72E+00	4.00E+00	9.52E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Barium-140	5.75E-01	1.74E+00	5.76E+00	1.50E+01	1.74E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Barium-140	3.46E+00	2.80E+00	9.61E+00	1.50E+01	2.92E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Barium-140	2.41E+00	2.66E+00	9.05E+00	1.50E+01	2.72E+00	pCi/L	U

DW-1(542322001) - Drinking Water	27-Apr-21	Barium-140	-4.32E+00	4.78E+00	1.07E+01	1.50E+01	4.89E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Barium-140	1.24E+01	9.16E+00	1.34E+01	1.50E+01	9.61E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Barium-140	2.45E+00	3.38E+00	1.17E+01	1.50E+01	3.43E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Barium-140	3.08E+00	3.72E+00	1.24E+01	1.50E+01	3.79E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Barium-140	2.96E+00	2.82E+00	9.62E+00	1.50E+01	2.91E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Barium-140	1.38E+00	2.55E+00	8.59E+00	1.50E+01	2.57E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Barium-140	-3.46E+00	2.42E+00	7.70E+00	1.50E+01	2.55E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Barium-140	-1.15E+00	4.04E+00	1.30E+01	1.50E+01	4.05E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Barium-140	1.05E+00	2.52E+00	8.46E+00	1.50E+01	2.53E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Beryllium-7	-3.48E-01	3.52E+00	1.16E+01		3.52E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Beryllium-7	7.90E+00	4.40E+00	1.48E+01		4.77E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Beryllium-7	2.92E+00	4.45E+00	1.51E+01		4.50E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Beryllium-7	1.60E+01	8.03E+00	1.66E+01		8.06E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Beryllium-7	4.54E+00	4.65E+00	1.55E+01		4.77E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Beryllium-7	-3.97E+00	5.20E+00	1.42E+01		5.28E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Beryllium-7	7.72E+00	5.42E+00	1.85E+01		5.71E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Beryllium-7	5.14E-01	4.17E+00	1.39E+01		4.17E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Beryllium-7	-6.43E+00	4.33E+00	1.39E+01		4.58E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Beryllium-7	-6.04E-01	3.58E+00	1.20E+01		3.58E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Beryllium-7	-4.59E-01	4.91E+00	1.60E+01		4.91E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Beryllium-7	3.98E+00	4.16E+00	1.43E+01		4.26E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Cerium-141	9.17E-02	8.53E-01	2.48E+00		8.53E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Cerium-141	1.03E+00	2.09E+00	3.47E+00		2.09E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Cerium-141	-1.26E+00	9.37E-01	2.94E+00		9.82E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Cerium-141	-2.38E+00	1.25E+00	3.70E+00		1.37E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Cerium-141	1.69E+00	2.05E+00	3.37E+00		2.05E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Cerium-141	-1.91E+00	9.47E-01	3.12E+00		1.05E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Cerium-141	-5.37E-01	9.30E-01	2.87E+00		9.39E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Cerium-141	-5.25E+00	1.49E+00	2.73E+00		1.93E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Cerium-141	-1.38E+00	8.92E-01	2.80E+00		9.49E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Cerium-141	-3.42E+00	1.33E+00	2.75E+00		1.55E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Cerium-141	4.81E-01	1.27E+00	3.90E+00		1.28E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Cerium-141	-7.11E+00	1.45E+00	2.83E+00		2.21E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Cerium-144	-5.90E+00	3.20E+00	9.73E+00		3.49E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Cerium-144	-6.54E+00	3.75E+00	1.24E+01		4.05E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Cerium-144	-4.20E+00	3.36E+00	1.06E+01		3.50E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Cerium-144	-1.03E+00	4.17E+00	1.30E+01		4.18E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Cerium-144	4.34E-01	3.27E+00	1.11E+01		3.28E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Cerium-144	2.06E+00	3.10E+00	1.07E+01		3.14E+00	pCi/L	U

DW-1(550834001) - Drinking Water	27-Jul-21	Cerium-144	-3.25E+00	3.31E+00	1.02E+01		3.39E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Cerium-144	-2.14E+00	2.96E+00	9.52E+00		3.00E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Cerium-144	-7.22E-01	3.21E+00	1.04E+01		3.22E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Cerium-144	-2.08E+00	2.76E+00	8.90E+00		2.80E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Cerium-144	4.38E-01	3.72E+00	1.26E+01		3.72E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Cerium-144	-2.35E+00	4.38E+00	1.09E+01		4.42E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Cesium-134	7.83E-01	5.01E-01	1.71E+00	1.50E+01	5.34E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Cesium-134	1.46E+00	5.75E-01	1.92E+00	1.50E+01	6.70E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Cesium-134	1.79E+00	5.28E-01	1.79E+00	1.50E+01	7.14E-01	pCi/L	UI
DW-1(542322001) - Drinking Water	27-Apr-21	Cesium-134	-6.21E-01	6.61E-01	2.10E+00	1.50E+01	6.76E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Cesium-134	4.26E-01	4.81E-01	1.68E+00	1.50E+01	4.91E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Cesium-134	1.89E-01	4.98E-01	1.67E+00	1.50E+01	5.00E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Cesium-134	-1.70E-01	6.79E-01	2.28E+00	1.50E+01	6.80E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Cesium-134	1.36E+00	5.29E-01	1.89E+00	1.50E+01	6.18E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Cesium-134	-1.08E-01	5.31E-01	1.69E+00	1.50E+01	5.31E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Cesium-134	3.83E-01	4.74E-01	1.60E+00	1.50E+01	4.82E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Cesium-134	-7.45E-01	8.85E-01	1.91E+00	1.50E+01	9.02E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Cesium-134	1.20E+00	5.37E-01	1.91E+00	1.50E+01	6.06E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Cesium-137	2.20E-02	4.50E-01	1.46E+00	1.80E+01	4.50E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Cesium-137	-3.47E-01	5.79E-01	1.85E+00	1.80E+01	5.84E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Cesium-137	-1.28E+00	8.92E-01	2.22E+00	1.80E+01	9.41E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Cesium-137	-4.13E-01	6.36E-01	2.09E+00	1.80E+01	6.44E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Cesium-137	-8.41E-01	5.19E-01	1.54E+00	1.80E+01	5.55E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Cesium-137	-2.54E-01	4.91E-01	1.41E+00	1.80E+01	4.94E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Cesium-137	-3.46E-01	1.02E+00	2.34E+00	1.80E+01	1.03E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Cesium-137	3.93E-01	5.09E-01	1.70E+00	1.80E+01	5.17E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Cesium-137	8.32E-01	5.15E-01	1.77E+00	1.80E+01	5.51E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Cesium-137	1.73E-01	4.27E-01	1.44E+00	1.80E+01	4.29E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Cesium-137	6.30E-01	5.69E-01	1.91E+00	1.80E+01	5.88E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Cesium-137	-8.20E-02	4.72E-01	1.53E+00	1.80E+01	4.73E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Chromium-51	-3.08E+00	3.78E+00	1.25E+01		3.85E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Chromium-51	7.72E+00	5.28E+00	1.82E+01		5.59E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Chromium-51	-7.78E-02	4.50E+00	1.53E+01		4.50E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Chromium-51	5.32E+00	6.28E+00	2.03E+01		6.41E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Chromium-51	-6.29E+00	5.70E+00	1.82E+01		5.88E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Chromium-51	-1.51E+00	5.09E+00	1.65E+01		5.10E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Chromium-51	-9.72E+00	5.48E+00	1.75E+01		5.94E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Chromium-51	7.27E+00	6.93E+00	1.46E+01		6.94E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Chromium-51	9.07E-01	5.17E+00	1.60E+01		5.18E+00	pCi/L	U

DW-1(560208003) - Drinking Water	26-Oct-21	Chromium-51	-1.82E-01	4.36E+00	1.36E+01		4.36E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Chromium-51	1.71E+00	5.61E+00	1.87E+01		5.62E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Chromium-51	-6.05E+00	4.62E+00	1.52E+01		4.83E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Cobalt-57	-3.42E-02	4.16E-01	1.32E+00		4.16E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Cobalt-57	2.21E-01	4.89E-01	1.67E+00		4.92E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Cobalt-57	3.00E-01	4.19E-01	1.39E+00		4.25E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Cobalt-57	-1.44E-01	6.00E-01	1.88E+00		6.01E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Cobalt-57	4.37E-02	4.43E-01	1.51E+00		4.44E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Cobalt-57	4.68E-01	5.61E-01	1.37E+00		5.61E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Cobalt-57	-6.57E-01	4.16E-01	1.26E+00		4.43E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Cobalt-57	-2.37E-01	3.97E-01	1.29E+00		4.01E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Cobalt-57	-1.55E-01	4.17E-01	1.35E+00		4.18E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Cobalt-57	1.96E-01	3.63E-01	1.21E+00		3.66E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Cobalt-57	8.04E-01	4.89E-01	1.70E+00		5.24E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Cobalt-57	3.09E-02	4.13E-01	1.35E+00		4.13E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Cobalt-58	-1.46E-02	4.10E-01	1.31E+00	1.50E+01	4.10E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Cobalt-58	3.77E-02	5.32E-01	1.65E+00	1.50E+01	5.33E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Cobalt-58	6.09E-02	4.96E-01	1.59E+00	1.50E+01	4.96E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Cobalt-58	-7.52E-02	5.85E-01	1.93E+00	1.50E+01	5.85E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Cobalt-58	-2.46E-01	5.33E-01	1.77E+00	1.50E+01	5.37E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Cobalt-58	2.38E-01	5.23E-01	1.55E+00	1.50E+01	5.26E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Cobalt-58	-4.46E-01	6.31E-01	2.08E+00	1.50E+01	6.39E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Cobalt-58	5.04E-01	5.21E-01	1.73E+00	1.50E+01	5.34E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Cobalt-58	-1.04E+00	7.60E-01	1.67E+00	1.50E+01	7.98E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Cobalt-58	1.71E-01	4.59E-01	1.52E+00	1.50E+01	4.61E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Cobalt-58	-1.82E-01	5.50E-01	1.73E+00	1.50E+01	5.51E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Cobalt-58	-4.96E-03	4.89E-01	1.57E+00	1.50E+01	4.89E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Cobalt-60	2.64E-01	3.86E-01	1.34E+00	1.50E+01	3.91E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Cobalt-60	7.22E-01	6.48E-01	2.18E+00	1.50E+01	6.70E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Cobalt-60	-6.74E-01	5.55E-01	1.68E+00	1.50E+01	5.77E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Cobalt-60	2.34E-01	7.11E-01	2.44E+00	1.50E+01	7.13E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Cobalt-60	-4.15E-01	4.90E-01	1.54E+00	1.50E+01	5.00E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Cobalt-60	1.81E-01	4.99E-01	1.70E+00	1.50E+01	5.01E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Cobalt-60	5.64E-01	7.09E-01	2.42E+00	1.50E+01	7.21E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Cobalt-60	-5.13E-02	5.35E-01	1.74E+00	1.50E+01	5.35E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Cobalt-60	3.21E-01	4.39E-01	1.51E+00	1.50E+01	4.45E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Cobalt-60	3.01E-01	4.13E-01	1.45E+00	1.50E+01	4.19E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Cobalt-60	2.92E-01	5.35E-01	1.85E+00	1.50E+01	5.40E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Cobalt-60	3.24E-01	4.76E-01	1.65E+00	1.50E+01	4.82E-01	pCi/L	U

DW-1(533330001) - Drinking Water	26-Jan-21	Iodine-131	-8.87E-01	5.56E-01	1.78E+00		5.93E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Iodine-131	1.62E+00	1.14E+00	3.92E+00		1.20E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Iodine-131	2.66E-01	8.64E-01	2.95E+00		8.66E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Iodine-131	5.71E-01	1.38E+00	4.57E+00		1.38E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Iodine-131	-6.84E-01	1.77E+00	5.74E+00		1.78E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Iodine-131	-1.58E+00	1.72E+00	4.79E+00		1.76E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Iodine-131	2.43E-01	1.31E+00	4.36E+00		1.31E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Iodine-131	9.82E-01	1.00E+00	3.48E+00		1.03E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Iodine-131	5.34E-01	1.04E+00	3.56E+00		1.04E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Iodine-131	5.39E-01	9.09E-01	3.18E+00		9.18E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Iodine-131	1.33E+00	1.76E+00	5.93E+00		1.79E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Iodine-131	-9.82E-01	8.97E-01	2.93E+00		9.26E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Iron-59	4.14E-04	1.29E+00	3.03E+00	3.00E+01	1.29E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Iron-59	2.87E-02	1.09E+00	3.49E+00	3.00E+01	1.09E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Iron-59	-3.85E-01	1.05E+00	3.44E+00	3.00E+01	1.05E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Iron-59	-1.33E-01	1.40E+00	4.51E+00	3.00E+01	1.40E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Iron-59	1.27E+00	1.12E+00	3.91E+00	3.00E+01	1.16E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Iron-59	3.27E-01	1.08E+00	3.53E+00	3.00E+01	1.09E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Iron-59	9.43E-01	1.41E+00	4.84E+00	3.00E+01	1.43E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Iron-59	3.92E+00	5.00E+00	3.92E+00	3.00E+01	5.14E+00	pCi/L	UI
DW-1(557418003) - Drinking Water	28-Sep-21	Iron-59	2.78E+00	6.94E-01	2.85E+00	3.00E+01	9.56E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Iron-59	-4.07E-01	1.05E+00	3.27E+00	3.00E+01	1.05E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Iron-59	-2.98E+00	1.05E+00	3.01E+00	3.00E+01	1.26E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Iron-59	4.99E-01	9.95E-01	3.44E+00	3.00E+01	1.00E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Lanthanum-140	-1.48E+00	6.78E-01	1.93E+00	1.50E+01	7.62E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Lanthanum-140	-5.43E-01	9.75E-01	2.76E+00	1.50E+01	9.84E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Lanthanum-140	2.43E-01	7.82E-01	2.59E+00	1.50E+01	7.84E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Lanthanum-140	-1.08E+00	1.30E+00	4.07E+00	1.50E+01	1.32E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Lanthanum-140	1.01E+00	1.31E+00	4.45E+00	1.50E+01	1.33E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Lanthanum-140	-2.07E+00	1.20E+00	3.61E+00	1.50E+01	1.30E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Lanthanum-140	-6.11E-01	1.40E+00	4.41E+00	1.50E+01	1.41E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Lanthanum-140	8.77E-01	9.76E-01	3.32E+00	1.50E+01	9.97E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Lanthanum-140	-1.28E-01	8.63E-01	2.80E+00	1.50E+01	8.63E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Lanthanum-140	-4.29E-02	8.36E-01	2.77E+00	1.50E+01	8.36E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Lanthanum-140	-1.04E+00	1.46E+00	4.65E+00	1.50E+01	1.48E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Lanthanum-140	1.80E+00	1.09E+00	3.31E+00	1.50E+01	1.17E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Manganese-54	2.74E-02	4.25E-01	1.36E+00	1.50E+01	4.25E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Manganese-54	6.74E-01	4.58E-01	1.59E+00	1.50E+01	4.84E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Manganese-54	-5.00E-01	5.40E-01	1.63E+00	1.50E+01	5.53E-01	pCi/L	U

DW-1(542322001) - Drinking Water	27-Apr-21	Manganese-54	-4.62E-01	5.61E-01	1.78E+00	1.50E+01	5.72E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Manganese-54	7.43E-01	4.74E-01	1.69E+00	1.50E+01	5.05E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Manganese-54	5.06E-01	4.55E-01	1.56E+00	1.50E+01	4.71E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Manganese-54	-2.85E-01	6.07E-01	2.02E+00	1.50E+01	6.11E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Manganese-54	-1.28E-01	4.94E-01	1.54E+00	1.50E+01	4.95E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Manganese-54	2.18E-01	5.31E-01	1.55E+00	1.50E+01	5.33E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Manganese-54	-1.46E+00	6.29E-01	1.16E+00	1.50E+01	7.16E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Manganese-54	-7.60E-01	4.92E-01	1.45E+00	1.50E+01	5.23E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Manganese-54	-1.12E-01	4.90E-01	1.55E+00	1.50E+01	4.91E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Niobium-95	-8.01E-01	4.86E-01	1.45E+00	1.50E+01	5.21E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Niobium-95	-7.08E-01	8.60E-01	1.66E+00	1.50E+01	8.76E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Niobium-95	7.51E-01	5.23E-01	1.79E+00	1.50E+01	5.52E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Niobium-95	3.02E-01	6.64E-01	2.25E+00	1.50E+01	6.67E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Niobium-95	4.37E-01	5.63E-01	1.75E+00	1.50E+01	5.73E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Niobium-95	1.54E+00	1.10E+00	1.54E+00	1.50E+01	1.11E+00	pCi/L	UI
DW-1(550834001) - Drinking Water	27-Jul-21	Niobium-95	9.76E-01	6.49E-01	2.32E+00	1.50E+01	6.88E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Niobium-95	5.03E-01	5.39E-01	1.79E+00	1.50E+01	5.52E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Niobium-95	1.02E+00	5.43E-01	1.86E+00	1.50E+01	5.94E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Niobium-95	-4.53E-02	4.73E-01	1.54E+00	1.50E+01	4.73E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Niobium-95	-2.09E+00	9.43E-01	1.95E+00	1.50E+01	1.06E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Niobium-95	1.14E+00	7.46E-01	1.47E+00	1.50E+01	7.48E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Potassium-40	-6.74E+00	8.27E+00	2.42E+01		8.42E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Potassium-40	-1.23E+01	1.16E+01	2.77E+01		1.19E+01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Potassium-40	1.79E+01	1.43E+01	1.79E+01		1.43E+01	pCi/L	UI
DW-1(542322001) - Drinking Water	27-Apr-21	Potassium-40	9.67E+00	1.53E+01	1.87E+01		1.53E+01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Potassium-40	-2.76E+01	1.02E+01	2.13E+01		1.20E+01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Potassium-40	1.54E+01	1.33E+01	1.54E+01		1.34E+01	pCi/L	UI
DW-1(550834001) - Drinking Water	27-Jul-21	Potassium-40	3.34E+01	8.84E+00	3.34E+01		1.20E+01	pCi/L	UI
DW-1(554504003) - Drinking Water	31-Aug-21	Potassium-40	1.78E+01	8.39E+00	1.78E+01		8.43E+00	pCi/L	UI
DW-1(557418003) - Drinking Water	28-Sep-21	Potassium-40	3.27E+00	1.25E+01	1.65E+01		1.25E+01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Potassium-40	-1.81E+00	8.17E+00	2.41E+01		8.18E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Potassium-40	-2.27E+01	1.08E+01	2.46E+01		1.20E+01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Potassium-40	-1.97E+01	8.95E+00	2.03E+01		1.01E+01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Ruthenium-103	7.98E-03	4.60E-01	1.35E+00		4.60E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Ruthenium-103	-1.57E-01	5.78E-01	1.89E+00		5.79E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Ruthenium-103	-1.90E-01	5.56E-01	1.82E+00		5.58E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Ruthenium-103	-6.35E-01	7.32E-01	2.26E+00		7.47E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Ruthenium-103	1.67E-01	6.54E-01	1.90E+00		6.55E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Ruthenium-103	-1.00E+00	5.85E-01	1.75E+00		6.30E-01	pCi/L	U

DW-1(550834001) - Drinking Water	27-Jul-21	Ruthenium-103	-1.14E+00	6.88E-01	2.12E+00		7.38E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Ruthenium-103	1.97E-01	5.42E-01	1.81E+00		5.44E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Ruthenium-103	-1.07E-02	5.50E-01	1.64E+00		5.50E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Ruthenium-103	-9.18E-02	4.87E-01	1.46E+00		4.87E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Ruthenium-103	-5.76E-01	6.05E-01	1.91E+00		6.20E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Ruthenium-103	-6.86E-01	5.24E-01	1.66E+00		5.49E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Ruthenium-106	4.91E+00	3.80E+00	1.29E+01		3.97E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Ruthenium-106	5.84E+00	4.28E+00	1.47E+01		4.50E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Ruthenium-106	-5.88E+00	4.55E+00	1.39E+01		4.75E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Ruthenium-106	-6.36E+00	5.50E+00	1.78E+01		5.70E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Ruthenium-106	1.45E+01	8.58E+00	1.45E+01		8.62E+00	pCi/L	UI
DW-1(548724001) - Drinking Water	29-Jun-21	Ruthenium-106	-7.08E-01	3.97E+00	1.33E+01		3.97E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Ruthenium-106	-6.31E+00	6.07E+00	1.87E+01		6.25E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Ruthenium-106	1.37E+00	4.23E+00	1.39E+01		4.25E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Ruthenium-106	3.47E+00	4.16E+00	1.40E+01		4.24E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Ruthenium-106	3.12E+00	3.51E+00	1.21E+01		3.59E+00	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Ruthenium-106	6.64E+00	5.00E+00	1.70E+01		5.24E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Ruthenium-106	-3.52E+00	4.42E+00	1.40E+01		4.49E+00	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Selenium-75	5.10E-01	5.64E-01	1.96E+00		5.76E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Selenium-75	3.95E-02	7.38E-01	2.47E+00		7.38E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Selenium-75	2.69E-01	7.32E-01	2.31E+00		7.35E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Selenium-75	1.49E-01	8.18E-01	2.74E+00		8.18E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Selenium-75	-1.52E-01	6.66E-01	2.19E+00		6.67E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Selenium-75	4.28E-01	6.26E-01	2.10E+00		6.34E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Selenium-75	2.14E-02	6.96E-01	2.35E+00		6.96E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Selenium-75	-1.12E-01	6.44E-01	2.00E+00		6.45E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Selenium-75	3.31E-01	7.30E-01	2.31E+00		7.34E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Selenium-75	-2.42E-01	5.90E-01	1.85E+00		5.93E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Selenium-75	-4.42E-01	7.55E-01	2.49E+00		7.63E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Selenium-75	8.70E-01	6.48E-01	2.12E+00		6.79E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Silver-108m	3.65E-01	3.90E-01	1.33E+00		3.99E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Silver-108m	-2.28E-01	4.41E-01	1.43E+00		4.44E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Silver-108m	2.05E-01	4.58E-01	1.55E+00		4.60E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Silver-108m	1.72E-01	5.39E-01	1.77E+00		5.41E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Silver-108m	-2.55E-02	4.18E-01	1.35E+00		4.18E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Silver-108m	8.44E-01	3.99E-01	1.36E+00		4.46E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Silver-108m	1.12E-02	5.27E-01	1.73E+00		5.27E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Silver-108m	-3.19E-01	4.06E-01	1.32E+00		4.13E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Silver-108m	1.15E-01	9.10E-01	1.51E+00		9.11E-01	pCi/L	U

DW-1(560208003) - Drinking Water	26-Oct-21	Silver-108m	-3.04E-01	3.77E-01	1.11E+00		3.83E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Silver-108m	2.66E-01	4.73E-01	1.58E+00		4.77E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Silver-108m	-6.43E-02	4.21E-01	1.41E+00		4.22E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Silver-110m	-1.45E+00	5.91E-01	1.63E+00		6.82E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Silver-110m	1.76E+00	9.19E-01	2.38E+00		1.01E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Silver-110m	-5.25E-01	6.04E-01	1.96E+00		6.16E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Silver-110m	-5.72E-02	8.98E-01	2.95E+00		8.98E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Silver-110m	5.66E-01	6.32E-01	2.20E+00		6.45E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Silver-110m	-3.39E-01	6.45E-01	2.07E+00		6.50E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Silver-110m	-7.33E-01	9.09E-01	2.97E+00		9.25E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Silver-110m	3.67E-01	6.75E-01	2.09E+00		6.80E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Silver-110m	9.92E-01	7.04E-01	2.37E+00		7.41E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Silver-110m	-4.76E-01	5.81E-01	1.81E+00		5.92E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Silver-110m	4.83E-02	7.40E-01	2.36E+00		7.40E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Silver-110m	6.80E-01	6.76E-01	2.27E+00		6.95E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Strontium-89	-1.39E+00	8.19E-01	2.94E+00	1.00E+01	9.06E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Strontium-89	8.14E-02	5.04E-01	1.64E+00	1.00E+01	5.35E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Strontium-89	-3.45E-01	7.55E-01	2.53E+00	1.00E+01	7.90E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Strontium-89	-1.10E+00	2.87E-01	1.30E+00	1.00E+01	6.35E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Strontium-89	2.77E-01	6.17E-01	1.95E+00	1.00E+01	7.90E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Strontium-89	1.65E+00	6.27E-01	1.77E+00	1.00E+01	6.59E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Strontium-89	-2.27E-01	4.18E-01	1.43E+00	1.00E+01	5.41E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Strontium-89	1.06E+00	1.31E+00	4.13E+00	1.00E+01	1.37E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Strontium-89	6.81E-01	5.04E-01	1.49E+00	1.00E+01	6.02E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Strontium-89	9.91E-01	8.48E-01	2.62E+00	1.00E+01	9.22E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Strontium-89	-1.39E+00	8.58E-01	3.06E+00	1.00E+01	1.01E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Strontium-89	-9.16E-01	4.45E-01	1.66E+00	1.00E+01	6.15E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Strontium-90	6.01E-02	2.86E-01	1.37E+00	2.00E+00	4.17E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Strontium-90	3.08E-01	1.74E-01	1.04E+00	2.00E+00	3.26E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Strontium-90	3.73E-01	4.55E-01	1.83E+00	2.00E+00	5.74E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Strontium-90	1.60E+00	4.61E-01	1.70E+00	2.00E+00	6.21E-01	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Strontium-90	1.36E-01	4.02E-01	1.70E+00	2.00E+00	5.24E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Strontium-90	-9.28E-01	1.68E-01	1.07E+00	2.00E+00	3.04E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Strontium-90	3.66E-01	3.08E-01	1.64E+00	2.00E+00	5.24E-01	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Strontium-90	-3.09E-01	3.84E-01	1.72E+00	2.00E+00	5.04E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Strontium-90	2.04E-01	4.35E-01	1.58E+00	2.00E+00	4.92E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Strontium-90	-1.03E+00	2.84E-01	1.47E+00	2.00E+00	3.62E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Strontium-90	-4.34E-01	3.68E-01	1.68E+00	2.00E+00	4.79E-01	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Strontium-90	7.21E-01	4.59E-01	1.47E+00	2.00E+00	5.06E-01	pCi/L	U

DW-1(533330001) - Drinking Water	26-Jan-21	Thorium-228	1.58E+00	1.82E+00	2.78E+00		1.82E+00	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Thorium-228	-1.56E+00	1.67E+00	4.09E+00		1.71E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Thorium-228	8.48E-01	1.95E+00	3.93E+00		1.96E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Thorium-228	-7.06E-01	1.90E+00	4.91E+00		1.91E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Thorium-228	-1.02E+00	1.57E+00	3.44E+00		1.58E+00	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Thorium-228	1.33E+00	2.07E+00	2.67E+00		2.07E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Thorium-228	4.87E-01	2.29E+00	3.09E+00		2.29E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Thorium-228	-1.81E+00	1.62E+00	3.37E+00		1.67E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Thorium-228	1.53E+00	2.55E+00	3.54E+00		2.57E+00	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Thorium-228	3.23E+00	2.05E+00	3.23E+00		2.30E+00	pCi/L	UI
DW-1(563685003) - Drinking Water	30-Nov-21	Thorium-228	-2.70E+00	1.79E+00	4.02E+00		1.90E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Thorium-228	9.97E-01	1.55E+00	3.68E+00		1.57E+00	pCi/L	U
DW-1(543406001) - Drinking Water	30-Mar-21	Tritium	-1.53E+01	1.27E+02	4.21E+02	5.00E+02	1.27E+02	pCi/L	U
DW-1(552151001) - Drinking Water	29-Jun-21	Tritium	2.12E+02	1.28E+02	3.95E+02	5.00E+02	1.30E+02	pCi/L	U
DW-1(560834003) - Drinking Water	28-Sep-21	Tritium	1.10E+02	1.24E+02	3.94E+02	5.00E+02	1.24E+02	pCi/L	U
DW-1(568418003) - Drinking Water	28-Dec-21	Tritium	4.42E+01	1.20E+02	3.90E+02	5.00E+02	1.20E+02	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Zinc-65	-9.89E-01	9.57E-01	2.62E+00	3.00E+01	9.85E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Zinc-65	1.98E+00	1.21E+00	4.18E+00	3.00E+01	1.30E+00	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Zinc-65	-8.60E-01	9.93E-01	3.14E+00	3.00E+01	1.01E+00	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Zinc-65	-1.95E-01	1.50E+00	4.44E+00	3.00E+01	1.50E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Zinc-65	2.45E+00	2.34E-01	2.82E+00	3.00E+01	2.53E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Zinc-65	-3.36E-01	1.03E+00	3.26E+00	3.00E+01	1.03E+00	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Zinc-65	-2.01E+00	1.73E+00	4.69E+00	3.00E+01	1.80E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Zinc-65	8.57E-01	1.02E+00	3.16E+00	3.00E+01	1.04E+00	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Zinc-65	-1.34E+00	8.38E-01	2.61E+00	3.00E+01	8.95E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Zinc-65	6.45E-01	9.31E-01	3.08E+00	3.00E+01	9.43E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Zinc-65	-1.63E+00	1.17E+00	3.13E+00	3.00E+01	1.23E+00	pCi/L	U
DW-1(566004003) - Drinking Water	28-Dec-21	Zinc-65	-7.40E-01	9.63E-01	3.10E+00	3.00E+01	9.78E-01	pCi/L	U
DW-1(533330001) - Drinking Water	26-Jan-21	Zirconium-95	3.87E-01	7.08E-01	2.33E+00	1.50E+01	7.14E-01	pCi/L	U
DW-1(535691001) - Drinking Water	23-Feb-21	Zirconium-95	3.94E-02	9.49E-01	3.09E+00	1.50E+01	9.49E-01	pCi/L	U
DW-1(539721001) - Drinking Water	30-Mar-21	Zirconium-95	-6.76E-01	9.01E-01	2.77E+00	1.50E+01	9.15E-01	pCi/L	U
DW-1(542322001) - Drinking Water	27-Apr-21	Zirconium-95	1.89E+00	1.12E+00	4.01E+00	1.50E+01	1.20E+00	pCi/L	U
DW-1(545938001) - Drinking Water	25-May-21	Zirconium-95	7.11E-01	9.18E-01	3.20E+00	1.50E+01	9.33E-01	pCi/L	U
DW-1(548724001) - Drinking Water	29-Jun-21	Zirconium-95	-7.06E-02	8.39E-01	2.77E+00	1.50E+01	8.40E-01	pCi/L	U
DW-1(550834001) - Drinking Water	27-Jul-21	Zirconium-95	1.29E+00	1.30E+00	4.30E+00	1.50E+01	1.34E+00	pCi/L	U
DW-1(554504003) - Drinking Water	31-Aug-21	Zirconium-95	-2.68E-01	9.16E-01	2.89E+00	1.50E+01	9.18E-01	pCi/L	U
DW-1(557418003) - Drinking Water	28-Sep-21	Zirconium-95	-5.08E-02	8.54E-01	2.75E+00	1.50E+01	8.54E-01	pCi/L	U
DW-1(560208003) - Drinking Water	26-Oct-21	Zirconium-95	1.98E-01	7.33E-01	2.44E+00	1.50E+01	7.35E-01	pCi/L	U
DW-1(563685003) - Drinking Water	30-Nov-21	Zirconium-95	1.76E+00	9.85E-01	3.42E+00	1.50E+01	1.07E+00	pCi/L	U

DW-1(566004003) - Drinking Water	28-Dec-21	Zirconium-95	1.07E+00	8.22E-01	2.83E+00	1.50E+01	8.60E-01	pCi/L	U

DW-1QC

Drinking Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
DW-1QC(533330002) - Drinking Water	26-Jan-21	Actinium-228	-1.05E+01	3.64E+00	7.16E+00		4.39E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Actinium-228	4.16E-01	3.59E+00	7.90E+00		3.59E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Actinium-228	5.72E+00	4.32E+00	8.46E+00		4.52E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Actinium-228	3.06E+00	4.31E+00	7.99E+00		4.37E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Actinium-228	-6.29E-01	3.44E+00	6.16E+00		3.44E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Actinium-228	9.69E-01	4.87E+00	5.59E+00		4.87E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Actinium-228	4.04E+00	5.23E+00	7.30E+00		5.32E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Actinium-228	3.53E+00	4.12E+00	4.99E+00		4.13E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Actinium-228	-2.46E+00	2.93E+00	5.07E+00		2.98E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Actinium-228	-2.34E+00	2.99E+00	6.71E+00		3.04E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Actinium-228	-6.27E+00	3.55E+00	8.13E+00		3.85E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Actinium-228	1.02E+01	3.47E+00	1.02E+01		5.16E+00	pCi/L	UI
DW-1QC(533330002) - Drinking Water	26-Jan-21	Antimony-124	1.11E+00	1.08E+00	3.47E+00		1.11E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Antimony-124	1.55E+00	1.43E+00	5.00E+00		1.48E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Antimony-124	6.18E-01	1.36E+00	4.65E+00		1.37E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Antimony-124	1.03E+00	1.19E+00	4.18E+00		1.21E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Antimony-124	-1.57E+00	1.05E+00	3.06E+00		1.11E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Antimony-124	3.30E-01	1.30E+00	3.82E+00		1.30E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Antimony-124	2.01E-01	1.17E+00	3.86E+00		1.18E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Antimony-124	-4.01E-01	1.10E+00	3.37E+00		1.11E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Antimony-124	1.10E+00	1.09E+00	3.86E+00		1.12E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Antimony-124	7.12E-02	1.05E+00	3.50E+00		1.05E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Antimony-124	-1.55E-01	1.33E+00	4.36E+00		1.33E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Antimony-124	3.13E+00	1.40E+00	5.21E+00		1.58E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Antimony-125	-3.12E-01	1.26E+00	4.24E+00		1.26E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Antimony-125	-2.10E-01	1.37E+00	4.56E+00		1.37E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Antimony-125	3.66E+00	1.96E+00	4.03E+00		2.14E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Antimony-125	3.02E+00	1.41E+00	4.87E+00		1.58E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Antimony-125	-2.39E+00	1.08E+00	3.43E+00		1.21E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Antimony-125	1.45E+00	1.28E+00	4.43E+00		1.32E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Antimony-125	8.41E-03	1.29E+00	4.33E+00		1.29E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Antimony-125	-1.17E+00	1.13E+00	3.65E+00		1.16E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Antimony-125	1.39E+00	1.18E+00	3.62E+00		1.23E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Antimony-125	-2.31E-01	1.16E+00	3.82E+00		1.17E+00	pCi/L	U

DW-1QC(563685004) - Drinking Water	30-Nov-21	Antimony-125	1.12E+00	1.91E+00	4.44E+00		1.93E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Antimony-125	-2.71E-01	1.62E+00	5.34E+00		1.62E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	BETA	-2.00E-01	9.10E-01	3.02E+00	4.00E+00	9.10E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	BETA	1.58E+00	7.50E-01	1.97E+00	4.00E+00	7.63E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	BETA	2.45E+00	1.21E+00	3.53E+00	4.00E+00	1.23E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	BETA	4.92E-01	7.72E-01	2.37E+00	4.00E+00	7.74E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	BETA	1.38E+00	7.82E-01	2.14E+00	4.00E+00	7.91E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	BETA	2.50E+00	9.81E-01	2.64E+00	4.00E+00	1.00E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	BETA	2.69E+00	1.20E+00	3.55E+00	4.00E+00	1.22E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	BETA	8.19E-01	7.60E-01	2.25E+00	4.00E+00	7.64E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	BETA	-1.74E-02	1.10E+00	3.60E+00	4.00E+00	1.10E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	BETA	6.84E-01	1.02E+00	3.26E+00	4.00E+00	1.02E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	BETA	1.34E+00	1.09E+00	3.32E+00	4.00E+00	1.09E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	BETA	2.25E+00	1.10E+00	3.20E+00	4.00E+00	1.12E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Barium-140	1.71E+00	1.94E+00	6.67E+00	1.50E+01	1.98E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Barium-140	-4.57E+00	2.93E+00	9.13E+00	1.50E+01	3.12E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Barium-140	3.02E+00	2.36E+00	8.36E+00	1.50E+01	2.46E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Barium-140	-6.19E+00	3.32E+00	9.16E+00	1.50E+01	3.62E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Barium-140	-5.63E+00	5.65E+00	1.13E+01	1.50E+01	5.80E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Barium-140	-7.31E-01	3.72E+00	1.23E+01	1.50E+01	3.72E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Barium-140	4.07E+00	2.72E+00	9.42E+00	1.50E+01	2.88E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Barium-140	4.05E-02	2.56E+00	8.44E+00	1.50E+01	2.56E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Barium-140	-2.83E+00	2.26E+00	6.91E+00	1.50E+01	2.35E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Barium-140	2.57E+00	2.57E+00	8.63E+00	1.50E+01	2.64E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Barium-140	-1.60E+01	7.45E+00	1.18E+01	1.50E+01	8.34E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Barium-140	-1.17E+00	3.77E+00	1.21E+01	1.50E+01	3.78E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Beryllium-7	-1.01E+00	4.28E+00	1.28E+01		4.28E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Beryllium-7	-1.61E+00	4.76E+00	1.57E+01		4.78E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Beryllium-7	1.18E+00	4.04E+00	1.39E+01		4.05E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Beryllium-7	-1.84E+00	4.46E+00	1.41E+01		4.49E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Beryllium-7	1.68E+00	3.76E+00	1.29E+01		3.78E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Beryllium-7	-5.99E+00	4.68E+00	1.51E+01		4.89E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Beryllium-7	2.67E+00	4.19E+00	1.42E+01		4.23E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Beryllium-7	3.96E+00	3.93E+00	1.35E+01		4.04E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Beryllium-7	-3.04E+00	3.68E+00	1.16E+01		3.75E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Beryllium-7	-8.80E-01	3.76E+00	1.22E+01		3.77E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Beryllium-7	1.57E+01	9.14E+00	1.58E+01		9.17E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Beryllium-7	-2.33E+00	5.64E+00	1.83E+01		5.66E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Cerium-141	-7.77E-01	9.09E-01	2.91E+00		9.27E-01	pCi/L	U

DW-1QC(535691002) - Drinking Water	23-Feb-21	Cerium-141	-1.97E+00	1.12E+00	3.46E+00		1.21E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Cerium-141	-2.10E+00	1.22E+00	2.68E+00		1.31E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Cerium-141	-8.78E-01	1.12E+00	3.34E+00		1.14E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Cerium-141	-5.89E-01	9.15E-01	2.74E+00		9.25E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Cerium-141	-2.87E+00	1.96E+00	3.39E+00		2.07E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Cerium-141	-5.37E-01	9.63E-01	2.84E+00		9.71E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Cerium-141	1.89E+00	8.16E-01	2.27E+00		8.20E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Cerium-141	2.05E-01	8.05E-01	2.32E+00		8.07E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Cerium-141	-9.95E-02	8.72E-01	2.79E+00		8.72E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Cerium-141	6.52E-01	1.16E+00	3.59E+00		1.17E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Cerium-141	-8.35E+00	1.45E+00	3.08E+00		2.43E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Cerium-144	1.03E+00	3.53E+00	1.16E+01		3.54E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Cerium-144	-3.92E+00	3.91E+00	1.23E+01		4.02E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Cerium-144	7.35E-01	3.08E+00	1.03E+01		3.09E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Cerium-144	-4.15E+00	3.53E+00	1.18E+01		3.66E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Cerium-144	-4.38E+00	2.67E+00	8.52E+00		2.86E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Cerium-144	1.13E+01	5.58E+00	1.15E+01		5.60E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Cerium-144	4.26E-01	3.13E+00	1.02E+01		3.14E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Cerium-144	7.65E-01	3.04E+00	9.82E+00		3.05E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Cerium-144	1.16E+00	2.70E+00	8.52E+00		2.72E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Cerium-144	-2.82E+00	3.00E+00	9.48E+00		3.08E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Cerium-144	-1.32E+00	3.50E+00	1.18E+01		3.52E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Cerium-144	1.52E+00	3.42E+00	1.11E+01		3.44E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Cesium-134	4.45E-02	5.00E-01	1.64E+00	1.50E+01	5.01E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Cesium-134	-8.10E-01	6.04E-01	1.72E+00	1.50E+01	6.33E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Cesium-134	7.54E-01	4.90E-01	1.75E+00	1.50E+01	5.20E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Cesium-134	-3.26E-02	5.71E-01	1.90E+00	1.50E+01	5.72E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Cesium-134	2.83E-02	4.71E-01	1.55E+00	1.50E+01	4.71E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Cesium-134	6.89E-01	5.05E-01	1.73E+00	1.50E+01	5.30E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Cesium-134	1.24E+00	5.14E-01	1.81E+00	1.50E+01	5.90E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Cesium-134	1.44E-02	5.36E-01	1.53E+00	1.50E+01	5.36E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Cesium-134	5.01E-01	4.37E-01	1.54E+00	1.50E+01	4.53E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Cesium-134	-1.95E-02	5.13E-01	1.52E+00	1.50E+01	5.13E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Cesium-134	-4.15E-01	5.67E-01	1.82E+00	1.50E+01	5.76E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Cesium-134	-5.74E-01	7.15E-01	2.15E+00	1.50E+01	7.28E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Cesium-137	-2.38E-01	5.11E-01	1.65E+00	1.80E+01	5.14E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Cesium-137	3.22E-01	5.07E-01	1.70E+00	1.80E+01	5.12E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Cesium-137	1.47E-01	5.20E-01	1.75E+00	1.80E+01	5.21E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Cesium-137	2.64E-01	5.51E-01	1.89E+00	1.80E+01	5.55E-01	pCi/L	U

DW-1QC(545938002) - Drinking Water	25-May-21	Cesium-137	6.18E-01	4.36E-01	1.53E+00	1.80E+01	4.60E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Cesium-137	-1.52E-01	4.83E-01	1.56E+00	1.80E+01	4.85E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Cesium-137	-2.47E-01	4.81E-01	1.54E+00	1.80E+01	4.84E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Cesium-137	3.87E-01	4.75E-01	1.59E+00	1.80E+01	4.83E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Cesium-137	5.75E-01	4.41E-01	1.47E+00	1.80E+01	4.61E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Cesium-137	7.42E-01	5.74E-01	1.46E+00	1.80E+01	5.75E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Cesium-137	5.64E-01	5.64E-01	1.60E+00	1.80E+01	5.64E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Cesium-137	-2.10E-01	7.10E-01	2.25E+00	1.80E+01	7.11E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Chromium-51	-1.10E+01	4.93E+00	1.43E+01		5.57E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Chromium-51	-2.33E+00	5.45E+00	1.84E+01		5.48E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Chromium-51	-7.84E+00	4.86E+00	1.43E+01		5.20E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Chromium-51	4.90E+00	5.52E+00	1.85E+01		5.64E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Chromium-51	-3.20E+00	4.89E+00	1.50E+01		4.94E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Chromium-51	3.67E+00	5.50E+00	1.91E+01		5.57E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Chromium-51	8.07E+00	4.91E+00	1.73E+01		5.27E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Chromium-51	6.23E+00	4.24E+00	1.49E+01		4.48E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Chromium-51	-4.24E+00	3.86E+00	1.24E+01		3.98E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Chromium-51	5.10E+00	4.31E+00	1.49E+01		4.48E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Chromium-51	1.21E+01	6.05E+00	1.98E+01		6.68E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Chromium-51	4.53E+00	5.50E+00	1.91E+01		5.60E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Cobalt-57	-3.77E-01	4.66E-01	1.50E+00		4.75E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Cobalt-57	2.68E-01	5.16E-01	1.68E+00		5.19E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Cobalt-57	-3.54E-01	4.38E-01	1.43E+00		4.46E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Cobalt-57	2.63E-01	4.52E-01	1.56E+00		4.56E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Cobalt-57	-2.28E-01	3.64E-01	1.19E+00		3.68E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Cobalt-57	1.29E-01	4.58E-01	1.50E+00		4.59E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Cobalt-57	4.29E-01	4.10E-01	1.36E+00		4.22E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Cobalt-57	2.28E-01	3.75E-01	1.22E+00		3.79E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Cobalt-57	-1.35E-01	3.48E-01	1.08E+00		3.50E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Cobalt-57	-5.36E-01	3.98E-01	1.25E+00		4.17E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Cobalt-57	-3.32E-01	4.62E-01	1.56E+00		4.69E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Cobalt-57	-2.63E-01	4.50E-01	1.43E+00		4.55E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Cobalt-58	-5.45E-01	7.10E-01	1.40E+00	1.50E+01	7.21E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Cobalt-58	-8.57E-02	5.55E-01	1.77E+00	1.50E+01	5.55E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Cobalt-58	-3.34E-01	5.12E-01	1.42E+00	1.50E+01	5.18E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Cobalt-58	-8.75E-01	5.23E-01	1.61E+00	1.50E+01	5.62E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Cobalt-58	-7.32E-01	4.39E-01	1.32E+00	1.50E+01	4.71E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Cobalt-58	-1.98E-01	4.89E-01	1.55E+00	1.50E+01	4.91E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Cobalt-58	-1.40E-01	5.27E-01	1.68E+00	1.50E+01	5.28E-01	pCi/L	U

DW-1QC(554504004) - Drinking Water	31-Aug-21	Cobalt-58	-8.53E-01	4.87E-01	1.43E+00	1.50E+01	5.26E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Cobalt-58	3.11E-01	3.99E-01	1.38E+00	1.50E+01	4.06E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Cobalt-58	-1.35E-01	4.45E-01	1.48E+00	1.50E+01	4.46E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Cobalt-58	2.96E-02	5.40E-01	1.78E+00	1.50E+01	5.40E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Cobalt-58	3.12E-01	6.36E-01	2.22E+00	1.50E+01	6.40E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Cobalt-60	3.97E-02	5.08E-01	1.72E+00	1.50E+01	5.08E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Cobalt-60	7.52E-01	4.58E-01	1.66E+00	1.50E+01	4.91E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Cobalt-60	1.08E-01	4.92E-01	1.69E+00	1.50E+01	4.93E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Cobalt-60	1.28E+00	5.43E-01	1.98E+00	1.50E+01	6.21E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Cobalt-60	3.16E-01	4.39E-01	1.54E+00	1.50E+01	4.45E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Cobalt-60	6.30E-01	5.16E-01	1.83E+00	1.50E+01	5.37E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Cobalt-60	7.32E-01	4.72E-01	1.69E+00	1.50E+01	5.03E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Cobalt-60	-1.78E-01	5.23E-01	1.71E+00	1.50E+01	5.25E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Cobalt-60	3.22E-01	7.13E-01	1.49E+00	1.50E+01	7.17E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Cobalt-60	-3.04E-01	4.58E-01	1.42E+00	1.50E+01	4.64E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Cobalt-60	-1.76E-01	5.14E-01	1.70E+00	1.50E+01	5.16E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Cobalt-60	-6.89E-02	6.31E-01	2.05E+00	1.50E+01	6.31E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Iodine-131	-1.38E+00	6.56E-01	2.12E+00		7.31E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Iodine-131	-1.94E+00	1.11E+00	3.58E+00		1.20E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Iodine-131	-3.85E-01	8.54E-01	2.61E+00		8.59E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Iodine-131	-1.56E+00	1.18E+00	3.67E+00		1.23E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Iodine-131	-4.67E-01	1.57E+00	4.84E+00		1.57E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Iodine-131	1.37E+00	1.65E+00	5.71E+00		1.68E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Iodine-131	-7.77E-01	1.10E+00	3.67E+00		1.11E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Iodine-131	4.20E-02	9.44E-01	3.19E+00		9.44E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Iodine-131	1.07E+00	8.60E-01	2.93E+00		8.96E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Iodine-131	-1.78E+00	1.01E+00	3.20E+00		1.09E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Iodine-131	-8.15E-01	1.74E+00	5.57E+00		1.76E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Iodine-131	-9.52E-01	1.16E+00	3.78E+00		1.18E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Iron-59	3.78E-02	9.59E-01	3.05E+00	3.00E+01	9.59E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Iron-59	9.96E-01	1.09E+00	3.85E+00	3.00E+01	1.12E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Iron-59	4.38E-01	1.03E+00	3.38E+00	3.00E+01	1.03E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Iron-59	9.96E-01	1.16E+00	3.53E+00	3.00E+01	1.19E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Iron-59	-2.34E-01	1.02E+00	3.20E+00	3.00E+01	1.02E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Iron-59	-1.44E+00	1.11E+00	3.54E+00	3.00E+01	1.16E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Iron-59	-1.27E+00	8.16E-01	2.54E+00	3.00E+01	8.69E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Iron-59	-4.44E-01	9.72E-01	3.21E+00	3.00E+01	9.77E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Iron-59	3.26E-01	8.54E-01	2.86E+00	3.00E+01	8.58E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Iron-59	2.66E-01	1.01E+00	2.96E+00	3.00E+01	1.01E+00	pCi/L	U

DW-1QC(563685004) - Drinking Water	30-Nov-21	Iron-59	-7.94E-01	1.31E+00	4.10E+00	3.00E+01	1.32E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Iron-59	7.75E-01	1.36E+00	4.67E+00	3.00E+01	1.37E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Lanthanum-140	-7.27E-01	6.50E-01	1.99E+00	1.50E+01	6.72E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Lanthanum-140	-3.14E+00	1.65E+00	3.22E+00	1.50E+01	1.81E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Lanthanum-140	1.51E-01	7.54E-01	2.56E+00	1.50E+01	7.55E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Lanthanum-140	-7.34E-01	1.04E+00	3.34E+00	1.50E+01	1.05E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Lanthanum-140	1.44E+00	1.18E+00	3.43E+00	1.50E+01	1.23E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Lanthanum-140	-2.00E+00	1.16E+00	3.38E+00	1.50E+01	1.25E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Lanthanum-140	-1.56E+00	9.06E-01	2.65E+00	1.50E+01	9.77E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Lanthanum-140	8.22E-03	9.45E-01	3.10E+00	1.50E+01	9.45E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Lanthanum-140	6.62E-01	7.53E-01	2.66E+00	1.50E+01	7.69E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Lanthanum-140	-9.06E-01	8.85E-01	2.79E+00	1.50E+01	9.09E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Lanthanum-140	-8.25E-01	1.40E+00	4.50E+00	1.50E+01	1.41E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Lanthanum-140	4.09E-01	1.24E+00	4.10E+00	1.50E+01	1.25E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Manganese-54	5.92E-01	4.36E-01	1.51E+00	1.50E+01	4.57E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Manganese-54	3.99E-01	4.89E-01	1.63E+00	1.50E+01	4.97E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Manganese-54	1.02E-01	5.16E-01	1.70E+00	1.50E+01	5.17E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Manganese-54	-1.67E+00	7.61E-01	1.75E+00	1.50E+01	8.55E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Manganese-54	1.19E+00	4.88E-01	1.30E+00	1.50E+01	4.91E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Manganese-54	-1.33E-01	4.87E-01	1.55E+00	1.50E+01	4.88E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Manganese-54	-4.36E-02	4.74E-01	1.51E+00	1.50E+01	4.74E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Manganese-54	2.11E-01	4.63E-01	1.51E+00	1.50E+01	4.65E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Manganese-54	-2.99E-01	3.98E-01	1.30E+00	1.50E+01	4.04E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Manganese-54	-3.61E-01	4.45E-01	1.45E+00	1.50E+01	4.53E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Manganese-54	-8.21E-01	5.22E-01	1.62E+00	1.50E+01	5.57E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Manganese-54	8.77E-01	6.61E-01	2.38E+00	1.50E+01	6.92E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Niobium-95	4.80E-03	4.84E-01	1.58E+00	1.50E+01	4.84E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Niobium-95	-8.22E-01	5.85E-01	1.78E+00	1.50E+01	6.16E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Niobium-95	9.69E-02	5.27E-01	1.75E+00	1.50E+01	5.28E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Niobium-95	-1.89E-01	5.35E-01	1.76E+00	1.50E+01	5.37E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Niobium-95	3.49E-01	4.52E-01	1.54E+00	1.50E+01	4.59E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Niobium-95	5.16E-01	5.82E-01	1.95E+00	1.50E+01	5.95E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Niobium-95	1.62E+00	7.81E-01	1.62E+00	1.50E+01	7.85E-01	pCi/L	UI
DW-1QC(554504004) - Drinking Water	31-Aug-21	Niobium-95	3.73E-01	5.24E-01	1.56E+00	1.50E+01	5.31E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Niobium-95	-1.35E+00	8.86E-01	1.36E+00	1.50E+01	9.41E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Niobium-95	1.32E+00	4.39E-01	1.60E+00	1.50E+01	5.36E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Niobium-95	1.13E+00	5.61E-01	1.99E+00	1.50E+01	6.20E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Niobium-95	-2.38E-02	7.88E-01	2.22E+00	1.50E+01	7.88E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Potassium-40	-1.27E+01	1.13E+01	2.66E+01		1.17E+01	pCi/L	U

DW-1QC(535691002) - Drinking Water	23-Feb-21	Potassium-40	-7.59E+00	1.19E+01	2.95E+01		1.20E+01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Potassium-40	1.06E+01	1.20E+01	1.47E+01		1.20E+01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Potassium-40	-9.16E+00	1.03E+01	2.54E+01		1.05E+01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Potassium-40	8.09E+00	1.23E+01	1.25E+01		1.23E+01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Potassium-40	7.84E+00	1.53E+01	1.74E+01		1.53E+01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Potassium-40	4.18E+00	1.24E+01	1.64E+01		1.24E+01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Potassium-40	-1.37E+01	9.20E+00	2.48E+01		9.75E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Potassium-40	1.30E+01	1.07E+01	1.30E+01		1.08E+01	pCi/L	UI
DW-1QC(560208004) - Drinking Water	26-Oct-21	Potassium-40	-3.06E+01	1.01E+01	2.11E+01		1.24E+01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Potassium-40	-1.88E-02	8.88E+00	2.47E+01		8.88E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Potassium-40	5.13E+01	1.19E+01	2.01E+01		1.22E+01	pCi/L	
DW-1QC(533330002) - Drinking Water	26-Jan-21	Ruthenium-103	-2.76E-01	4.91E-01	1.62E+00		4.95E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Ruthenium-103	4.51E-01	6.08E-01	1.87E+00		6.17E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Ruthenium-103	-1.16E+00	7.52E-01	1.61E+00		8.00E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Ruthenium-103	-2.19E-03	6.65E-01	1.89E+00		6.65E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Ruthenium-103	-4.57E-01	4.77E-01	1.57E+00		4.89E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Ruthenium-103	-1.25E-01	5.77E-01	1.91E+00		5.77E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Ruthenium-103	-2.46E-01	5.57E-01	1.64E+00		5.60E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Ruthenium-103	-4.18E-01	4.77E-01	1.53E+00		4.87E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Ruthenium-103	-5.72E-01	5.15E-01	1.41E+00		5.32E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Ruthenium-103	2.17E-01	5.73E-01	1.69E+00		5.75E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Ruthenium-103	-1.51E+00	6.31E-01	1.83E+00		7.23E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Ruthenium-103	-4.81E-01	6.99E-01	2.23E+00		7.08E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Ruthenium-106	2.21E+00	4.29E+00	1.45E+01		4.32E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Ruthenium-106	2.94E+00	4.72E+00	1.58E+01		4.77E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Ruthenium-106	1.07E+00	4.43E+00	1.50E+01		4.44E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Ruthenium-106	-1.29E+00	4.68E+00	1.57E+01		4.69E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Ruthenium-106	2.92E+00	3.48E+00	1.20E+01		3.55E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Ruthenium-106	3.90E+00	5.05E+00	1.53E+01		5.13E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Ruthenium-106	8.76E+00	3.97E+00	1.29E+01		4.47E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Ruthenium-106	-3.80E-01	4.26E+00	1.39E+01		4.26E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Ruthenium-106	6.13E+00	3.93E+00	1.32E+01		4.19E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Ruthenium-106	-7.99E-01	4.07E+00	1.29E+01		4.08E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Ruthenium-106	-2.72E+00	5.15E+00	1.49E+01		5.19E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Ruthenium-106	-7.61E+00	6.27E+00	1.91E+01		6.52E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Selenium-75	4.28E-01	7.07E-01	2.26E+00		7.14E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Selenium-75	7.92E-01	8.14E-01	2.60E+00		8.36E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Selenium-75	1.92E-01	6.83E-01	2.20E+00		6.84E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Selenium-75	-8.90E-02	8.01E-01	2.36E+00		8.01E-01	pCi/L	U

DW-1QC(545938002) - Drinking Water	25-May-21	Selenium-75	-3.90E-01	6.35E-01	1.82E+00		6.42E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Selenium-75	-9.43E-01	7.79E-01	2.36E+00		8.10E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Selenium-75	-2.05E+00	1.05E+00	2.14E+00		1.16E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Selenium-75	-1.33E-01	5.68E-01	1.94E+00		5.69E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Selenium-75	-2.06E-01	5.36E-01	1.78E+00		5.38E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Selenium-75	3.34E-01	6.04E-01	2.08E+00		6.09E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Selenium-75	4.29E-01	7.02E-01	2.35E+00		7.10E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Selenium-75	3.84E-01	6.91E-01	2.40E+00		6.97E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Silver-108m	2.01E-01	6.82E-01	1.47E+00		6.83E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Silver-108m	-1.95E-01	4.70E-01	1.56E+00		4.72E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Silver-108m	-6.25E-02	4.56E-01	1.55E+00		4.56E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Silver-108m	6.44E-02	4.69E-01	1.52E+00		4.70E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Silver-108m	2.48E-01	3.42E-01	1.20E+00		3.47E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Silver-108m	-3.76E-01	4.37E-01	1.44E+00		4.46E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Silver-108m	1.48E-02	8.65E-01	1.55E+00		8.65E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Silver-108m	-2.60E-01	3.81E-01	1.25E+00		3.86E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Silver-108m	2.39E-01	3.39E-01	1.13E+00		3.44E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Silver-108m	6.31E-01	4.31E-01	1.41E+00		4.55E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Silver-108m	-4.26E-01	5.38E-01	1.48E+00		5.47E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Silver-108m	7.25E-01	4.96E-01	1.74E+00		5.25E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Silver-110m	-1.46E-01	6.21E-01	1.98E+00		6.22E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Silver-110m	-5.49E-01	7.22E-01	2.22E+00		7.33E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Silver-110m	-1.33E+00	1.51E+00	2.44E+00		1.54E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Silver-110m	5.62E-02	7.11E-01	2.36E+00		7.11E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Silver-110m	3.71E-02	5.56E-01	1.82E+00		5.56E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Silver-110m	1.57E-01	6.74E-01	2.18E+00		6.75E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Silver-110m	-4.94E-01	6.29E-01	1.94E+00		6.40E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Silver-110m	-2.80E-01	5.96E-01	1.85E+00		6.00E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Silver-110m	2.89E-01	5.61E-01	1.92E+00		5.66E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Silver-110m	4.23E-02	6.09E-01	2.04E+00		6.09E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Silver-110m	-1.41E-01	6.69E-01	2.17E+00		6.70E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Silver-110m	-1.79E-01	8.63E-01	2.89E+00		8.64E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Strontium-89	3.46E-01	5.30E-01	1.64E+00	1.00E+01	6.60E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Strontium-89	-3.11E+00	8.46E-01	3.36E+00	1.00E+01	9.09E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Strontium-89	1.30E+00	6.76E-01	1.97E+00	1.00E+01	9.08E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Strontium-89	5.95E-01	4.49E-01	1.36E+00	1.00E+01	6.94E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Strontium-89	-9.93E-01	3.11E-01	1.34E+00	1.00E+01	5.89E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Strontium-89	-2.42E-01	4.99E-01	1.70E+00	1.00E+01	5.60E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Strontium-89	-2.95E-02	4.88E-01	1.61E+00	1.00E+01	6.46E-01	pCi/L	U

DW-1QC(554504004) - Drinking Water	31-Aug-21	Strontium-89	5.49E-01	7.11E-01	2.22E+00	1.00E+01	8.27E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Strontium-89	-2.22E+00	9.52E-01	3.57E+00	1.00E+01	9.92E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Strontium-89	-2.98E-01	4.61E-01	1.58E+00	1.00E+01	6.08E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Strontium-89	-1.37E-01	7.78E-01	2.59E+00	1.00E+01	8.89E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Strontium-89	-7.57E-01	6.70E-01	2.32E+00	1.00E+01	7.98E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Strontium-90	-1.18E+00	2.86E-01	1.74E+00	2.00E+00	4.85E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Strontium-90	5.01E-01	2.57E-01	1.54E+00	2.00E+00	4.81E-01	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Strontium-90	3.86E-01	4.13E-01	1.61E+00	2.00E+00	5.15E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Strontium-90	1.08E-01	4.15E-01	1.77E+00	2.00E+00	5.43E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Strontium-90	1.20E+00	4.54E-01	1.72E+00	2.00E+00	6.00E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Strontium-90	-4.85E-02	2.88E-01	1.72E+00	2.00E+00	5.22E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Strontium-90	-1.64E-01	3.75E-01	1.72E+00	2.00E+00	5.12E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Strontium-90	3.19E-01	3.94E-01	1.64E+00	2.00E+00	5.16E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Strontium-90	-6.13E-01	4.24E-01	1.69E+00	2.00E+00	4.98E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Strontium-90	9.89E-02	3.74E-01	1.54E+00	2.00E+00	4.76E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Strontium-90	1.52E-02	4.07E-01	1.75E+00	2.00E+00	5.32E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Strontium-90	-4.80E-02	3.94E-01	1.43E+00	2.00E+00	4.31E-01	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Thorium-228	2.18E+00	2.13E+00	5.29E+00		2.19E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Thorium-228	2.61E-01	2.09E+00	3.20E+00		2.09E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Thorium-228	3.35E-01	2.14E+00	3.81E+00		2.14E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Thorium-228	-9.40E-01	1.52E+00	3.67E+00		1.54E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Thorium-228	2.80E-01	1.39E+00	3.06E+00		1.39E+00	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Thorium-228	4.47E-01	2.08E+00	3.52E+00		2.08E+00	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Thorium-228	1.97E+00	2.08E+00	3.38E+00		2.13E+00	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Thorium-228	1.65E+00	2.13E+00	2.54E+00		2.13E+00	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Thorium-228	-9.26E-01	1.37E+00	2.91E+00		1.39E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Thorium-228	9.46E-01	1.81E+00	2.57E+00		1.81E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Thorium-228	9.37E-01	1.74E+00	4.16E+00		1.75E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Thorium-228	2.97E+00	2.05E+00	2.97E+00		2.05E+00	pCi/L	UI
DW-1QC(543406002) - Drinking Water	30-Mar-21	Tritium	1.80E+02	1.29E+02	4.06E+02	5.00E+02	1.30E+02	pCi/L	U
DW-1QC(552151002) - Drinking Water	29-Jun-21	Tritium	1.81E+02	1.28E+02	3.98E+02	5.00E+02	1.29E+02	pCi/L	U
DW-1QC(560834004) - Drinking Water	28-Sep-21	Tritium	3.24E+01	1.16E+02	3.77E+02	5.00E+02	1.16E+02	pCi/L	U
DW-1QC(568418004) - Drinking Water	28-Dec-21	Tritium	-5.89E+01	1.18E+02	3.94E+02	5.00E+02	1.18E+02	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Zinc-65	-3.95E-01	1.20E+00	3.29E+00	3.00E+01	1.20E+00	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Zinc-65	6.08E-01	1.06E+00	3.67E+00	3.00E+01	1.07E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Zinc-65	-8.00E-01	1.31E+00	3.50E+00	3.00E+01	1.32E+00	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Zinc-65	1.13E+00	1.20E+00	3.64E+00	3.00E+01	1.22E+00	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Zinc-65	-1.21E-01	9.69E-01	2.72E+00	3.00E+01	9.70E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Zinc-65	-2.88E+00	1.12E+00	2.76E+00	3.00E+01	1.31E+00	pCi/L	U

DW-1QC(550834002) - Drinking Water	27-Jul-21	Zinc-65	-7.81E-01	8.25E-01	2.65E+00	3.00E+01	8.45E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Zinc-65	5.13E-01	9.16E-01	3.16E+00	3.00E+01	9.23E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Zinc-65	4.05E-01	8.70E-01	2.92E+00	3.00E+01	8.75E-01	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Zinc-65	1.94E+00	9.53E-01	3.40E+00	3.00E+01	1.06E+00	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Zinc-65	1.71E+00	1.13E+00	3.89E+00	3.00E+01	1.20E+00	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Zinc-65	3.51E-01	1.24E+00	4.21E+00	3.00E+01	1.25E+00	pCi/L	U
DW-1QC(533330002) - Drinking Water	26-Jan-21	Zirconium-95	4.51E-01	8.39E-01	2.80E+00	1.50E+01	8.46E-01	pCi/L	U
DW-1QC(535691002) - Drinking Water	23-Feb-21	Zirconium-95	1.54E+00	9.72E-01	3.36E+00	1.50E+01	1.04E+00	pCi/L	U
DW-1QC(539721002) - Drinking Water	30-Mar-21	Zirconium-95	-1.01E+00	9.15E-01	2.83E+00	1.50E+01	9.45E-01	pCi/L	U
DW-1QC(542322002) - Drinking Water	27-Apr-21	Zirconium-95	-5.49E-03	9.18E-01	3.07E+00	1.50E+01	9.18E-01	pCi/L	U
DW-1QC(545938002) - Drinking Water	25-May-21	Zirconium-95	-1.12E+00	7.86E-01	2.41E+00	1.50E+01	8.29E-01	pCi/L	U
DW-1QC(548724002) - Drinking Water	29-Jun-21	Zirconium-95	-1.28E+00	8.81E-01	2.67E+00	1.50E+01	9.31E-01	pCi/L	U
DW-1QC(550834002) - Drinking Water	27-Jul-21	Zirconium-95	1.44E+00	8.97E-01	3.07E+00	1.50E+01	9.58E-01	pCi/L	U
DW-1QC(554504004) - Drinking Water	31-Aug-21	Zirconium-95	-5.40E-01	7.76E-01	2.41E+00	1.50E+01	7.86E-01	pCi/L	U
DW-1QC(557418004) - Drinking Water	28-Sep-21	Zirconium-95	-9.87E-01	1.20E+00	2.54E+00	1.50E+01	1.22E+00	pCi/L	U
DW-1QC(560208004) - Drinking Water	26-Oct-21	Zirconium-95	-1.18E+00	7.95E-01	2.54E+00	1.50E+01	8.41E-01	pCi/L	U
DW-1QC(563685004) - Drinking Water	30-Nov-21	Zirconium-95	-6.39E-01	9.66E-01	3.12E+00	1.50E+01	9.77E-01	pCi/L	U
DW-1QC(566004004) - Drinking Water	28-Dec-21	Zirconium-95	1.54E+00	1.31E+00	4.05E+00	1.50E+01	1.36E+00	pCi/L	U

DW-2

Drinking Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
DW-2(533330003) - Drinking Water	26-Jan-21	Actinium-228	-1.72E+00	3.62E+00	8.34E+00		3.64E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Actinium-228	-5.02E+00	3.25E+00	6.30E+00		3.46E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Actinium-228	1.01E+01	5.53E+00	1.15E+01		6.02E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Actinium-228	9.42E+00	4.53E+00	9.42E+00		5.49E+00	pCi/L	UI
DW-2(545938003) - Drinking Water	25-May-21	Actinium-228	2.22E+00	3.52E+00	5.56E+00		3.52E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Actinium-228	7.70E+00	2.72E+00	7.70E+00		3.57E+00	pCi/L	UI
DW-2(550834003) - Drinking Water	27-Jul-21	Actinium-228	2.85E+00	4.06E+00	6.48E+00		4.11E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Actinium-228	-1.94E+00	3.04E+00	6.81E+00		3.07E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Actinium-228	-1.96E+00	3.08E+00	6.96E+00		3.12E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Actinium-228	4.90E+00	3.16E+00	6.99E+00		3.36E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Actinium-228	-5.35E+00	3.58E+00	7.32E+00		3.80E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Antimony-124	-5.30E-02	1.39E+00	4.02E+00		1.39E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Antimony-124	5.69E-01	1.12E+00	3.77E+00		1.13E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Antimony-124	1.53E+00	2.22E+00	7.47E+00		2.24E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Antimony-124	-1.16E+00	1.60E+00	4.89E+00		1.62E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Antimony-124	-4.17E-01	1.25E+00	4.07E+00		1.25E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Antimony-124	-2.56E-01	1.27E+00	4.14E+00		1.27E+00	pCi/L	U

DW-2(550834003) - Drinking Water	27-Jul-21	Antimony-124	4.21E-01	1.09E+00	3.65E+00		1.09E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Antimony-124	1.22E+00	9.45E-01	3.43E+00		9.88E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Antimony-124	1.13E+00	1.17E+00	3.98E+00		1.20E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Antimony-124	9.20E-01	1.02E+00	3.50E+00		1.05E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Antimony-124	1.63E+00	1.29E+00	4.57E+00		1.34E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Antimony-125	5.04E-01	1.38E+00	4.55E+00		1.39E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Antimony-125	-1.14E+00	1.12E+00	3.62E+00		1.15E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Antimony-125	2.04E+00	1.99E+00	6.75E+00		2.04E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Antimony-125	1.55E-01	1.57E+00	5.12E+00		1.57E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Antimony-125	-1.72E+00	1.32E+00	3.67E+00		1.38E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Antimony-125	-1.27E-01	1.37E+00	4.43E+00		1.37E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Antimony-125	9.68E-02	1.22E+00	3.87E+00		1.22E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Antimony-125	4.65E-01	1.12E+00	3.89E+00		1.13E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Antimony-125	4.00E+00	2.00E+00	4.05E+00		2.21E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Antimony-125	9.27E-01	1.18E+00	3.91E+00		1.20E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Antimony-125	-9.88E-01	1.27E+00	4.17E+00		1.29E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	BETA	-1.81E+00	9.61E-01	3.38E+00	4.00E+00	9.61E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	BETA	-5.25E-01	6.91E-01	2.40E+00	4.00E+00	6.91E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	BETA	2.25E+00	1.17E+00	3.42E+00	4.00E+00	1.18E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	BETA	-6.17E-01	1.12E+00	3.79E+00	4.00E+00	1.12E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	BETA	1.12E-01	7.63E-01	2.44E+00	4.00E+00	7.64E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	BETA	3.05E+00	1.20E+00	3.34E+00	4.00E+00	1.22E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	BETA	-3.43E-01	1.05E+00	3.51E+00	4.00E+00	1.05E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	BETA	2.37E+00	1.02E+00	2.82E+00	4.00E+00	1.03E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	BETA	9.38E-01	7.70E-01	2.27E+00	4.00E+00	7.74E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	BETA	-1.16E-01	1.10E+00	3.62E+00	4.00E+00	1.10E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	BETA	2.39E+00	9.51E-01	2.60E+00	4.00E+00	9.72E-01	pCi/L	U
DW-2(566004006) - Drinking Water	28-Dec-21	BETA	-1.11E+00	1.07E+00	3.65E+00	4.00E+00	1.07E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Barium-140	-2.94E+00	2.27E+00	6.92E+00	1.50E+01	2.37E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Barium-140	4.82E+00	2.54E+00	8.93E+00	1.50E+01	2.78E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Barium-140	-1.87E+00	3.52E+00	1.11E+01	1.50E+01	3.55E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Barium-140	-3.32E+00	3.34E+00	1.02E+01	1.50E+01	3.43E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Barium-140	7.24E+00	4.39E+00	1.12E+01	1.50E+01	4.71E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Barium-140	-4.59E+00	3.39E+00	1.02E+01	1.50E+01	3.55E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Barium-140	2.48E+00	2.58E+00	8.90E+00	1.50E+01	2.64E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Barium-140	-4.77E+00	3.21E+00	7.33E+00	1.50E+01	3.40E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Barium-140	2.90E+00	2.43E+00	8.02E+00	1.50E+01	2.52E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Barium-140	-1.02E+00	2.53E+00	7.95E+00	1.50E+01	2.54E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Barium-140	-3.60E-01	3.70E+00	1.22E+01	1.50E+01	3.71E+00	pCi/L	U

DW-2(533330003) - Drinking Water	26-Jan-21	Beryllium-7	-5.52E+00	4.53E+00	1.40E+01		4.71E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Beryllium-7	9.19E-02	3.88E+00	1.29E+01		3.88E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Beryllium-7	1.99E+00	6.14E+00	2.03E+01		6.16E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Beryllium-7	1.57E+00	5.63E+00	1.64E+01		5.64E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Beryllium-7	1.89E+00	4.25E+00	1.41E+01		4.27E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Beryllium-7	-2.08E+00	4.43E+00	1.40E+01		4.46E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Beryllium-7	-5.92E+00	3.75E+00	1.22E+01		4.00E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Beryllium-7	3.60E+00	3.57E+00	1.25E+01		3.67E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Beryllium-7	-8.48E-01	3.91E+00	1.25E+01		3.91E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Beryllium-7	-1.54E+00	4.07E+00	1.30E+01		4.09E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Beryllium-7	4.13E+00	4.67E+00	1.60E+01		4.77E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Cerium-141	5.99E-01	8.35E-01	2.44E+00		8.47E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Cerium-141	-8.89E-01	8.20E-01	2.57E+00		8.46E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Cerium-141	8.14E-01	1.91E+00	3.16E+00		1.91E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Cerium-141	-2.55E+00	1.57E+00	3.89E+00		1.68E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Cerium-141	2.68E+00	9.92E-01	3.12E+00		1.17E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Cerium-141	4.71E-01	1.09E+00	3.14E+00		1.09E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Cerium-141	-1.72E+00	1.24E+00	2.77E+00		1.30E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Cerium-141	-2.81E-01	7.85E-01	2.57E+00		7.88E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Cerium-141	-4.44E-01	8.73E-01	2.53E+00		8.79E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Cerium-141	-1.40E+00	8.40E-01	2.59E+00		9.01E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Cerium-141	-2.07E-02	1.16E+00	3.73E+00		1.16E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Cerium-144	5.49E+00	3.47E+00	9.30E+00		3.48E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Cerium-144	5.91E-01	2.89E+00	9.35E+00		2.90E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Cerium-144	-3.67E+00	4.11E+00	1.26E+01		4.20E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Cerium-144	-3.52E+00	3.93E+00	1.30E+01		4.02E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Cerium-144	1.70E+00	3.11E+00	1.01E+01		3.13E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Cerium-144	6.73E+00	3.35E+00	1.09E+01		3.71E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Cerium-144	1.02E+00	2.96E+00	9.99E+00		2.97E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Cerium-144	1.35E+00	2.63E+00	8.80E+00		2.65E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Cerium-144	2.93E+00	2.80E+00	9.12E+00		2.88E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Cerium-144	2.15E+00	2.86E+00	9.25E+00		2.90E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Cerium-144	-3.18E+00	3.80E+00	1.21E+01		3.87E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Cesium-134	-5.77E-02	6.31E-01	2.11E+00	1.50E+01	6.31E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Cesium-134	1.57E-01	4.50E-01	1.47E+00	1.50E+01	4.52E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Cesium-134	1.69E+00	8.00E-01	2.96E+00	1.50E+01	8.93E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Cesium-134	4.51E-01	6.04E-01	2.11E+00	1.50E+01	6.13E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Cesium-134	6.32E-02	4.72E-01	1.60E+00	1.50E+01	4.73E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Cesium-134	5.87E-01	5.00E-01	1.73E+00	1.50E+01	5.19E-01	pCi/L	U

DW-2(550834003) - Drinking Water	27-Jul-21	Cesium-134	-1.24E+00	7.38E-01	1.56E+00	1.50E+01	7.92E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Cesium-134	1.12E-01	4.59E-01	1.52E+00	1.50E+01	4.59E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Cesium-134	-1.45E+00	6.59E-01	1.50E+00	1.50E+01	7.42E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Cesium-134	3.43E-01	5.02E-01	1.70E+00	1.50E+01	5.08E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Cesium-134	5.94E-01	5.14E-01	1.75E+00	1.50E+01	5.33E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Cesium-137	9.43E-01	5.53E-01	1.99E+00	1.80E+01	5.95E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Cesium-137	-8.34E-02	4.63E-01	1.50E+00	1.80E+01	4.63E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Cesium-137	-1.08E+00	9.74E-01	2.58E+00	1.80E+01	1.01E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Cesium-137	-8.38E-01	6.12E-01	1.81E+00	1.80E+01	6.42E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Cesium-137	-3.89E-02	4.39E-01	1.39E+00	1.80E+01	4.39E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Cesium-137	-4.32E-01	4.45E-01	1.45E+00	1.80E+01	4.57E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Cesium-137	5.41E-02	4.52E-01	1.51E+00	1.80E+01	4.52E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Cesium-137	-1.14E-02	4.14E-01	1.37E+00	1.80E+01	4.14E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Cesium-137	1.00E+00	4.47E-01	1.60E+00	1.80E+01	5.05E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Cesium-137	-8.34E-02	4.53E-01	1.52E+00	1.80E+01	4.53E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Cesium-137	4.54E-01	5.23E-01	1.77E+00	1.80E+01	5.34E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Chromium-51	-1.37E+00	4.55E+00	1.34E+01		4.56E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Chromium-51	2.17E+00	4.27E+00	1.47E+01		4.30E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Chromium-51	-3.46E+00	6.31E+00	2.07E+01		6.36E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Chromium-51	-2.20E+00	5.85E+00	1.90E+01		5.88E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Chromium-51	-5.01E-01	4.91E+00	1.65E+01		4.91E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Chromium-51	-1.87E-01	5.14E+00	1.70E+01		5.14E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Chromium-51	1.47E+00	4.50E+00	1.47E+01		4.52E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Chromium-51	-1.41E+00	4.15E+00	1.29E+01		4.17E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Chromium-51	2.02E+00	4.35E+00	1.46E+01		4.37E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Chromium-51	-1.27E+00	4.33E+00	1.43E+01		4.34E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Chromium-51	-1.50E-01	5.82E+00	1.99E+01		5.82E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Cobalt-57	-1.48E-01	3.66E-01	1.14E+00		3.68E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Cobalt-57	-1.08E-01	3.84E-01	1.23E+00		3.85E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Cobalt-57	-6.72E-01	4.86E-01	1.47E+00		5.11E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Cobalt-57	-5.51E-01	5.50E-01	1.83E+00		5.65E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Cobalt-57	-7.33E-01	4.06E-01	1.27E+00		4.40E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Cobalt-57	-4.02E-01	4.39E-01	1.36E+00		4.49E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Cobalt-57	-7.42E-02	3.73E-01	1.26E+00		3.74E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Cobalt-57	-4.27E-01	3.47E-01	1.12E+00		3.61E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Cobalt-57	-1.35E-01	3.63E-01	1.16E+00		3.64E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Cobalt-57	-9.72E-02	3.59E-01	1.15E+00		3.60E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Cobalt-57	5.16E-01	4.79E-01	1.59E+00		4.94E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Cobalt-58	5.31E-01	5.49E-01	1.91E+00	1.50E+01	5.62E-01	pCi/L	U

DW-2(535691003) - Drinking Water	23-Feb-21	Cobalt-58	-9.89E-01	6.31E-01	1.53E+00	1.50E+01	6.72E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Cobalt-58	-5.41E-01	6.85E-01	2.23E+00	1.50E+01	6.96E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Cobalt-58	7.53E-01	6.87E-01	2.18E+00	1.50E+01	7.10E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Cobalt-58	-3.19E-01	4.30E-01	1.40E+00	1.50E+01	4.37E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Cobalt-58	-1.54E-01	5.13E-01	1.69E+00	1.50E+01	5.15E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Cobalt-58	6.43E-01	4.41E-01	1.52E+00	1.50E+01	4.66E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Cobalt-58	-4.02E-02	4.19E-01	1.37E+00	1.50E+01	4.19E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Cobalt-58	1.21E-01	4.26E-01	1.42E+00	1.50E+01	4.27E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Cobalt-58	-1.37E-01	5.01E-01	1.59E+00	1.50E+01	5.02E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Cobalt-58	-2.22E-01	5.45E-01	1.72E+00	1.50E+01	5.47E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Cobalt-60	3.77E-01	6.15E-01	2.06E+00	1.50E+01	6.22E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Cobalt-60	-1.58E-01	4.72E-01	1.54E+00	1.50E+01	4.73E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Cobalt-60	-8.19E-01	8.74E-01	2.69E+00	1.50E+01	8.95E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Cobalt-60	3.96E-01	7.02E-01	2.38E+00	1.50E+01	7.08E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Cobalt-60	6.96E-01	5.21E-01	1.79E+00	1.50E+01	5.46E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Cobalt-60	-2.32E-01	4.81E-01	1.58E+00	1.50E+01	4.84E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Cobalt-60	3.23E-02	4.57E-01	1.53E+00	1.50E+01	4.57E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Cobalt-60	1.37E-01	4.34E-01	1.49E+00	1.50E+01	4.35E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Cobalt-60	-2.20E-02	4.65E-01	1.55E+00	1.50E+01	4.65E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Cobalt-60	7.09E-01	4.98E-01	1.57E+00	1.50E+01	5.25E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Cobalt-60	-5.57E-01	4.65E-01	1.43E+00	1.50E+01	4.84E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Iodine-131	1.00E+00	6.66E-01	2.29E+00		7.06E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Iodine-131	6.10E-01	8.88E-01	3.06E+00		8.99E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Iodine-131	-1.17E+00	1.05E+00	3.35E+00		1.09E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Iodine-131	1.18E+00	1.29E+00	4.33E+00		1.32E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Iodine-131	-1.71E+00	1.54E+00	4.97E+00		1.59E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Iodine-131	-7.24E-01	1.52E+00	4.90E+00		1.53E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Iodine-131	1.38E+00	1.09E+00	3.61E+00		1.14E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Iodine-131	1.00E+00	8.88E-01	2.89E+00		9.19E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Iodine-131	2.22E-01	9.30E-01	3.08E+00		9.32E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Iodine-131	-2.89E-01	1.01E+00	3.30E+00		1.01E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Iodine-131	1.72E+00	1.68E+00	5.83E+00		1.72E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Iron-59	-6.09E+00	2.15E+00	3.49E+00	3.00E+01	2.59E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Iron-59	-2.85E-01	9.23E-01	3.07E+00	3.00E+01	9.26E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Iron-59	-2.15E-01	1.68E+00	5.53E+00	3.00E+01	1.68E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Iron-59	-2.80E-01	1.25E+00	4.11E+00	3.00E+01	1.25E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Iron-59	-1.13E+00	1.01E+00	3.12E+00	3.00E+01	1.04E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Iron-59	1.16E-01	1.17E+00	3.81E+00	3.00E+01	1.17E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Iron-59	-7.86E-01	9.08E-01	2.79E+00	3.00E+01	9.27E-01	pCi/L	U

DW-2(554504006) - Drinking Water	31-Aug-21	Iron-59	-1.19E+00	9.00E-01	2.64E+00	3.00E+01	9.43E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Iron-59	-5.77E+00	1.81E+00	2.98E+00	3.00E+01	2.27E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Iron-59	6.78E-02	1.02E+00	3.27E+00	3.00E+01	1.02E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Iron-59	-8.58E-01	1.11E+00	3.62E+00	3.00E+01	1.13E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Lanthanum-140	-6.62E-01	7.92E-01	2.53E+00	1.50E+01	8.07E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Lanthanum-140	3.28E-01	9.42E-01	3.15E+00	1.50E+01	9.45E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Lanthanum-140	-2.40E-01	1.49E+00	4.76E+00	1.50E+01	1.49E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Lanthanum-140	-1.76E-01	1.30E+00	4.19E+00	1.50E+01	1.30E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Lanthanum-140	1.21E+00	1.09E+00	3.88E+00	1.50E+01	1.13E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Lanthanum-140	3.15E-01	1.10E+00	3.71E+00	1.50E+01	1.10E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Lanthanum-140	-1.59E-01	9.56E-01	2.70E+00	1.50E+01	9.57E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Lanthanum-140	-1.12E+00	7.76E-01	2.33E+00	1.50E+01	8.19E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Lanthanum-140	6.79E-01	8.16E-01	2.78E+00	1.50E+01	8.32E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Lanthanum-140	-1.97E-01	8.95E-01	2.90E+00	1.50E+01	8.96E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Lanthanum-140	-8.21E-01	1.34E+00	4.25E+00	1.50E+01	1.36E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Manganese-54	1.89E-01	5.40E-01	1.83E+00	1.50E+01	5.42E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Manganese-54	3.88E-02	4.77E-01	1.37E+00	1.50E+01	4.77E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Manganese-54	4.32E-01	7.38E-01	2.56E+00	1.50E+01	7.45E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Manganese-54	-1.81E-01	6.06E-01	2.02E+00	1.50E+01	6.08E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Manganese-54	7.56E-03	5.11E-01	1.51E+00	1.50E+01	5.11E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Manganese-54	8.95E-02	4.46E-01	1.49E+00	1.50E+01	4.46E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Manganese-54	-1.94E-02	4.51E-01	1.47E+00	1.50E+01	4.51E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Manganese-54	6.84E-02	4.22E-01	1.39E+00	1.50E+01	4.23E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Manganese-54	3.68E-01	4.10E-01	1.39E+00	1.50E+01	4.19E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Manganese-54	-4.88E-01	4.47E-01	1.42E+00	1.50E+01	4.61E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Manganese-54	-4.00E-02	4.79E-01	1.53E+00	1.50E+01	4.79E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Niobium-95	-2.31E-01	5.84E-01	1.94E+00	1.50E+01	5.87E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Niobium-95	-3.61E-01	4.64E-01	1.44E+00	1.50E+01	4.72E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Niobium-95	4.46E-01	8.49E-01	2.94E+00	1.50E+01	8.55E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Niobium-95	1.84E+00	1.62E+00	1.84E+00	1.50E+01	1.64E+00	pCi/L	UI
DW-2(545938003) - Drinking Water	25-May-21	Niobium-95	1.09E+00	4.90E-01	1.78E+00	1.50E+01	5.52E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Niobium-95	1.04E+00	5.22E-01	1.85E+00	1.50E+01	5.77E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Niobium-95	2.45E-02	8.02E-01	1.62E+00	1.50E+01	8.02E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Niobium-95	2.20E-01	4.40E-01	1.48E+00	1.50E+01	4.43E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Niobium-95	-6.43E-01	7.24E-01	1.48E+00	1.50E+01	7.39E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Niobium-95	6.87E-01	5.04E-01	1.56E+00	1.50E+01	5.29E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Niobium-95	1.53E+00	1.04E+00	1.69E+00	1.50E+01	1.05E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Potassium-40	-8.33E+00	1.14E+01	2.74E+01		1.16E+01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Potassium-40	1.70E+00	1.32E+01	1.64E+01		1.32E+01	pCi/L	U

DW-2(539721003) - Drinking Water	30-Mar-21	Potassium-40	5.08E+00	2.21E+01	2.67E+01		2.21E+01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Potassium-40	-2.39E+01	1.06E+01	2.62E+01		1.20E+01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Potassium-40	3.98E+00	8.83E+00	2.31E+01		8.87E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Potassium-40	4.85E+00	1.27E+01	1.46E+01		1.27E+01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Potassium-40	1.42E+01	1.24E+01	1.42E+01		1.26E+01	pCi/L	UI
DW-2(554504006) - Drinking Water	31-Aug-21	Potassium-40	1.40E+01	1.24E+01	1.40E+01		1.25E+01	pCi/L	UI
DW-2(557418006) - Drinking Water	28-Sep-21	Potassium-40	3.95E+00	1.14E+01	1.36E+01		1.14E+01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Potassium-40	4.47E+00	1.30E+01	1.37E+01		1.30E+01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Potassium-40	1.65E+01	1.27E+01	1.65E+01		1.28E+01	pCi/L	UI
DW-2(533330003) - Drinking Water	26-Jan-21	Ruthenium-103	1.34E+00	5.26E-01	1.85E+00		6.14E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Ruthenium-103	-7.93E-01	4.89E-01	1.54E+00		5.23E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Ruthenium-103	-1.10E+00	7.95E-01	2.46E+00		8.36E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Ruthenium-103	-8.44E-01	7.08E-01	2.18E+00		7.36E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Ruthenium-103	-8.80E-01	7.85E-01	1.66E+00		8.12E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Ruthenium-103	-8.25E-01	6.54E-01	1.76E+00		6.82E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Ruthenium-103	-5.01E-01	4.84E-01	1.59E+00		4.98E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Ruthenium-103	-4.65E-01	4.76E-01	1.39E+00		4.89E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Ruthenium-103	-6.57E-01	5.07E-01	1.57E+00		5.30E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Ruthenium-103	-1.12E+00	6.00E-01	1.60E+00		6.54E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Ruthenium-103	2.89E-01	7.76E-01	1.89E+00		7.79E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Ruthenium-106	-2.92E+00	4.93E+00	1.53E+01		4.98E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Ruthenium-106	2.46E+00	4.13E+00	1.38E+01		4.17E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Ruthenium-106	-8.19E-01	6.84E+00	2.18E+01		6.84E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Ruthenium-106	3.51E+00	5.81E+00	1.90E+01		5.87E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Ruthenium-106	8.91E-01	4.27E+00	1.37E+01		4.27E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Ruthenium-106	-7.25E-02	4.20E+00	1.42E+01		4.20E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Ruthenium-106	-4.16E-01	3.91E+00	1.30E+01		3.91E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Ruthenium-106	-8.02E-01	3.48E+00	1.15E+01		3.49E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Ruthenium-106	-1.39E-01	3.84E+00	1.30E+01		3.84E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Ruthenium-106	-2.90E+00	3.59E+00	1.19E+01		3.65E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Ruthenium-106	-8.55E+00	4.44E+00	1.35E+01		4.88E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Selenium-75	1.72E-01	6.08E-01	2.05E+00		6.09E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Selenium-75	-4.22E-01	5.91E-01	2.00E+00		5.99E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Selenium-75	1.12E-01	8.26E-01	2.80E+00		8.27E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Selenium-75	2.03E-01	8.05E-01	2.68E+00		8.06E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Selenium-75	-4.87E-01	6.02E-01	2.02E+00		6.13E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Selenium-75	2.48E-01	6.17E-01	2.08E+00		6.20E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Selenium-75	-7.70E-01	6.44E-01	2.05E+00		6.69E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Selenium-75	4.27E-01	5.52E-01	1.80E+00		5.61E-01	pCi/L	U

DW-2(557418006) - Drinking Water	28-Sep-21	Selenium-75	1.36E-01	5.86E-01	1.98E+00		5.87E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Selenium-75	2.41E-01	5.82E-01	1.98E+00		5.84E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Selenium-75	1.02E+00	9.04E-01	2.50E+00		9.36E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Silver-108m	-2.32E-01	4.63E-01	1.48E+00		4.66E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Silver-108m	-1.70E-01	3.74E-01	1.24E+00		3.76E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Silver-108m	6.66E-01	6.39E-01	2.17E+00		6.58E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Silver-108m	-3.98E-01	5.24E-01	1.65E+00		5.32E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Silver-108m	-1.78E-01	4.13E-01	1.19E+00		4.15E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Silver-108m	4.05E-01	4.10E-01	1.36E+00		4.20E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Silver-108m	9.54E-02	4.04E-01	1.29E+00		4.05E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Silver-108m	2.10E-01	3.37E-01	1.18E+00		3.41E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Silver-108m	3.33E-01	4.28E-01	1.27E+00		4.35E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Silver-108m	-3.34E-01	3.85E-01	1.22E+00		3.93E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Silver-108m	6.39E-02	4.41E-01	1.49E+00		4.41E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Silver-110m	-1.36E+00	7.99E-01	2.47E+00		8.60E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Silver-110m	2.66E-01	5.73E-01	1.87E+00		5.76E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Silver-110m	-1.64E+00	1.08E+00	3.39E+00		1.15E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Silver-110m	-5.21E-01	7.15E-01	2.32E+00		7.26E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Silver-110m	-4.29E-02	5.95E-01	1.98E+00		5.95E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Silver-110m	-1.66E-01	6.18E-01	2.01E+00		6.19E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Silver-110m	1.33E+00	5.79E-01	2.05E+00		6.58E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Silver-110m	1.60E-01	5.49E-01	1.81E+00		5.50E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Silver-110m	9.19E-01	5.78E-01	2.00E+00		6.17E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Silver-110m	-5.80E-01	6.16E-01	1.95E+00		6.30E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Silver-110m	-6.47E-01	6.69E-01	2.03E+00		6.86E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Strontium-89	1.25E+00	1.04E+00	3.22E+00	1.00E+01	1.12E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Strontium-89	-6.96E-01	9.39E-01	3.24E+00	1.00E+01	9.79E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Strontium-89	6.52E-01	7.17E-01	2.25E+00	1.00E+01	8.11E-01	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Strontium-89	-2.08E-01	3.19E-01	1.11E+00	1.00E+01	5.36E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Strontium-89	-5.08E-01	4.47E-01	1.61E+00	1.00E+01	6.45E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Strontium-89	1.33E-01	6.42E-01	2.09E+00	1.00E+01	6.67E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Strontium-89	1.11E-01	6.10E-01	1.99E+00	1.00E+01	7.38E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Strontium-89	-1.95E+00	3.46E-01	1.60E+00	1.00E+01	5.92E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Strontium-89	-8.20E-01	3.88E-01	1.53E+00	1.00E+01	5.00E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Strontium-89	-2.12E+00	2.18E-01	1.36E+00	1.00E+01	5.10E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Strontium-89	-6.32E+00	6.74E-01	4.00E+00	1.00E+01	1.03E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Strontium-90	5.48E-01	3.20E-01	1.72E+00	2.00E+00	5.47E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Strontium-90	-8.76E-01	2.30E-01	1.49E+00	2.00E+00	4.29E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Strontium-90	6.64E-01	4.66E-01	1.80E+00	2.00E+00	5.85E-01	pCi/L	U

DW-2(542322003) - Drinking Water	27-Apr-21	Strontium-90	-4.82E-01	3.85E-01	1.74E+00	2.00E+00	5.05E-01	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Strontium-90	-1.01E+00	3.72E-01	1.79E+00	2.00E+00	4.83E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Strontium-90	-6.20E-01	2.08E-01	1.30E+00	2.00E+00	3.78E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Strontium-90	1.00E-01	3.53E-01	1.56E+00	2.00E+00	4.82E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Strontium-90	9.24E-01	3.92E-01	1.57E+00	2.00E+00	5.19E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Strontium-90	-1.27E+00	3.71E-01	1.61E+00	2.00E+00	4.19E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Strontium-90	2.00E+00	4.64E-01	1.47E+00	2.00E+00	6.19E-01	pCi/L	
DW-2(563685006) - Drinking Water	30-Nov-21	Strontium-90	1.15E+00	5.51E-01	1.82E+00	2.00E+00	6.07E-01	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Thorium-228	9.12E-01	1.81E+00	3.62E+00		1.82E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Thorium-228	1.11E+00	1.83E+00	2.34E+00		1.83E+00	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Thorium-228	4.68E+00	3.06E+00	5.01E+00		3.25E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Thorium-228	2.32E+00	2.40E+00	4.39E+00		2.46E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Thorium-228	-1.95E+00	1.29E+00	3.13E+00		1.37E+00	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Thorium-228	-3.38E+00	1.63E+00	3.65E+00		1.82E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Thorium-228	2.73E+00	1.68E+00	3.18E+00		1.79E+00	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Thorium-228	1.33E+00	1.87E+00	2.39E+00		1.87E+00	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Thorium-228	-1.28E+00	1.39E+00	3.14E+00		1.42E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Thorium-228	4.03E-01	1.72E+00	2.57E+00		1.72E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Thorium-228	4.43E-01	2.36E+00	2.96E+00		2.36E+00	pCi/L	U
DW-2(543406003) - Drinking Water	30-Mar-21	Tritium	-9.17E+01	1.22E+02	4.11E+02	5.00E+02	1.22E+02	pCi/L	U
DW-2(552151003) - Drinking Water	29-Jun-21	Tritium	2.02E+01	1.22E+02	3.99E+02	5.00E+02	1.22E+02	pCi/L	U
DW-2(560834006) - Drinking Water	28-Sep-21	Tritium	1.23E+02	1.26E+02	4.02E+02	5.00E+02	1.27E+02	pCi/L	U
DW-2(568418006) - Drinking Water	28-Dec-21	Tritium	1.81E+02	1.26E+02	3.97E+02	5.00E+02	1.27E+02	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Zinc-65	-1.95E+00	1.23E+00	3.68E+00	3.00E+01	1.31E+00	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Zinc-65	-6.78E-01	8.91E-01	2.89E+00	3.00E+01	9.05E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Zinc-65	1.80E-01	1.73E+00	5.78E+00	3.00E+01	1.73E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Zinc-65	1.89E+00	1.27E+00	4.54E+00	3.00E+01	1.35E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Zinc-65	-7.04E-01	9.53E-01	3.01E+00	3.00E+01	9.68E-01	pCi/L	U
DW-2(548724003) - Drinking Water	29-Jun-21	Zinc-65	-1.11E+00	1.18E+00	3.13E+00	3.00E+01	1.21E+00	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Zinc-65	1.35E-01	9.22E-01	2.98E+00	3.00E+01	9.23E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Zinc-65	-1.05E-01	9.26E-01	2.94E+00	3.00E+01	9.27E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Zinc-65	1.20E+00	1.00E+00	3.01E+00	3.00E+01	1.04E+00	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Zinc-65	-1.93E+00	9.60E-01	2.81E+00	3.00E+01	1.06E+00	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Zinc-65	1.89E+00	1.16E+00	3.81E+00	3.00E+01	1.24E+00	pCi/L	U
DW-2(533330003) - Drinking Water	26-Jan-21	Zirconium-95	-1.14E-01	9.78E-01	3.28E+00	1.50E+01	9.78E-01	pCi/L	U
DW-2(535691003) - Drinking Water	23-Feb-21	Zirconium-95	8.88E-01	7.95E-01	2.70E+00	1.50E+01	8.21E-01	pCi/L	U
DW-2(539721003) - Drinking Water	30-Mar-21	Zirconium-95	1.49E+00	1.51E+00	5.01E+00	1.50E+01	1.55E+00	pCi/L	U
DW-2(542322003) - Drinking Water	27-Apr-21	Zirconium-95	4.18E-01	1.01E+00	3.47E+00	1.50E+01	1.01E+00	pCi/L	U
DW-2(545938003) - Drinking Water	25-May-21	Zirconium-95	1.19E-01	7.98E-01	2.71E+00	1.50E+01	7.99E-01	pCi/L	U

DW-2(548724003) - Drinking Water	29-Jun-21	Zirconium-95	4.81E-01	8.69E-01	2.96E+00	1.50E+01	8.76E-01	pCi/L	U
DW-2(550834003) - Drinking Water	27-Jul-21	Zirconium-95	-4.29E-01	8.03E-01	2.60E+00	1.50E+01	8.09E-01	pCi/L	U
DW-2(554504006) - Drinking Water	31-Aug-21	Zirconium-95	-5.39E-01	7.56E-01	2.41E+00	1.50E+01	7.66E-01	pCi/L	U
DW-2(557418006) - Drinking Water	28-Sep-21	Zirconium-95	2.49E-01	8.46E-01	2.84E+00	1.50E+01	8.48E-01	pCi/L	U
DW-2(560208006) - Drinking Water	26-Oct-21	Zirconium-95	-3.69E-01	7.86E-01	2.57E+00	1.50E+01	7.91E-01	pCi/L	U
DW-2(563685006) - Drinking Water	30-Nov-21	Zirconium-95	-2.21E-02	1.70E+00	3.17E+00	1.50E+01	1.70E+00	pCi/L	U

F-1 Large Mouth Bass
Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Actinium-228	-5.90E+01	3.36E+01	1.02E+02		3.64E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Antimony-124	-1.24E+01	1.72E+01	5.14E+01		1.75E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Antimony-125	1.18E+01	1.75E+01	5.76E+01		1.77E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Barium-140	4.41E+02	2.32E+02	5.81E+02		2.54E+02	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Beryllium-7	-9.66E+01	7.66E+01	2.41E+02		7.99E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Cerium-141	-2.56E+01	1.89E+01	5.51E+01		1.98E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Cerium-144	-4.58E+01	3.92E+01	1.16E+02		4.07E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Cesium-134	8.59E+00	6.86E+00	2.20E+01	1.30E+02	7.15E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Cesium-137	-3.29E-01	7.02E+00	2.29E+01	1.50E+02	7.02E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Chromium-51	-5.06E+01	1.22E+02	3.90E+02		1.23E+02	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Cobalt-57	8.47E+00	4.67E+00	1.61E+01		5.08E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Cobalt-58	4.79E+00	9.84E+00	2.89E+01	1.30E+02	9.90E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Cobalt-60	-6.28E+00	8.11E+00	2.46E+01	1.30E+02	8.24E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Iodine-131	-6.42E+01	1.54E+02	4.83E+02		1.55E+02	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Iron-59	3.56E+00	2.12E+01	7.07E+01	2.60E+02	2.12E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Lanthanum-140	-2.82E+00	5.43E+01	1.80E+02		5.43E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Manganese-54	2.64E+00	7.21E+00	2.37E+01	1.30E+02	7.23E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Niobium-95	-9.11E+00	9.64E+00	2.92E+01		9.88E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Potassium-40	3.54E+03	2.40E+02	2.37E+02		3.01E+02	pCi/kg	
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Ruthenium-103	4.95E+00	1.06E+01	3.64E+01		1.06E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Ruthenium-106	3.43E+01	5.69E+01	1.95E+02		5.75E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Selenium-75	3.47E+00	9.45E+00	3.18E+01		9.49E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Silver-108m	-1.30E+00	4.81E+00	1.61E+01		4.82E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Silver-110m	2.15E+00	9.65E+00	2.89E+01		9.66E+00	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Strontium-89	-4.03E+01	2.63E+01	8.96E+01	3.00E+02	5.26E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Strontium-90	2.99E+01	3.49E+01	1.47E+02	3.00E+02	4.51E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Thorium-228	2.12E+01	2.10E+01	4.61E+01		2.16E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Zinc-65	-1.00E+01	1.65E+01	5.21E+01	2.60E+02	1.67E+01	pCi/kg	U
F-1 Large Mouth Bass(560513001) - Fish	5-Oct-21	Zirconium-95	-7.29E+00	1.57E+01	4.91E+01		1.58E+01	pCi/kg	U

F-1 S.Bass

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-1 S.Bass(545424001) - Fish	4-May-21	Actinium-228	-1.09E+01	9.45E+00	2.89E+01		9.79E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Antimony-124	-4.27E+00	4.33E+00	1.23E+01		4.44E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Antimony-125	6.82E+00	4.02E+00	1.45E+01		4.32E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Barium-140	-1.26E+00	2.00E+01	5.84E+01		2.00E+01	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Beryllium-7	-1.30E+01	1.67E+01	5.29E+01		1.69E+01	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Cerium-141	-9.52E+00	4.10E+00	1.19E+01		4.66E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Cerium-144	1.40E+01	1.03E+01	3.44E+01		1.08E+01	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Cesium-134	-6.92E-01	1.86E+00	5.81E+00	1.30E+02	1.87E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Cesium-137	2.38E+00	1.73E+00	6.07E+00	1.50E+02	1.81E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Chromium-51	-6.43E+00	2.17E+01	7.25E+01		2.17E+01	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Cobalt-57	-1.58E+00	1.40E+00	4.27E+00		1.44E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Cobalt-58	-2.55E+00	2.33E+00	6.63E+00	1.30E+02	2.41E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Cobalt-60	5.28E-01	2.01E+00	6.82E+00	1.30E+02	2.02E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Iodine-131	1.47E+01	1.06E+01	3.77E+01		1.12E+01	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Iron-59	5.20E-02	5.34E+00	1.80E+01	2.60E+02	5.34E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Lanthanum-140	1.11E+00	5.92E+00	1.98E+01		5.92E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Manganese-54	-1.50E+00	1.97E+00	5.99E+00	1.30E+02	2.00E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Niobium-95	3.19E+00	2.06E+00	7.27E+00		2.19E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Potassium-40	2.58E+03	1.05E+02	6.09E+01		1.78E+02	pCi/kg	
F-1 S.Bass(545424001) - Fish	4-May-21	Ruthenium-103	-1.90E+00	2.19E+00	6.91E+00		2.24E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Ruthenium-106	-1.28E+01	1.56E+01	4.85E+01		1.59E+01	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Selenium-75	3.17E+00	2.41E+00	7.87E+00		2.52E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Silver-108m	-9.36E-01	1.40E+00	4.51E+00		1.42E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Silver-110m	-2.41E+00	2.87E+00	8.63E+00		2.93E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Strontium-89	8.55E+01	1.97E+01	4.91E+01	3.00E+02	2.41E+01	pCi/kg	M
F-1 S.Bass(545424001) - Fish	4-May-21	Strontium-90	7.33E+00	1.06E+01	6.07E+01	3.00E+02	1.90E+01	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Thorium-228	1.24E+01	6.58E+00	1.24E+01		7.22E+00	pCi/kg	UI
F-1 S.Bass(545424001) - Fish	4-May-21	Zinc-65	-8.19E-02	4.59E+00	1.54E+01	2.60E+02	4.59E+00	pCi/kg	U
F-1 S.Bass(545424001) - Fish	4-May-21	Zirconium-95	-3.39E+00	4.44E+00	1.27E+01		4.51E+00	pCi/kg	U

F-1 Smallmouth Bass

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Actinium-228	2.28E+00	1.22E+01	4.09E+01		1.22E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Antimony-124	3.76E-02	7.99E+00	2.68E+01		7.99E+00	pCi/kg	U

F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Antimony-125	7.50E+00	8.49E+00	2.85E+01		8.67E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Barium-140	-6.41E+01	6.86E+01	2.11E+02		7.03E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Beryllium-7	-8.68E+01	3.49E+01	9.74E+01		4.04E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Cerium-141	-3.49E+00	7.33E+00	2.30E+01		7.37E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Cerium-144	8.77E+00	1.37E+01	4.61E+01		1.39E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Cesium-134	-2.01E+00	2.96E+00	9.31E+00	1.30E+02	2.99E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Cesium-137	-1.84E+00	3.43E+00	1.07E+01	1.50E+02	3.46E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Chromium-51	8.95E+01	5.12E+01	1.56E+02		5.14E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Cobalt-57	-9.18E-01	1.87E+00	5.96E+00		1.88E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Cobalt-58	6.22E+00	4.50E+00	1.65E+01	1.30E+02	4.73E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Cobalt-60	-4.99E-02	3.42E+00	1.13E+01	1.30E+02	3.42E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Iodine-131	3.97E+01	7.23E+01	2.41E+02		7.29E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Iron-59	-7.89E-01	1.45E+01	4.01E+01	2.60E+02	1.45E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Lanthanum-140	5.50E+00	2.25E+01	7.60E+01		2.25E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Manganese-54	4.06E+00	3.72E+00	1.33E+01	1.30E+02	3.84E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Niobium-95	-6.90E-01	3.99E+00	1.33E+01		4.00E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Potassium-40	1.16E+02	1.83E+02	1.16E+02		2.65E+02	pCi/kg	UI
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Ruthenium-103	7.93E-01	4.45E+00	1.51E+01		4.45E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Ruthenium-106	4.82E+01	2.89E+01	1.05E+02		3.10E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Selenium-75	-2.74E+00	3.79E+00	1.22E+01		3.84E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Silver-108m	1.42E+00	2.46E+00	8.12E+00		2.48E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Silver-110m	1.26E+01	8.21E+00	1.76E+01		8.73E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Strontium-89	-3.15E+01	8.43E+01	2.85E+02	3.00E+02	1.01E+02	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Strontium-90	2.63E+01	2.66E+01	1.12E+02	3.00E+02	3.43E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Thorium-228	8.56E+00	6.46E+00	1.37E+01		6.47E+00	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Zinc-65	-7.05E+00	1.21E+01	3.15E+01	2.60E+02	1.22E+01	pCi/kg	U
F-1 Smallmouth Bass(560513002) - Fish	5-Oct-21	Zirconium-95	-4.88E+00	6.70E+00	2.12E+01		6.80E+00	pCi/kg	U

F-1 Walleye

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-1 Walleye(560513003) - Fish	5-Oct-21	Actinium-228	9.49E+00	1.27E+01	4.07E+01		1.29E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Antimony-124	2.99E+00	9.63E+00	3.32E+01		9.65E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Antimony-125	-1.50E+00	6.60E+00	2.14E+01		6.61E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Barium-140	3.92E+01	6.95E+01	2.35E+02		7.01E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Beryllium-7	-4.64E+01	3.34E+01	8.35E+01		3.52E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Cerium-141	6.44E+00	7.06E+00	2.47E+01		7.22E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Cerium-144	1.40E+01	1.61E+01	5.13E+01		1.64E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Cesium-134	-6.75E-01	2.90E+00	9.08E+00	1.30E+02	2.91E+00	pCi/kg	U

F-1 Walleye(560513003) - Fish	5-Oct-21	Cesium-137	-2.44E+00	2.79E+00	8.35E+00	1.50E+02	2.85E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Chromium-51	-5.35E+01	4.73E+01	1.47E+02		4.90E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Cobalt-57	5.69E+00	3.39E+00	6.36E+00		3.40E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Cobalt-58	-9.07E-02	3.97E+00	1.27E+01	1.30E+02	3.97E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Cobalt-60	6.22E+00	2.86E+00	1.08E+01	1.30E+02	3.21E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Iodine-131	-3.45E+01	6.14E+01	1.96E+02		6.20E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Iron-59	-9.15E+00	8.45E+00	2.56E+01	2.60E+02	8.72E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Lanthanum-140	1.61E+01	2.29E+01	8.30E+01		2.33E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Manganese-54	1.67E+00	3.01E+00	1.01E+01	1.30E+02	3.04E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Niobium-95	2.66E+00	3.98E+00	1.35E+01		4.03E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Potassium-40	3.62E+03	1.65E+02	7.81E+01		2.39E+02	pCi/kg	
F-1 Walleye(560513003) - Fish	5-Oct-21	Ruthenium-103	-7.90E-01	4.42E+00	1.42E+01		4.42E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Ruthenium-106	2.69E+01	2.41E+01	8.47E+01		2.49E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Selenium-75	-4.96E-01	3.31E+00	1.10E+01		3.31E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Silver-108m	3.83E+00	1.91E+00	7.12E+00		2.11E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Silver-110m	8.93E-02	4.45E+00	1.26E+01		4.45E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Strontium-89	-2.03E+02	3.53E+01	1.28E+02	3.00E+02	5.89E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Strontium-90	1.06E+02	2.91E+01	1.19E+02	3.00E+02	3.76E+01	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Thorium-228	8.79E-01	7.70E+00	1.60E+01		7.70E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Zinc-65	-6.80E+00	6.27E+00	1.91E+01	2.60E+02	6.47E+00	pCi/kg	U
F-1 Walleye(560513003) - Fish	5-Oct-21	Zirconium-95	-2.24E+00	7.64E+00	2.39E+01		7.66E+00	pCi/kg	U

F-2 Fresh Water Drum

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Actinium-228	-4.96E+00	9.83E+00	3.14E+01		9.90E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Antimony-124	-1.11E+01	4.92E+00	9.84E+00		5.56E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Antimony-125	1.32E+00	5.63E+00	1.86E+01		5.64E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Barium-140	1.14E+00	1.09E+01	3.54E+01		1.09E+01	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Beryllium-7	-1.65E+01	1.88E+01	5.74E+01		1.92E+01	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Cerium-141	3.42E+00	2.96E+00	9.06E+00		3.07E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Cerium-144	-3.52E+00	1.01E+01	3.11E+01		1.01E+01	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Cesium-134	4.47E+00	2.88E+00	1.06E+01	1.30E+02	3.06E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Cesium-137	2.02E-01	2.33E+00	7.97E+00	1.50E+02	2.33E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Chromium-51	5.18E+01	2.39E+01	5.18E+01		2.41E+01	pCi/kg	UI
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Cobalt-57	-5.07E-01	1.33E+00	4.11E+00		1.33E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Cobalt-58	-1.14E+00	2.59E+00	8.43E+00	1.30E+02	2.61E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Cobalt-60	8.45E-01	2.81E+00	9.34E+00	1.30E+02	2.82E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Iodine-131	4.97E+00	3.42E+00	1.21E+01		3.61E+00	pCi/kg	U

F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Iron-59	-1.43E+01	6.19E+00	1.64E+01	2.60E+02	7.05E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Lanthanum-140	4.88E+00	3.09E+00	1.25E+01		3.30E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Manganese-54	-6.75E-01	2.47E+00	8.10E+00	1.30E+02	2.47E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Niobium-95	1.81E+00	2.42E+00	8.54E+00		2.45E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Potassium-40	3.03E+03	1.38E+02	5.43E+01		1.96E+02	pCi/kg	
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Ruthenium-103	2.33E+00	2.26E+00	7.77E+00		2.32E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Ruthenium-106	-3.83E+00	2.26E+01	7.09E+01		2.26E+01	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Selenium-75	8.14E-01	2.40E+00	8.16E+00		2.40E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Silver-108m	-2.11E+00	1.81E+00	5.44E+00		1.87E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Silver-110m	1.26E+00	3.44E+00	1.18E+01		3.45E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Strontium-89	3.28E+00	2.10E+01	6.81E+01	3.00E+02	3.25E+01	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Strontium-90	-1.73E+01	2.07E+01	1.03E+02	3.00E+02	3.02E+01	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Thorium-228	4.61E+00	5.02E+00	1.08E+01		5.02E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Zinc-65	-6.77E+00	6.74E+00	2.04E+01	2.60E+02	6.92E+00	pCi/kg	U
F-2 Fresh Water Drum(546311002) - Fish	1-Jun-21	Zirconium-95	9.41E-01	4.20E+00	1.44E+01		4.21E+00	pCi/kg	U

F-2 G Shad

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 G Shad(546311004) - Fish	1-Jun-21	Actinium-228	1.07E+01	5.06E+01	1.65E+02		5.07E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Antimony-124	-1.48E+00	2.27E+01	7.32E+01		2.27E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Antimony-125	-2.00E+01	2.22E+01	6.59E+01		2.27E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Barium-140	9.74E+01	4.64E+01	1.80E+02		5.17E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Beryllium-7	1.01E+02	7.21E+01	2.64E+02		7.59E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Cerium-141	-1.11E+01	1.29E+01	3.83E+01		1.31E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Cerium-144	6.50E+01	4.59E+01	1.60E+02		4.83E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Cesium-134	2.09E+00	1.13E+01	3.80E+01	1.30E+02	1.13E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Cesium-137	-1.54E+01	1.06E+01	3.16E+01	1.50E+02	1.12E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Chromium-51	-5.30E+01	9.01E+01	2.53E+02		9.10E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Cobalt-57	-1.28E+00	4.93E+00	1.55E+01		4.94E+00	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Cobalt-58	-6.76E+00	9.39E+00	2.85E+01	1.30E+02	9.53E+00	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Cobalt-60	-2.03E+01	1.04E+01	2.44E+01	1.30E+02	1.15E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Iodine-131	-2.07E+01	1.65E+01	4.83E+01		1.72E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Iron-59	-2.85E+01	2.66E+01	5.97E+01	2.60E+02	2.74E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Lanthanum-140	1.99E+01	1.55E+01	6.15E+01		1.61E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Manganese-54	9.86E+00	7.66E+00	2.91E+01	1.30E+02	8.00E+00	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Niobium-95	-2.79E+00	8.85E+00	2.84E+01		8.88E+00	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Potassium-40	2.99E+03	3.37E+02	1.32E+02		3.63E+02	pCi/kg	
F-2 G Shad(546311004) - Fish	1-Jun-21	Ruthenium-103	1.19E-01	1.03E+01	3.30E+01		1.03E+01	pCi/kg	U

F-2 G Shad(546311004) - Fish	1-Jun-21	Ruthenium-106	6.91E+01	8.37E+01	3.02E+02		8.53E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Selenium-75	2.11E+00	9.87E+00	3.38E+01		9.89E+00	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Silver-108m	1.46E+01	1.12E+01	2.64E+01		1.17E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Silver-110m	3.55E+00	9.75E+00	3.37E+01		9.79E+00	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Strontium-89	-9.42E+00	2.28E+01	7.79E+01	3.00E+02	3.43E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Strontium-90	3.29E+00	4.28E+01	2.05E+02	3.00E+02	6.26E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Thorium-228	1.46E+00	1.51E+01	5.37E+01		1.51E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Zinc-65	8.37E+00	2.13E+01	7.16E+01	2.60E+02	2.14E+01	pCi/kg	U
F-2 G Shad(546311004) - Fish	1-Jun-21	Zirconium-95	-1.50E+01	1.68E+01	4.79E+01		1.72E+01	pCi/kg	U

F-2 Glizz Shad

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Actinium-228	3.44E+01	6.00E+01	1.20E+02		6.05E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Antimony-124	6.97E+00	1.48E+01	5.16E+01		1.49E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Antimony-125	-3.22E+01	1.90E+01	5.76E+01		2.04E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Barium-140	1.11E+01	1.28E+02	4.13E+02		1.28E+02	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Beryllium-7	-1.67E+02	8.60E+01	2.54E+02		9.44E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Cerium-141	3.51E+01	1.97E+01	6.38E+01		2.13E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Cerium-144	-3.57E+01	4.28E+01	1.41E+02		4.36E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Cesium-134	8.62E-01	7.37E+00	2.44E+01	1.30E+02	7.37E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Cesium-137	1.90E+00	8.18E+00	2.77E+01	1.50E+02	8.20E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Chromium-51	7.59E+01	1.21E+02	4.17E+02		1.22E+02	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Cobalt-57	-2.76E+00	5.64E+00	1.89E+01		5.68E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Cobalt-58	-1.73E+01	8.46E+00	2.40E+01	1.30E+02	9.38E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Cobalt-60	6.04E-01	6.54E+00	2.15E+01	1.30E+02	6.54E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Iodine-131	1.09E+02	9.44E+01	3.29E+02		9.78E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Iron-59	-7.34E+00	1.94E+01	6.29E+01	2.60E+02	1.95E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Lanthanum-140	-2.49E+01	3.73E+01	1.17E+02		3.77E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Manganese-54	2.91E+00	8.48E+00	2.82E+01	1.30E+02	8.50E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Niobium-95	-1.92E+00	9.15E+00	2.98E+01		9.16E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Potassium-40	3.66E+03	2.44E+02	1.92E+02		2.96E+02	pCi/kg	
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Ruthenium-103	-9.51E+00	1.09E+01	3.37E+01		1.11E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Ruthenium-106	-3.01E+01	6.34E+01	2.08E+02		6.38E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Selenium-75	-4.59E+00	1.13E+01	3.56E+01		1.14E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Silver-108m	-6.88E+00	6.40E+00	2.01E+01		6.60E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Silver-110m	1.29E+01	8.66E+00	3.11E+01		9.18E+00	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Strontium-89	-9.08E+01	5.14E+01	1.74E+02	3.00E+02	6.85E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Strontium-90	3.93E+01	2.73E+01	1.14E+02	3.00E+02	3.53E+01	pCi/kg	U

F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Thorium-228	1.55E+01	1.63E+01	5.37E+01		1.67E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Zinc-65	1.41E+01	1.97E+01	5.98E+01	2.60E+02	2.00E+01	pCi/kg	U
F-2 Glizz Shad(560513006) - Fish	13-Oct-21	Zirconium-95	1.09E+01	1.56E+01	5.34E+01		1.58E+01	pCi/kg	U

F-2 S.Bass
Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 S.Bass(546311001) - Fish	1-Jun-21	Actinium-228	-2.87E+01	5.85E+01	1.73E+02		5.89E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Antimony-124	-7.60E+01	3.54E+01	9.48E+01		3.96E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Antimony-125	-1.41E+01	3.02E+01	9.62E+01		3.03E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Barium-140	-5.97E+01	5.96E+01	1.75E+02		6.12E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Beryllium-7	1.48E+02	8.56E+01	3.21E+02		9.23E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Cerium-141	-4.52E+01	1.61E+01	4.00E+01		1.92E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Cerium-144	-3.75E+01	4.46E+01	1.39E+02		4.55E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Cesium-134	6.08E+00	1.24E+01	3.93E+01	1.30E+02	1.25E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Cesium-137	1.24E+01	1.32E+01	4.55E+01	1.50E+02	1.35E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Chromium-51	1.67E+02	8.63E+01	3.27E+02		9.48E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Cobalt-57	-6.11E+00	6.20E+00	1.94E+01		6.36E+00	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Cobalt-58	2.75E+00	1.16E+01	3.96E+01	1.30E+02	1.16E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Cobalt-60	-2.17E+01	1.91E+01	5.22E+01	1.30E+02	1.97E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Iodine-131	3.15E+00	1.91E+01	6.47E+01		1.91E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Iron-59	1.80E+01	2.10E+01	7.65E+01	2.60E+02	2.15E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Lanthanum-140	-1.24E+01	1.60E+01	4.35E+01		1.62E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Manganese-54	-5.99E+00	1.28E+01	4.06E+01	1.30E+02	1.28E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Niobium-95	-8.21E+00	1.11E+01	3.42E+01		1.12E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Potassium-40	3.39E+03	4.21E+02	3.83E+02		4.53E+02	pCi/kg	
F-2 S.Bass(546311001) - Fish	1-Jun-21	Ruthenium-103	7.86E+00	8.51E+00	2.85E+01		8.71E+00	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Ruthenium-106	2.84E+01	1.08E+02	3.53E+02		1.08E+02	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Selenium-75	-7.51E+00	1.20E+01	3.53E+01		1.21E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Silver-108m	-7.25E+00	9.60E+00	2.98E+01		9.75E+00	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Silver-110m	1.67E+01	1.67E+01	6.08E+01		1.72E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Strontium-89	-9.08E+01	1.63E+01	8.28E+01	3.00E+02	3.44E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Strontium-90	4.25E+01	2.18E+01	1.02E+02	3.00E+02	3.38E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Thorium-228	-1.48E+01	2.27E+01	6.78E+01		2.29E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Zinc-65	-2.15E+01	2.40E+01	6.71E+01	2.60E+02	2.45E+01	pCi/kg	U
F-2 S.Bass(546311001) - Fish	1-Jun-21	Zirconium-95	-2.82E+01	1.84E+01	5.08E+01		1.96E+01	pCi/kg	U

F-2 Spotted Gar
Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Actinium-228	-9.38E+00	1.35E+01	4.42E+01		1.37E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Antimony-124	9.82E+00	6.05E+00	2.42E+01		6.47E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Antimony-125	-6.58E+00	6.22E+00	1.83E+01		6.41E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Barium-140	-2.66E+01	1.14E+01	3.17E+01		1.30E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Beryllium-7	-3.98E+00	2.32E+01	7.27E+01		2.32E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Cerium-141	3.85E+00	5.36E+00	1.17E+01		5.36E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Cerium-144	6.10E+00	1.40E+01	4.85E+01		1.41E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Cesium-134	6.28E-01	2.72E+00	9.14E+00	1.30E+02	2.72E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Cesium-137	5.65E+00	4.69E+00	8.58E+00	1.50E+02	4.70E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Chromium-51	2.91E+01	1.94E+01	6.94E+01		2.06E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Cobalt-57	7.91E-01	1.79E+00	6.25E+00		1.80E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Cobalt-58	-1.78E+00	2.48E+00	7.62E+00	1.30E+02	2.52E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Cobalt-60	9.54E-01	2.76E+00	9.59E+00	1.30E+02	2.77E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Iodine-131	6.55E-01	4.64E+00	1.51E+01		4.64E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Iron-59	-6.78E+00	7.71E+00	1.86E+01	2.60E+02	7.88E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Lanthanum-140	3.25E+00	3.39E+00	1.29E+01		3.48E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Manganese-54	1.56E+00	1.95E+00	6.97E+00	1.30E+02	1.98E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Niobium-95	3.35E+00	2.91E+00	1.04E+01		3.01E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Potassium-40	2.94E+03	1.54E+02	1.00E+02		2.10E+02	pCi/kg	
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Ruthenium-103	-1.37E+00	2.88E+00	7.69E+00		2.90E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Ruthenium-106	-1.94E+01	2.04E+01	6.32E+01		2.09E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Selenium-75	1.72E+00	2.90E+00	9.85E+00		2.92E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Silver-108m	1.22E+00	2.25E+00	7.45E+00		2.26E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Silver-110m	2.94E+00	3.70E+00	1.29E+01		3.77E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Strontium-89	2.46E+01	2.59E+01	7.89E+01	3.00E+02	3.83E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Strontium-90	-4.59E+00	2.15E+01	1.11E+02	3.00E+02	3.33E+01	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Thorium-228	5.08E+00	7.49E+00	1.34E+01		7.49E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Zinc-65	-3.64E+00	7.41E+00	2.28E+01	2.60E+02	7.46E+00	pCi/kg	U
F-2 Spotted Gar(546311005) - Fish	1-Jun-21	Zirconium-95	2.99E+00	3.78E+00	1.35E+01		3.85E+00	pCi/kg	U

F-2 W Sucker

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 W Sucker(546311003) - Fish	1-Jun-21	Actinium-228	3.69E+01	2.51E+01	9.35E+01		2.66E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Antimony-124	8.95E-01	1.09E+01	3.70E+01		1.09E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Antimony-125	-2.97E+00	1.46E+01	4.54E+01		1.46E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Barium-140	1.70E+00	3.22E+01	9.48E+01		3.22E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Beryllium-7	2.75E+01	4.40E+01	1.55E+02		4.44E+01	pCi/kg	U

F-2 W Sucker(546311003) - Fish	1-Jun-21	Cerium-141	-5.91E+00	7.57E+00	2.33E+01		7.70E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Cerium-144	4.06E+01	2.63E+01	9.32E+01		2.80E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Cesium-134	6.42E+00	8.60E+00	2.72E+01	1.30E+02	8.74E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Cesium-137	-2.92E+00	6.52E+00	1.73E+01	1.50E+02	6.55E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Chromium-51	3.27E+01	5.21E+01	1.77E+02		5.27E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Cobalt-57	-6.17E+00	3.41E+00	9.92E+00		3.70E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Cobalt-58	-3.01E+00	6.21E+00	1.68E+01	1.30E+02	6.25E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Cobalt-60	9.37E-01	6.38E+00	2.16E+01	1.30E+02	6.39E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Iodine-131	-9.62E+00	7.89E+00	2.27E+01		8.21E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Iron-59	-7.48E+00	1.44E+01	4.40E+01	2.60E+02	1.45E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Lanthanum-140	1.87E+00	1.10E+01	3.66E+01		1.10E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Manganese-54	2.67E+00	6.65E+00	2.29E+01	1.30E+02	6.68E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Niobium-95	-6.89E+00	5.84E+00	1.76E+01		6.06E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Potassium-40	2.93E+03	2.44E+02	1.83E+02		2.86E+02	pCi/kg	
F-2 W Sucker(546311003) - Fish	1-Jun-21	Ruthenium-103	2.44E+00	5.23E+00	1.82E+01		5.26E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Ruthenium-106	-4.41E+01	5.10E+01	1.54E+02		5.21E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Selenium-75	-2.71E+00	6.01E+00	1.95E+01		6.04E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Silver-108m	1.13E+01	4.96E+00	1.85E+01		5.62E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Silver-110m	-1.01E+00	7.69E+00	2.52E+01		7.69E+00	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Strontium-89	-4.46E+01	2.23E+01	8.48E+01	3.00E+02	4.04E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Strontium-90	3.01E+01	2.24E+01	1.02E+02	3.00E+02	3.28E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Thorium-228	1.57E+01	1.89E+01	3.48E+01		1.92E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Zinc-65	4.21E+01	1.64E+01	5.15E+01	2.60E+02	1.65E+01	pCi/kg	U
F-2 W Sucker(546311003) - Fish	1-Jun-21	Zirconium-95	-5.19E+00	1.06E+01	3.43E+01		1.07E+01	pCi/kg	U

F-2 W. Bass

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 W. Bass(560513004) - Fish	13-Oct-21	Actinium-228	2.07E+01	9.32E+00	3.39E+01		1.05E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Antimony-124	-9.52E+00	9.09E+00	2.55E+01		9.36E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Antimony-125	-2.12E+00	6.33E+00	1.86E+01		6.35E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Barium-140	1.17E+02	4.47E+01	1.19E+02		5.24E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Beryllium-7	-1.31E+01	2.72E+01	7.91E+01		2.74E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Cerium-141	1.68E+00	5.65E+00	1.85E+01		5.66E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Cerium-144	2.27E+01	1.42E+01	4.95E+01		1.52E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Cesium-134	8.07E-01	2.73E+00	9.05E+00	1.30E+02	2.73E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Cesium-137	5.89E+00	2.43E+00	9.42E+00	1.50E+02	2.79E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Chromium-51	-1.99E-01	3.12E+01	1.07E+02		3.12E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Cobalt-57	4.67E-01	2.13E+00	6.55E+00		2.13E+00	pCi/kg	U

F-2 W. Bass(560513004) - Fish	13-Oct-21	Cobalt-58	4.69E-02	2.70E+00	8.72E+00	1.30E+02	2.70E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Cobalt-60	1.10E+00	2.87E+00	9.97E+00	1.30E+02	2.89E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Iodine-131	-1.23E+01	2.55E+01	8.40E+01		2.56E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Iron-59	9.24E+00	7.95E+00	2.95E+01	2.60E+02	8.25E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Lanthanum-140	-6.71E+00	1.26E+01	3.77E+01		1.27E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Manganese-54	-3.74E+00	2.69E+00	7.49E+00	1.30E+02	2.83E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Niobium-95	3.59E+00	3.51E+00	1.13E+01		3.61E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Potassium-40	3.08E+03	1.46E+02	9.32E+01		2.19E+02	pCi/kg	
F-2 W. Bass(560513004) - Fish	13-Oct-21	Ruthenium-103	2.84E+00	3.47E+00	1.22E+01		3.54E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Ruthenium-106	2.37E+01	1.97E+01	6.63E+01		2.05E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Selenium-75	5.84E+00	3.27E+00	1.14E+01		3.55E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Silver-108m	-2.43E-01	1.98E+00	5.93E+00		1.98E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Silver-110m	2.66E-01	3.87E+00	1.25E+01		3.87E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Strontium-89	-1.34E+02	7.67E+01	2.63E+02	3.00E+02	1.06E+02	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Strontium-90	-5.04E+01	4.17E+01	1.81E+02	3.00E+02	5.38E+01	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Thorium-228	2.82E+00	4.63E+00	1.47E+01		4.68E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Zinc-65	4.67E+00	6.30E+00	2.26E+01	2.60E+02	6.39E+00	pCi/kg	U
F-2 W. Bass(560513004) - Fish	13-Oct-21	Zirconium-95	-2.44E-01	5.29E+00	1.71E+01		5.29E+00	pCi/kg	U

F-2 W. Perch

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 W. Perch(560513005) - Fish	13-Oct-21	Actinium-228	7.33E+01	5.78E+01	1.91E+02		6.03E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Antimony-124	-2.11E+01	4.96E+01	1.52E+02		4.98E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Antimony-125	2.96E+01	2.51E+01	9.15E+01		2.60E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Barium-140	1.29E+02	2.10E+02	7.17E+02		2.12E+02	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Beryllium-7	3.04E+01	1.26E+02	4.22E+02		1.27E+02	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Cerium-141	-3.81E+00	1.74E+01	5.51E+01		1.75E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Cerium-144	-1.72E+00	4.13E+01	1.31E+02		4.13E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Cesium-134	3.67E+01	2.34E+01	6.20E+01	1.30E+02	2.49E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Cesium-137	-7.61E+00	1.63E+01	5.10E+01	1.50E+02	1.64E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Chromium-51	4.11E+01	1.35E+02	4.64E+02		1.35E+02	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Cobalt-57	2.17E-01	5.31E+00	1.73E+01		5.31E+00	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Cobalt-58	6.56E+00	1.13E+01	4.12E+01	1.30E+02	1.15E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Cobalt-60	-9.70E+00	1.62E+01	4.67E+01	1.30E+02	1.64E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Iodine-131	-7.22E+01	1.27E+02	3.56E+02		1.29E+02	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Iron-59	-2.29E+01	3.86E+01	1.14E+02	2.60E+02	3.89E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Lanthanum-140	-1.37E+02	7.44E+01	1.38E+02		8.10E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Manganese-54	2.67E+01	1.67E+01	6.29E+01	1.30E+02	1.78E+01	pCi/kg	U

F-2 W. Perch(560513005) - Fish	13-Oct-21	Niobium-95	-1.29E+01	1.68E+01	5.19E+01		1.70E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Potassium-40	2.89E+03	4.09E+02	3.35E+02		4.28E+02	pCi/kg	
F-2 W. Perch(560513005) - Fish	13-Oct-21	Ruthenium-103	1.38E+01	1.46E+01	5.21E+01		1.49E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Ruthenium-106	2.36E+01	1.02E+02	3.35E+02		1.02E+02	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Selenium-75	-1.11E+01	1.21E+01	3.86E+01		1.23E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Silver-108m	-5.13E+00	9.50E+00	2.98E+01		9.58E+00	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Silver-110m	-1.41E+01	1.71E+01	5.05E+01		1.74E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Strontium-89	-3.01E+01	7.23E+01	2.39E+02	3.00E+02	9.46E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Strontium-90	7.35E+01	3.05E+01	1.26E+02	3.00E+02	3.94E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Thorium-228	-6.45E+00	1.58E+01	4.74E+01		1.58E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Zinc-65	-8.74E+01	3.67E+01	7.91E+01	2.60E+02	4.20E+01	pCi/kg	U
F-2 W. Perch(560513005) - Fish	13-Oct-21	Zirconium-95	-2.62E+01	2.43E+01	7.01E+01		2.51E+01	pCi/kg	U

F-2 Walleye

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-2 Walleye(560513007) - Fish	13-Oct-21	Actinium-228	-2.65E+01	3.00E+01	8.94E+01		3.07E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Antimony-124	1.08E+01	2.15E+01	7.51E+01		2.17E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Antimony-125	1.41E+00	1.38E+01	4.65E+01		1.38E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Barium-140	-2.97E+01	1.09E+02	3.53E+02		1.10E+02	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Beryllium-7	2.36E+01	5.78E+01	1.99E+02		5.81E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Cerium-141	4.12E+00	1.36E+01	4.10E+01		1.36E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Cerium-144	-4.66E+00	2.96E+01	9.42E+01		2.96E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Cesium-134	8.62E+00	6.99E+00	2.52E+01	1.30E+02	7.28E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Cesium-137	5.02E+00	5.71E+00	2.02E+01	1.50E+02	5.83E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Chromium-51	9.40E+01	8.67E+01	3.13E+02		8.94E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Cobalt-57	-8.26E-01	3.83E+00	1.22E+01		3.84E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Cobalt-58	-6.12E+00	8.17E+00	2.41E+01	1.30E+02	8.29E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Cobalt-60	-3.98E+00	7.57E+00	2.36E+01	1.30E+02	7.62E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Iodine-131	2.83E+01	7.26E+01	2.28E+02		7.29E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Iron-59	-6.64E+00	2.13E+01	6.98E+01	2.60E+02	2.14E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Lanthanum-140	3.51E+01	2.46E+01	1.03E+02		2.60E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Manganese-54	4.53E+00	6.75E+00	2.30E+01	1.30E+02	6.83E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Niobium-95	1.40E+01	8.16E+00	3.05E+01		8.79E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Potassium-40	3.60E+03	2.69E+02	2.05E+02		3.16E+02	pCi/kg	
F-2 Walleye(560513007) - Fish	13-Oct-21	Ruthenium-103	-6.20E+00	9.37E+00	2.95E+01		9.49E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Ruthenium-106	7.53E+00	5.11E+01	1.69E+02		5.11E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Selenium-75	5.54E+00	8.09E+00	2.63E+01		8.19E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Silver-108m	-1.00E+01	5.20E+00	1.37E+01		5.70E+00	pCi/kg	U

F-2 Walleye(560513007) - Fish	13-Oct-21	Silver-110m	-3.39E+00	8.63E+00	2.62E+01		8.67E+00	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Strontium-89	-9.13E+01	4.44E+01	1.50E+02	3.00E+02	6.42E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Strontium-90	-2.12E+02	2.93E+01	2.03E+02	3.00E+02	4.25E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Thorium-228	-2.38E+01	1.45E+01	5.10E+01		1.55E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Zinc-65	1.29E+01	1.66E+01	5.96E+01	2.60E+02	1.69E+01	pCi/kg	U
F-2 Walleye(560513007) - Fish	13-Oct-21	Zirconium-95	1.11E+01	1.48E+01	4.70E+01		1.50E+01	pCi/kg	U

F-3 Channel Catfish

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Actinium-228	-1.70E+01	9.29E+00	2.60E+01		1.01E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Antimony-124	7.86E+00	4.67E+00	1.91E+01		5.02E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Antimony-125	-1.05E+00	5.10E+00	1.70E+01		5.11E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Barium-140	-2.58E+01	2.57E+01	7.78E+01		2.64E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Beryllium-7	1.27E+00	1.78E+01	5.98E+01		1.78E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Cerium-141	1.70E+00	4.67E+00	1.40E+01		4.68E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Cerium-144	1.23E+00	1.16E+01	3.79E+01		1.16E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Cesium-134	-1.53E+00	2.27E+00	6.89E+00	1.30E+02	2.30E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Cesium-137	-1.29E+00	2.16E+00	6.74E+00	1.50E+02	2.18E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Chromium-51	-1.78E+00	2.50E+01	8.54E+01		2.50E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Cobalt-57	-3.16E-01	1.48E+00	4.79E+00		1.48E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Cobalt-58	2.93E+00	2.41E+00	8.54E+00	1.30E+02	2.51E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Cobalt-60	-2.36E-01	2.50E+00	7.60E+00	1.30E+02	2.50E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Iodine-131	1.12E+00	1.30E+01	4.42E+01		1.30E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Iron-59	-9.34E+00	6.29E+00	1.88E+01	2.60E+02	6.67E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Lanthanum-140	2.27E+00	5.53E+00	1.95E+01		5.56E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Manganese-54	2.51E-01	2.13E+00	6.88E+00	1.30E+02	2.13E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Niobium-95	-1.51E+00	2.37E+00	6.78E+00		2.39E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Potassium-40	2.92E+03	1.18E+02	4.31E+01		1.78E+02	pCi/kg	
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Ruthenium-103	7.66E-01	2.67E+00	9.05E+00		2.68E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Ruthenium-106	3.30E-01	1.74E+01	5.73E+01		1.74E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Selenium-75	2.20E+00	2.81E+00	9.16E+00		2.86E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Silver-108m	2.84E+00	2.50E+00	6.53E+00		2.59E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Silver-110m	-3.00E+00	3.25E+00	9.54E+00		3.32E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Strontium-89	7.36E+01	3.05E+01	9.54E+01	3.00E+02	5.25E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Strontium-90	-3.72E+00	2.80E+01	1.19E+02	3.00E+02	3.61E+01	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Thorium-228	-9.43E+00	3.80E+00	1.06E+01		4.40E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Zinc-65	3.55E+00	5.68E+00	1.99E+01	2.60E+02	5.74E+00	pCi/kg	U
F-3 Channel Catfish(560513011) - Fish	19-Oct-21	Zirconium-95	-2.27E-01	4.14E+00	1.18E+01		4.14E+00	pCi/kg	U

F-3 Crappie
Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-3 Crappie(545424006) - Fish	13-May-21	Actinium-228	2.73E+01	1.48E+02	5.40E+02		1.48E+02	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Antimony-124	-9.19E+01	7.52E+01	1.67E+02		7.82E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Antimony-125	-8.04E+01	5.95E+01	1.80E+02		6.24E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Barium-140	-2.38E+02	1.65E+02	4.60E+02		1.74E+02	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Beryllium-7	3.62E+01	2.08E+02	7.13E+02		2.08E+02	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Cerium-141	1.17E+01	3.47E+01	1.17E+02		3.48E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Cerium-144	9.22E+01	1.13E+02	3.91E+02		1.15E+02	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Cesium-134	-2.69E+01	3.19E+01	9.27E+01	1.30E+02	3.25E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Cesium-137	2.90E+01	3.13E+01	7.40E+01	1.50E+02	3.13E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Chromium-51	-2.10E+02	2.60E+02	7.60E+02		2.65E+02	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Cobalt-57	9.45E+00	1.19E+01	4.16E+01		1.21E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Cobalt-58	-3.71E+01	2.72E+01	6.96E+01	1.30E+02	2.86E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Cobalt-60	1.66E+00	2.47E+01	8.35E+01	1.30E+02	2.47E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Iodine-131	4.66E+01	8.38E+01	2.56E+02		8.45E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Iron-59	3.62E+01	5.56E+01	2.07E+02	2.60E+02	5.63E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Lanthanum-140	3.50E+01	6.76E+01	2.46E+02		6.81E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Manganese-54	-7.96E+00	2.83E+01	8.83E+01	1.30E+02	2.83E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Niobium-95	-4.21E+01	2.83E+01	7.30E+01		3.00E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Potassium-40	3.22E+03	8.00E+02	1.07E+03		8.15E+02	pCi/kg	
F-3 Crappie(545424006) - Fish	13-May-21	Ruthenium-103	7.91E+00	2.81E+01	9.69E+01		2.81E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Ruthenium-106	4.10E+02	2.35E+02	9.06E+02		2.54E+02	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Selenium-75	-4.50E+01	2.70E+01	7.38E+01		2.90E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Silver-108m	-1.80E+01	1.94E+01	6.10E+01		1.99E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Silver-110m	2.20E+01	2.91E+01	1.06E+02		2.96E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Strontium-89	3.56E+01	1.42E+01	3.93E+01	3.00E+02	1.72E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Strontium-90	1.07E+00	6.41E+00	2.98E+01	3.00E+02	9.15E+00	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Thorium-228	9.43E+01	8.22E+01	1.54E+02		8.51E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Zinc-65	-4.66E+01	6.74E+01	2.20E+02	2.60E+02	6.83E+01	pCi/kg	U
F-3 Crappie(545424006) - Fish	13-May-21	Zirconium-95	-2.58E+01	4.76E+01	1.44E+02		4.80E+01	pCi/kg	U

F-3 Gizzard Shad
Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Actinium-228	4.85E+01	2.64E+01	8.71E+01		2.87E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Antimony-124	-8.44E+00	1.27E+01	3.59E+01		1.28E+01	pCi/kg	U

F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Antimony-125	-1.19E+01	1.25E+01	3.96E+01		1.28E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Barium-140	-2.31E+01	5.95E+01	1.93E+02		5.97E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Beryllium-7	6.58E+01	3.80E+01	1.50E+02		4.10E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Cerium-141	1.58E+00	1.43E+01	3.57E+01		1.43E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Cerium-144	4.53E+01	2.64E+01	9.49E+01		2.85E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Cesium-134	-4.58E+00	6.67E+00	2.04E+01	1.30E+02	6.75E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Cesium-137	3.91E+00	5.38E+00	1.90E+01	1.50E+02	5.46E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Chromium-51	1.86E+02	1.72E+02	1.86E+02		1.73E+02	pCi/kg	UI
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Cobalt-57	-3.22E+00	3.51E+00	1.10E+01		3.59E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Cobalt-58	-8.37E+00	5.54E+00	1.45E+01	1.30E+02	5.88E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Cobalt-60	-1.15E+01	6.74E+00	1.82E+01	1.30E+02	7.25E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Iodine-131	4.33E+01	3.21E+01	1.20E+02		3.37E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Iron-59	4.33E+00	1.24E+01	4.15E+01	2.60E+02	1.24E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Lanthanum-140	6.80E-01	1.65E+01	5.53E+01		1.65E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Manganese-54	6.30E-01	5.57E+00	1.83E+01	1.30E+02	5.57E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Niobium-95	-3.25E+00	6.62E+00	2.06E+01		6.66E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Potassium-40	2.60E+03	2.19E+02	2.11E+02		2.50E+02	pCi/kg	
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Ruthenium-103	-3.03E+00	6.42E+00	2.08E+01		6.46E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Ruthenium-106	-5.31E+01	3.82E+01	1.06E+02		4.02E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Selenium-75	-4.45E+00	5.48E+00	1.60E+01		5.58E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Silver-108m	-4.45E+00	3.77E+00	1.16E+01		3.91E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Silver-110m	-1.60E+00	8.36E+00	2.66E+01		8.37E+00	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Strontium-89	-1.62E+02	5.26E+01	1.83E+02	3.00E+02	7.45E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Strontium-90	5.46E+01	3.71E+01	1.54E+02	3.00E+02	4.80E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Thorium-228	9.31E+00	1.02E+01	2.19E+01		1.02E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Zinc-65	-1.39E+01	1.59E+01	4.57E+01	2.60E+02	1.62E+01	pCi/kg	U
F-3 Gizzard Shad(560513009) - Fish	19-Oct-21	Zirconium-95	-1.45E+01	1.16E+01	3.31E+01		1.21E+01	pCi/kg	U

F-3 S.Bass

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-3 S.Bass(545424005) - Fish	13-May-21	Actinium-228	-1.24E+01	1.72E+01	5.87E+01		1.74E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Antimony-124	8.98E+00	8.30E+00	3.36E+01		8.56E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Antimony-125	-1.05E+00	8.26E+00	2.72E+01		8.27E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Barium-140	-6.46E+01	3.10E+01	7.96E+01		3.45E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Beryllium-7	1.31E+01	2.90E+01	1.01E+02		2.92E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Cerium-141	-1.17E+00	6.78E+00	2.12E+01		6.78E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Cerium-144	-1.22E+01	2.29E+01	7.01E+01		2.31E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Cesium-134	5.34E+00	3.52E+00	1.37E+01	1.30E+02	3.74E+00	pCi/kg	U

F-3 S.Bass(545424005) - Fish	13-May-21	Cesium-137	3.09E-01	3.79E+00	1.24E+01	1.50E+02	3.79E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Chromium-51	-6.42E+01	4.01E+01	1.19E+02		4.29E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Cobalt-57	-5.24E-01	2.65E+00	8.34E+00		2.65E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Cobalt-58	-5.43E+00	3.81E+00	1.01E+01	1.30E+02	4.02E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Cobalt-60	-5.10E+00	4.55E+00	1.25E+01	1.30E+02	4.71E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Iodine-131	4.49E+00	1.22E+01	3.86E+01		1.23E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Iron-59	-9.87E-01	8.75E+00	2.91E+01	2.60E+02	8.76E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Lanthanum-140	3.56E+00	8.34E+00	2.99E+01		8.39E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Manganese-54	-3.65E+00	4.30E+00	1.23E+01	1.30E+02	4.39E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Niobium-95	-5.05E-01	3.53E+00	1.11E+01		3.53E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Potassium-40	2.47E+03	1.92E+02	1.09E+02		2.36E+02	pCi/kg	
F-3 S.Bass(545424005) - Fish	13-May-21	Ruthenium-103	2.52E+00	3.42E+00	1.23E+01		3.47E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Ruthenium-106	-4.42E+01	3.61E+01	1.02E+02		3.75E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Selenium-75	-3.44E-02	4.78E+00	1.63E+01		4.78E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Silver-108m	1.90E+00	3.06E+00	1.08E+01		3.09E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Silver-110m	2.66E+00	5.44E+00	1.85E+01		5.48E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Strontium-89	-6.07E+00	1.38E+01	4.69E+01	3.00E+02	2.69E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Strontium-90	2.91E+01	1.64E+01	9.21E+01	3.00E+02	2.95E+01	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Thorium-228	-7.34E+00	6.68E+00	2.27E+01		6.89E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Zinc-65	6.71E+00	8.66E+00	3.18E+01	2.60E+02	8.80E+00	pCi/kg	U
F-3 S.Bass(545424005) - Fish	13-May-21	Zirconium-95	-1.65E+01	8.60E+00	1.61E+01		9.43E+00	pCi/kg	U

F-3 W. Perch

Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-3 W. Perch(545424007) - Fish	13-May-21	Actinium-228	-1.26E+01	1.60E+01	4.83E+01		1.63E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Actinium-228	5.10E+00	1.06E+01	3.85E+01		1.07E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Antimony-124	3.39E+00	8.84E+00	3.12E+01		8.87E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Antimony-124	-1.25E+01	6.28E+00	1.21E+01		6.93E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Antimony-125	-6.74E+00	8.45E+00	2.68E+01		8.60E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Antimony-125	7.65E-01	5.89E+00	1.98E+01		5.89E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Barium-140	4.49E+01	2.84E+01	1.06E+02		3.03E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Barium-140	-2.98E+00	2.52E+01	8.20E+01		2.52E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Beryllium-7	3.05E+01	3.06E+01	1.11E+02		3.14E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Beryllium-7	-8.21E+00	2.03E+01	6.54E+01		2.04E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Cerium-141	-7.42E+00	7.42E+00	2.08E+01		7.62E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Cerium-141	-6.50E+00	4.74E+00	1.37E+01		4.98E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Cerium-144	-1.24E+01	1.98E+01	6.22E+01		2.00E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Cerium-144	2.00E+01	1.25E+01	4.36E+01		1.34E+01	pCi/kg	U

F-3 W. Perch(545424007) - Fish	13-May-21	Cesium-134	6.70E-01	3.94E+00	1.31E+01	1.30E+02	3.95E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Cesium-134	8.24E-01	2.71E+00	8.88E+00	1.30E+02	2.72E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Cesium-137	2.22E+00	3.67E+00	1.28E+01	1.50E+02	3.70E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Cesium-137	7.93E-01	3.07E+00	1.00E+01	1.50E+02	3.07E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Chromium-51	-6.86E+00	4.16E+01	1.17E+02		4.16E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Chromium-51	3.10E+01	2.74E+01	9.86E+01		2.83E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Cobalt-57	1.53E+00	2.95E+00	9.92E+00		2.97E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Cobalt-57	-6.75E-01	1.55E+00	4.97E+00		1.56E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Cobalt-58	-2.46E-01	3.67E+00	1.18E+01	1.30E+02	3.67E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Cobalt-58	-4.71E+00	2.99E+00	7.41E+00	1.30E+02	3.19E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Cobalt-60	3.95E+00	4.24E+00	1.58E+01	1.30E+02	4.34E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Cobalt-60	1.50E-01	2.54E+00	8.39E+00	1.30E+02	2.54E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Iodine-131	-1.69E+00	9.28E+00	3.13E+01		9.29E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Iodine-131	5.45E+00	1.53E+01	5.28E+01		1.54E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Iron-59	-4.84E-02	1.06E+01	3.37E+01	2.60E+02	1.06E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Iron-59	3.11E+00	7.42E+00	2.56E+01	2.60E+02	7.46E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Lanthanum-140	4.34E+00	1.04E+01	3.64E+01		1.04E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Lanthanum-140	-8.16E-01	7.23E+00	2.29E+01		7.24E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Manganese-54	6.17E+00	4.17E+00	1.53E+01	1.30E+02	4.41E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Manganese-54	3.34E-01	2.49E+00	8.00E+00	1.30E+02	2.49E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Niobium-95	2.88E+00	4.49E+00	1.55E+01		4.54E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Niobium-95	9.54E-01	2.66E+00	8.79E+00		2.67E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Potassium-40	2.59E+03	1.97E+02	1.36E+02		2.39E+02	pCi/kg	
F-3 W. Perch(560513008) - Fish	19-Oct-21	Potassium-40	3.34E+03	1.40E+02	7.98E+01		2.07E+02	pCi/kg	
F-3 W. Perch(545424007) - Fish	13-May-21	Ruthenium-103	-5.14E+00	3.76E+00	1.11E+01		3.95E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Ruthenium-103	6.82E+00	6.88E+00	8.64E+00		6.89E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Ruthenium-106	2.18E+01	2.84E+01	1.01E+02		2.88E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Ruthenium-106	-2.56E+01	1.85E+01	5.26E+01		1.95E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Selenium-75	5.64E+00	4.67E+00	1.59E+01		4.85E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Selenium-75	-2.71E+00	2.89E+00	8.42E+00		2.96E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Silver-108m	-7.37E-02	3.15E+00	9.58E+00		3.15E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Silver-108m	-3.49E+00	1.84E+00	5.35E+00		2.01E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Silver-110m	1.30E+00	3.55E+00	1.21E+01		3.56E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Silver-110m	3.87E-01	3.25E+00	1.11E+01		3.25E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Strontium-89	7.28E+01	3.05E+01	8.84E+01	3.00E+02	3.96E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Strontium-89	-1.85E+01	2.68E+01	8.95E+01	3.00E+02	7.74E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Strontium-90	-5.55E+01	1.81E+01	9.48E+01	3.00E+02	2.58E+01	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Strontium-90	3.74E+01	4.62E+01	2.11E+02	3.00E+02	6.70E+01	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Thorium-228	1.64E+01	1.06E+01	3.05E+01		1.12E+01	pCi/kg	U

F-3 W. Perch(560513008) - Fish	19-Oct-21	Thorium-228	1.31E+01	7.24E+00	1.43E+01		7.86E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Zinc-65	7.04E-01	8.38E+00	2.69E+01	2.60E+02	8.38E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Zinc-65	5.24E+00	6.98E+00	2.44E+01	2.60E+02	7.09E+00	pCi/kg	U
F-3 W. Perch(545424007) - Fish	13-May-21	Zirconium-95	8.86E+00	6.84E+00	2.39E+01		7.15E+00	pCi/kg	U
F-3 W. Perch(560513008) - Fish	19-Oct-21	Zirconium-95	3.80E+00	5.30E+00	1.80E+01		5.37E+00	pCi/kg	U

F-3 Walleye
Fish

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
F-3 Walleye(545424004) - Fish	13-May-21	Actinium-228	-1.19E+01	1.16E+01	3.54E+01		1.19E+01	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Actinium-228	1.83E+01	1.58E+01	5.72E+01		1.64E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Antimony-124	-2.96E+00	6.01E+00	1.92E+01		6.05E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Antimony-124	1.44E+00	1.07E+01	3.24E+01		1.07E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Antimony-125	6.93E+00	5.32E+00	1.80E+01		5.56E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Antimony-125	4.29E+00	6.63E+00	2.28E+01		6.71E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Barium-140	-3.09E+01	1.63E+01	4.36E+01		1.79E+01	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Barium-140	1.34E+01	3.27E+01	1.10E+02		3.28E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Beryllium-7	3.19E+00	1.78E+01	6.04E+01		1.78E+01	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Beryllium-7	-3.93E+01	2.96E+01	8.68E+01		3.10E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Cerium-141	-4.01E+00	2.93E+00	8.89E+00		3.07E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Cerium-141	-9.34E+00	6.68E+00	1.48E+01		7.03E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Cerium-144	3.99E+00	9.52E+00	3.15E+01		9.56E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Cerium-144	1.35E+01	1.38E+01	4.54E+01		1.41E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Cesium-134	9.68E+00	4.25E+00	9.74E+00	1.30E+02	4.81E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Cesium-134	-3.63E+00	3.75E+00	1.18E+01	1.30E+02	3.84E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Cesium-137	7.51E+00	2.54E+00	9.41E+00	1.50E+02	3.09E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Cesium-137	-1.26E+00	2.70E+00	8.19E+00	1.50E+02	2.71E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Chromium-51	5.55E-01	2.06E+01	6.76E+01		2.06E+01	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Chromium-51	2.40E+01	3.05E+01	1.07E+02		3.10E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Cobalt-57	-1.05E-01	1.17E+00	3.82E+00		1.17E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Cobalt-57	1.10E+00	1.66E+00	5.40E+00		1.68E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Cobalt-58	3.80E+00	2.34E+00	7.02E+00	1.30E+02	2.35E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Cobalt-58	3.82E-01	3.87E+00	1.32E+01	1.30E+02	3.87E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Cobalt-60	2.39E-01	2.55E+00	8.51E+00	1.30E+02	2.55E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Cobalt-60	3.69E-01	3.40E+00	1.13E+01	1.30E+02	3.41E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Iodine-131	-2.29E+00	5.86E+00	1.86E+01		5.89E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Iodine-131	-1.69E+01	2.02E+01	5.56E+01		2.06E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Iron-59	1.37E+00	6.57E+00	2.15E+01	2.60E+02	6.58E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Iron-59	3.09E+00	1.20E+01	4.06E+01	2.60E+02	1.20E+01	pCi/kg	U

F-3 Walleye(545424004) - Fish	13-May-21	Lanthanum-140	5.76E+00	5.12E+00	1.85E+01		5.29E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Lanthanum-140	1.22E+01	1.40E+01	5.05E+01		1.43E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Manganese-54	2.53E+00	2.55E+00	7.99E+00	1.30E+02	2.62E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Manganese-54	1.21E+00	4.17E+00	1.28E+01	1.30E+02	4.18E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Niobium-95	1.61E-01	2.17E+00	7.35E+00		2.17E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Niobium-95	3.85E+00	3.82E+00	1.39E+01		3.93E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Potassium-40	3.47E+03	1.24E+02	7.31E+01		2.11E+02	pCi/kg	
F-3 Walleye(560513010) - Fish	19-Oct-21	Potassium-40	3.60E+03	1.83E+02	1.43E+02		2.46E+02	pCi/kg	
F-3 Walleye(545424004) - Fish	13-May-21	Ruthenium-103	2.40E+00	2.31E+00	8.12E+00		2.38E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Ruthenium-103	7.06E-01	3.73E+00	1.23E+01		3.73E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Ruthenium-106	-1.08E+01	2.02E+01	6.41E+01		2.03E+01	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Ruthenium-106	1.07E+01	3.32E+01	1.09E+02		3.33E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Selenium-75	1.93E+00	2.28E+00	7.88E+00		2.33E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Selenium-75	6.49E+00	3.50E+00	1.28E+01		3.81E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Silver-108m	-5.96E-01	1.72E+00	5.35E+00		1.73E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Silver-108m	1.58E+00	2.24E+00	7.72E+00		2.27E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Silver-110m	3.23E+00	3.62E+00	1.12E+01		3.70E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Silver-110m	-1.42E+00	3.96E+00	1.29E+01		3.97E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Strontium-89	3.88E+00	2.20E+01	7.16E+01	3.00E+02	2.54E+01	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Strontium-89	6.63E+00	2.09E+01	6.82E+01	3.00E+02	3.85E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Strontium-90	-6.55E+00	9.37E+00	4.58E+01	3.00E+02	1.34E+01	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Strontium-90	-4.85E+01	1.84E+01	8.05E+01	3.00E+02	2.38E+01	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Thorium-228	9.37E+00	5.67E+00	1.27E+01		6.08E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Thorium-228	-9.28E+00	5.01E+00	1.63E+01		5.47E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Zinc-65	-3.84E+00	6.49E+00	2.03E+01	2.60E+02	6.55E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Zinc-65	4.74E+00	8.76E+00	2.73E+01	2.60E+02	8.83E+00	pCi/kg	U
F-3 Walleye(545424004) - Fish	13-May-21	Zirconium-95	5.57E+00	4.04E+00	1.47E+01		4.24E+00	pCi/kg	U
F-3 Walleye(560513010) - Fish	19-Oct-21	Zirconium-95	5.18E-01	6.95E+00	2.22E+01		6.95E+00	pCi/kg	U

FP-9 Unidentified Broadleaf 3
Vegetation

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Actinium-228	-4.00E+01	3.39E+01	8.61E+01		3.51E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Actinium-228	5.66E+01	4.01E+01	9.51E+01		4.22E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Actinium-228	1.89E+01	5.20E+01	1.03E+02		5.22E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Antimony-124	1.27E+01	9.32E+00	3.72E+01		9.79E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Antimony-124	4.29E+00	1.27E+01	4.40E+01		1.27E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Antimony-124	-6.14E+00	1.28E+01	4.03E+01		1.29E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Antimony-125	-1.31E+01	1.44E+01	4.58E+01		1.47E+01	pCi/kg	U

FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Antimony-125	-2.34E+01	1.43E+01	4.32E+01		1.53E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Antimony-125	1.20E+01	1.60E+01	5.46E+01		1.62E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Barium-140	1.66E+01	2.36E+01	8.13E+01		2.39E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Barium-140	1.16E+01	2.22E+01	7.74E+01		2.24E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Barium-140	6.97E+01	3.41E+01	8.95E+01		3.78E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Beryllium-7	4.81E+03	1.79E+02	1.51E+02		2.74E+02	pCi/kg	
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Beryllium-7	4.72E+03	2.10E+02	1.34E+02		2.92E+02	pCi/kg	
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Beryllium-7	3.20E+03	1.63E+02	1.63E+02		2.16E+02	pCi/kg	
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Cerium-141	1.48E+00	8.36E+00	2.69E+01		8.37E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Cerium-141	-2.31E+01	1.01E+01	2.75E+01		1.15E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Cerium-141	-5.33E+00	9.57E+00	3.01E+01		9.65E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Cerium-144	-3.16E+01	3.25E+01	1.01E+02		3.34E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Cerium-144	-1.98E+00	3.31E+01	1.08E+02		3.31E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Cerium-144	-3.01E+01	3.49E+01	1.09E+02		3.56E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Cesium-134	-3.56E-01	6.96E+00	2.23E+01	6.00E+01	6.96E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Cesium-134	-5.59E+00	7.37E+00	2.25E+01	6.00E+01	7.48E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Cesium-134	9.68E-01	6.68E+00	2.27E+01	6.00E+01	6.68E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Cesium-137	-2.16E-02	6.49E+00	2.11E+01	8.00E+01	6.49E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Cesium-137	3.12E+00	5.75E+00	1.98E+01	8.00E+01	5.79E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Cesium-137	8.52E+00	6.33E+00	2.19E+01	8.00E+01	6.64E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Chromium-51	-3.24E+01	5.27E+01	1.56E+02		5.32E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Chromium-51	3.00E+01	5.28E+01	1.70E+02		5.32E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Chromium-51	-8.73E+00	5.01E+01	1.67E+02		5.01E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Cobalt-57	1.80E+00	3.92E+00	1.29E+01		3.94E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Cobalt-57	-8.35E+00	4.46E+00	1.33E+01		4.87E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Cobalt-57	3.25E-01	4.27E+00	1.39E+01		4.27E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Cobalt-58	6.36E+00	6.51E+00	2.14E+01		6.67E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Cobalt-58	1.79E+01	6.06E+00	2.45E+01		7.37E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Cobalt-58	-4.84E+00	6.18E+00	1.98E+01		6.28E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Cobalt-60	-8.10E-01	6.48E+00	2.13E+01		6.48E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Cobalt-60	6.36E+00	6.80E+00	2.51E+01		6.96E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Cobalt-60	1.07E+01	7.20E+00	2.61E+01		7.62E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Iodine-131	-4.06E+00	8.27E+00	2.73E+01	6.00E+01	8.33E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Iodine-131	1.66E+00	8.17E+00	2.83E+01	6.00E+01	8.18E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Iodine-131	1.23E+01	8.47E+00	2.99E+01	6.00E+01	8.94E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Iron-59	-7.94E+00	1.43E+01	4.64E+01		1.44E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Iron-59	-7.09E+00	1.21E+01	3.56E+01		1.23E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Iron-59	-3.09E+00	1.17E+01	3.76E+01		1.18E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Lanthanum-140	-3.85E+00	8.41E+00	2.60E+01		8.45E+00	pCi/kg	U

FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Lanthanum-140	1.55E+00	6.43E+00	2.23E+01		6.44E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Lanthanum-140	-1.12E+01	8.98E+00	2.63E+01		9.35E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Manganese-54	-3.06E+00	6.00E+00	1.84E+01		6.04E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Manganese-54	8.21E+00	6.16E+00	2.23E+01		6.46E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Manganese-54	5.75E+00	5.99E+00	2.13E+01		6.14E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Niobium-95	1.03E+00	6.56E+00	2.13E+01		6.56E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Niobium-95	-8.09E+00	5.21E+00	1.41E+01		5.55E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Niobium-95	-3.28E+00	6.15E+00	1.74E+01		6.20E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Potassium-40	6.69E+03	3.26E+02	2.10E+02		4.52E+02	pCi/kg	
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Potassium-40	5.23E+03	3.14E+02	1.63E+02		4.15E+02	pCi/kg	
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Potassium-40	3.77E+03	2.59E+02	2.48E+02		3.12E+02	pCi/kg	
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Ruthenium-103	4.55E+00	4.87E+00	1.71E+01		4.98E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Ruthenium-103	-6.97E+00	5.13E+00	1.54E+01		5.38E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Ruthenium-103	3.88E-02	5.73E+00	1.87E+01		5.73E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Ruthenium-106	-5.91E+01	5.37E+01	1.40E+02		5.54E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Ruthenium-106	-5.03E+01	4.70E+01	1.41E+02		4.85E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Ruthenium-106	-5.44E+00	5.49E+01	1.75E+02		5.49E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Selenium-75	-2.14E-01	6.84E+00	2.34E+01		6.84E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Selenium-75	-2.40E+00	8.24E+00	2.55E+01		8.26E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Selenium-75	-1.35E+00	9.69E+00	2.64E+01		9.69E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Silver-108m	8.39E+00	6.32E+00	1.80E+01		6.61E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Silver-108m	2.76E+00	4.03E+00	1.32E+01		4.08E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Silver-108m	-1.94E+00	5.28E+00	1.71E+01		5.30E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Silver-110m	-8.35E+00	8.56E+00	2.51E+01		8.78E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Silver-110m	-7.29E+00	9.46E+00	2.84E+01		9.62E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Silver-110m	6.74E+00	8.24E+00	2.90E+01		8.39E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Thorium-228	-2.41E+01	1.61E+01	5.48E+01		1.71E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Thorium-228	8.52E+00	1.77E+01	4.98E+01		1.78E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Thorium-228	-1.61E+01	1.46E+01	4.17E+01		1.51E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Zinc-65	2.80E+01	1.54E+01	5.75E+01		1.68E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Zinc-65	2.12E+00	1.58E+01	5.07E+01		1.58E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Zinc-65	3.18E+01	3.76E+01	5.99E+01		3.76E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(550488003) - Vegetation	22-Jul-21	Zirconium-95	-2.04E+01	1.11E+01	3.08E+01		1.21E+01	pCi/kg	U
FP-9 Unidentified Broadleaf 3(553514003) - Vegetation	19-Aug-21	Zirconium-95	-5.04E+00	9.23E+00	2.84E+01		9.30E+00	pCi/kg	U
FP-9 Unidentified Broadleaf 3(556498003) - Vegetation	20-Sep-21	Zirconium-95	-7.26E-01	1.16E+01	3.80E+01		1.17E+01	pCi/kg	U

FP-HD1 Unidentified Broadleaf 2
Vegetation

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual

FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Actinium-228	6.06E+01	5.16E+01	1.18E+02		5.36E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Actinium-228	-1.19E+02	3.41E+01	7.84E+01		4.42E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Actinium-228	9.61E+00	6.14E+01	1.14E+02		6.15E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Antimony-124	-6.90E+00	1.42E+01	4.21E+01		1.43E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Antimony-124	3.64E+01	1.80E+01	8.39E+01		1.99E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Antimony-124	2.74E+01	2.30E+01	4.05E+01		2.30E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Antimony-125	-9.97E+00	1.50E+01	4.84E+01		1.52E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Antimony-125	5.58E-02	2.27E+01	7.50E+01		2.27E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Antimony-125	4.21E+01	1.52E+01	5.92E+01		1.81E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Barium-140	-7.06E+00	2.80E+01	9.08E+01		2.81E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Barium-140	9.06E+01	3.93E+01	1.58E+02		4.46E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Barium-140	-4.23E+00	2.89E+01	9.67E+01		2.89E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Beryllium-7	5.94E+03	2.09E+02	1.63E+02		3.31E+02	pCi/kg	
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Beryllium-7	7.22E+03	3.82E+02	2.50E+02		4.91E+02	pCi/kg	
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Beryllium-7	4.36E+03	1.86E+02	1.59E+02		2.68E+02	pCi/kg	
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Cerium-141	-1.27E+00	9.31E+00	2.78E+01		9.31E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Cerium-141	2.48E+00	1.52E+01	4.83E+01		1.52E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Cerium-141	-1.93E+01	9.25E+00	2.79E+01		1.03E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Cerium-144	1.46E+01	3.36E+01	1.12E+02		3.38E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Cerium-144	-4.52E+01	5.92E+01	1.76E+02		6.01E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Cerium-144	-2.40E+01	3.64E+01	1.17E+02		3.68E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Cesium-134	-6.65E+00	8.43E+00	2.38E+01	6.00E+01	8.58E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Cesium-134	8.05E+00	9.94E+00	3.51E+01	6.00E+01	1.01E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Cesium-134	1.15E+00	6.74E+00	2.24E+01	6.00E+01	6.74E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Cesium-137	-3.50E+00	6.75E+00	2.10E+01	8.00E+01	6.80E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Cesium-137	-1.02E+00	1.08E+01	3.43E+01	8.00E+01	1.08E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Cesium-137	8.66E+00	7.06E+00	2.53E+01	8.00E+01	7.35E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Chromium-51	4.81E+01	5.17E+01	1.83E+02		5.29E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Chromium-51	-8.89E+01	8.44E+01	2.62E+02		8.69E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Chromium-51	2.98E+01	5.35E+01	1.74E+02		5.40E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Cobalt-57	1.05E+01	4.11E+00	1.48E+01		4.79E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Cobalt-57	5.05E+00	6.23E+00	2.10E+01		6.34E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Cobalt-57	3.00E+00	4.79E+00	1.63E+01		4.84E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Cobalt-58	6.33E-01	6.09E+00	1.95E+01		6.10E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Cobalt-58	3.61E+00	6.92E+00	2.41E+01		6.97E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Cobalt-58	-8.96E+00	6.90E+00	1.69E+01		7.21E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Cobalt-60	5.53E+00	7.47E+00	2.61E+01		7.58E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Cobalt-60	-6.77E-01	9.38E+00	3.06E+01		9.38E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Cobalt-60	-2.54E-01	7.96E+00	2.68E+01		7.96E+00	pCi/kg	U

FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Iodine-131	-1.89E+01	8.91E+00	2.72E+01	6.00E+01	9.94E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Iodine-131	1.02E+01	1.41E+01	4.96E+01	6.00E+01	1.43E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Iodine-131	-9.99E-01	9.91E+00	3.07E+01	6.00E+01	9.91E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Iron-59	2.85E+01	1.65E+01	5.37E+01		1.79E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Iron-59	-3.00E+01	2.22E+01	6.14E+01		2.33E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Iron-59	-1.70E+01	1.60E+01	4.62E+01		1.65E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Lanthanum-140	1.35E+00	8.35E+00	2.75E+01		8.36E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Lanthanum-140	-3.83E+00	1.01E+01	2.93E+01		1.02E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Lanthanum-140	9.09E+00	1.01E+01	3.68E+01		1.03E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Manganese-54	1.00E+00	7.18E+00	2.30E+01		7.18E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Manganese-54	-2.02E+00	9.24E+00	2.84E+01		9.26E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Manganese-54	1.45E+00	7.83E+00	2.59E+01		7.83E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Niobium-95	-9.78E+00	8.49E+00	2.34E+01		8.79E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Niobium-95	2.89E+01	1.50E+01	2.89E+01		1.51E+01	pCi/kg	UI
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Niobium-95	-3.75E+00	7.30E+00	2.32E+01		7.36E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Potassium-40	6.79E+03	3.76E+02	2.42E+02		5.01E+02	pCi/kg	
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Potassium-40	6.18E+03	4.66E+02	1.60E+02		5.76E+02	pCi/kg	
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Potassium-40	6.69E+03	3.61E+02	1.96E+02		4.85E+02	pCi/kg	
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Ruthenium-103	-1.30E+00	7.72E+00	2.16E+01		7.73E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Ruthenium-103	-4.31E+00	8.44E+00	2.61E+01		8.50E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Ruthenium-103	6.95E+00	5.97E+00	2.15E+01		6.19E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Ruthenium-106	-6.02E+01	5.83E+01	1.77E+02		6.00E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Ruthenium-106	-2.67E+00	1.10E+02	3.15E+02		1.10E+02	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Ruthenium-106	4.15E+01	6.90E+01	2.16E+02		6.97E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Selenium-75	-1.44E+01	8.72E+00	2.52E+01		9.35E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Selenium-75	-8.63E-01	1.30E+01	4.39E+01		1.30E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Selenium-75	5.68E+00	8.48E+00	2.78E+01		8.58E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Silver-108m	4.64E+00	5.32E+00	1.86E+01		5.43E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Silver-108m	-6.47E+00	8.30E+00	2.55E+01		8.44E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Silver-108m	4.97E+00	5.72E+00	2.03E+01		5.84E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Silver-110m	9.13E-01	7.80E+00	2.67E+01		7.80E+00	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Silver-110m	6.06E+00	1.13E+01	4.09E+01		1.14E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Silver-110m	-9.76E+00	1.01E+01	3.02E+01		1.03E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Thorium-228	2.46E+01	2.40E+01	4.26E+01		2.46E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Thorium-228	-6.29E+00	1.89E+01	6.49E+01		1.90E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Thorium-228	-2.42E+00	1.52E+01	4.64E+01		1.52E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Zinc-65	3.07E+01	1.85E+01	3.07E+01		1.86E+01	pCi/kg	UI
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Zinc-65	3.33E+01	3.05E+01	1.12E+02		3.15E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Zinc-65	5.36E+00	1.89E+01	6.17E+01		1.90E+01	pCi/kg	U

FP-HD1 Unidentified Broadleaf 2(550488002) - Vegetation	22-Jul-21	Zirconium-95	-1.86E+01	1.27E+01	3.62E+01		1.35E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(553514002) - Vegetation	19-Aug-21	Zirconium-95	-1.70E+01	1.28E+01	2.98E+01		1.34E+01	pCi/kg	U
FP-HD1 Unidentified Broadleaf 2(556498002) - Vegetation	20-Sep-21	Zirconium-95	-8.88E+00	1.26E+01	3.94E+01		1.28E+01	pCi/kg	U

FP-HD3 Unidentified Broadleaf 1
Vegetation

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Actinium-228	4.25E+01	4.63E+01	1.04E+02		4.74E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Actinium-228	7.03E+01	4.11E+01	1.43E+02		4.43E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Actinium-228	1.77E+01	3.26E+01	8.99E+01		3.29E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Antimony-124	-4.71E+00	1.12E+01	3.45E+01		1.13E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Antimony-124	-1.93E-01	1.78E+01	5.82E+01		1.78E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Antimony-124	3.04E+00	1.26E+01	4.15E+01		1.26E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Antimony-125	1.66E+01	1.64E+01	5.02E+01		1.68E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Antimony-125	-4.74E+01	2.83E+01	7.52E+01		3.04E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Antimony-125	-7.86E+00	1.34E+01	4.36E+01		1.35E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Barium-140	6.20E+01	2.77E+01	1.03E+02		3.13E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Barium-140	5.32E+01	3.63E+01	1.40E+02		3.84E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Barium-140	-9.44E-02	1.91E+01	6.26E+01		1.91E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Beryllium-7	4.20E+03	1.83E+02	1.56E+02		2.57E+02	pCi/kg	
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Beryllium-7	2.31E+03	2.58E+02	2.63E+02		2.77E+02	pCi/kg	
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Beryllium-7	2.26E+02	8.08E+01	1.24E+02		8.14E+01	pCi/kg	
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Cerium-141	-4.14E+00	8.99E+00	3.02E+01		9.04E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Cerium-141	1.30E+01	1.45E+01	5.10E+01		1.49E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Cerium-141	-6.08E+00	6.94E+00	1.98E+01		7.08E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Cerium-144	-6.48E+01	4.26E+01	1.04E+02		4.52E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Cerium-144	-5.89E+01	5.27E+01	1.66E+02		5.45E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Cerium-144	-2.84E+01	2.66E+01	8.29E+01		2.74E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Cesium-134	1.83E+00	5.96E+00	2.01E+01	6.00E+01	5.97E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Cesium-134	-2.54E+01	1.08E+01	2.38E+01	6.00E+01	1.24E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Cesium-134	-6.21E+00	5.16E+00	1.47E+01	6.00E+01	5.36E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Cesium-137	3.14E+00	5.79E+00	2.00E+01	8.00E+01	5.83E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Cesium-137	-2.74E+00	1.11E+01	3.69E+01	8.00E+01	1.11E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Cesium-137	1.00E+01	1.09E+01	1.76E+01	8.00E+01	1.09E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Chromium-51	-1.58E+01	5.49E+01	1.77E+02		5.51E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Chromium-51	-8.18E+01	9.19E+01	2.77E+02		9.38E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Chromium-51	6.09E+00	3.82E+01	1.31E+02		3.82E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Cobalt-57	3.30E+00	4.22E+00	1.48E+01		4.29E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Cobalt-57	1.44E+00	6.30E+00	2.15E+01		6.31E+00	pCi/kg	U

FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Cobalt-57	2.95E+00	3.37E+00	1.14E+01		3.44E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Cobalt-58	-7.07E+00	6.83E+00	1.91E+01		7.03E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Cobalt-58	-2.64E+00	9.00E+00	2.84E+01		9.02E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Cobalt-58	-1.02E+01	4.74E+00	1.20E+01		5.31E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Cobalt-60	1.25E+01	9.57E+00	2.05E+01		1.00E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Cobalt-60	-8.91E+00	1.12E+01	3.48E+01		1.13E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Cobalt-60	-6.24E+00	5.44E+00	1.58E+01		5.63E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Iodine-131	1.19E+01	1.33E+01	2.75E+01	6.00E+01	1.33E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Iodine-131	7.45E+00	1.55E+01	5.15E+01	6.00E+01	1.56E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Iodine-131	8.28E+00	7.49E+00	2.12E+01	6.00E+01	7.74E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Iron-59	-5.13E+00	1.36E+01	4.24E+01		1.36E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Iron-59	3.52E+01	1.82E+01	7.48E+01		2.00E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Iron-59	-4.68E+00	1.17E+01	3.50E+01		1.18E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Lanthanum-140	-2.58E+01	1.08E+01	2.76E+01		1.24E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Lanthanum-140	1.07E+01	1.29E+01	4.94E+01		1.32E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Lanthanum-140	-6.42E+00	6.61E+00	1.85E+01		6.77E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Manganese-54	2.44E+00	6.32E+00	2.13E+01		6.34E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Manganese-54	1.09E-01	1.08E+01	3.54E+01		1.08E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Manganese-54	1.96E+00	5.84E+00	1.89E+01		5.86E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Niobium-95	-4.50E+00	7.63E+00	2.19E+01		7.70E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Niobium-95	-3.63E+00	9.42E+00	2.96E+01		9.46E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Niobium-95	5.18E+00	6.50E+00	1.74E+01		6.61E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Potassium-40	2.62E+03	2.22E+02	2.12E+02		2.56E+02	pCi/kg	
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Potassium-40	2.49E+03	3.36E+02	2.18E+02		3.58E+02	pCi/kg	
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Potassium-40	3.30E+03	2.24E+02	1.76E+02		2.70E+02	pCi/kg	
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Ruthenium-103	6.98E+00	6.19E+00	1.90E+01		6.41E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Ruthenium-103	9.58E+00	8.65E+00	3.21E+01		8.93E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Ruthenium-103	-9.32E+00	4.78E+00	1.40E+01		5.25E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Ruthenium-106	-7.25E+01	5.19E+01	1.60E+02		5.46E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Ruthenium-106	1.04E+02	8.74E+01	3.23E+02		9.08E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Ruthenium-106	2.05E+01	4.39E+01	1.47E+02		4.42E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Selenium-75	-2.45E-01	7.94E+00	2.61E+01		7.94E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Selenium-75	-6.14E+00	1.21E+01	3.79E+01		1.21E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Selenium-75	-2.14E-01	6.49E+00	2.02E+01		6.49E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Silver-108m	-3.86E+00	5.75E+00	1.55E+01		5.82E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Silver-108m	-1.15E+01	9.74E+00	2.76E+01		1.01E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Silver-108m	-4.35E+00	4.03E+00	1.27E+01		4.16E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Silver-110m	2.33E+00	8.10E+00	2.71E+01		8.12E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Silver-110m	-2.80E+01	1.35E+01	3.04E+01		1.50E+01	pCi/kg	U

FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Silver-110m	3.92E+00	6.65E+00	2.12E+01		6.71E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Thorium-228	3.14E+01	1.98E+01	4.40E+01		2.11E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Thorium-228	-2.46E+01	2.04E+01	6.51E+01		2.12E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Thorium-228	3.37E+01	2.03E+01	3.80E+01		2.18E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Zinc-65	1.16E+01	1.43E+01	4.89E+01		1.46E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Zinc-65	-1.62E+01	2.13E+01	5.99E+01		2.16E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Zinc-65	1.14E+00	1.29E+01	3.82E+01		1.29E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(550488001) - Vegetation	22-Jul-21	Zirconium-95	-6.67E+00	9.61E+00	2.56E+01		9.73E+00	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(553514001) - Vegetation	19-Aug-21	Zirconium-95	-1.20E+01	1.44E+01	4.16E+01		1.47E+01	pCi/kg	U
FP-HD3 Unidentified Broadleaf 1(556498001) - Vegetation	20-Sep-21	Zirconium-95	7.87E+00	8.64E+00	2.95E+01		8.83E+00	pCi/kg	U

GW-1

Ground Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
GW-1(537440001) - Ground Water	10-Mar-21	Actinium-228	-9.54E-01	4.08E+00	8.86E+00		4.08E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Actinium-228	-5.54E+00	3.22E+00	6.99E+00		3.47E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Actinium-228	-1.08E+01	4.16E+00	8.14E+00		4.87E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Actinium-228	-3.02E+00	3.42E+00	8.27E+00		3.49E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Antimony-124	-1.88E-01	1.35E+00	4.36E+00		1.35E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Antimony-124	9.87E-02	1.20E+00	3.93E+00		1.20E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Antimony-124	-3.32E-01	1.30E+00	4.20E+00		1.30E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Antimony-124	-2.89E+00	1.62E+00	4.90E+00		1.76E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Antimony-125	-1.23E+00	1.43E+00	4.61E+00		1.46E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Antimony-125	-4.34E-02	1.15E+00	3.86E+00		1.15E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Antimony-125	2.56E-01	1.35E+00	4.36E+00		1.36E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Antimony-125	-1.05E+00	1.51E+00	4.66E+00		1.53E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Barium-140	8.96E-02	2.66E+00	8.77E+00	1.50E+01	2.66E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Barium-140	1.13E+00	2.40E+00	8.06E+00	1.50E+01	2.42E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Barium-140	-2.88E+00	2.50E+00	8.19E+00	1.50E+01	2.59E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Barium-140	-6.99E-02	3.31E+00	1.10E+01	1.50E+01	3.31E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Beryllium-7	-1.90E+00	4.61E+00	1.50E+01		4.63E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Beryllium-7	-4.09E+00	3.84E+00	1.23E+01		3.96E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Beryllium-7	4.00E+00	4.59E+00	1.50E+01		4.69E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Beryllium-7	3.93E+00	4.88E+00	1.69E+01		4.97E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Cerium-141	-5.43E-02	1.10E+00	3.49E+00		1.10E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Cerium-141	3.62E-01	1.62E+00	2.48E+00		1.62E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Cerium-141	1.48E+00	1.80E+00	2.98E+00		1.80E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Cerium-141	-1.63E+00	1.05E+00	2.97E+00		1.11E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Cerium-144	-3.34E+00	4.08E+00	1.27E+01		4.15E+00	pCi/L	U

GW-1(547038001) - Ground Water	10-Jun-21	Cerium-144	-3.16E+00	2.89E+00	9.09E+00		2.99E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Cerium-144	9.64E-01	3.35E+00	1.15E+01		3.36E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Cerium-144	4.85E+00	3.54E+00	1.09E+01		3.54E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Cesium-134	-3.66E-01	5.90E-01	1.83E+00	1.50E+01	5.96E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Cesium-134	9.27E-01	4.90E-01	1.71E+00	1.50E+01	5.35E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Cesium-134	4.91E-01	5.78E-01	1.84E+00	1.50E+01	5.89E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Cesium-134	6.14E-01	6.41E-01	2.18E+00	1.50E+01	6.57E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Cesium-137	4.02E-01	5.26E-01	1.77E+00	1.80E+01	5.34E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Cesium-137	1.03E-01	4.36E-01	1.44E+00	1.80E+01	4.37E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Cesium-137	1.32E+00	5.49E-01	1.80E+00	1.80E+01	6.29E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Cesium-137	5.70E-01	5.95E-01	2.00E+00	1.80E+01	6.10E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Chromium-51	-4.25E+00	4.94E+00	1.63E+01		5.04E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Chromium-51	-2.37E-01	4.15E+00	1.41E+01		4.15E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Chromium-51	1.81E+00	5.04E+00	1.66E+01		5.06E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Chromium-51	4.81E+00	5.30E+00	1.78E+01		5.42E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Cobalt-57	-6.22E-02	5.29E-01	1.69E+00		5.29E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Cobalt-57	2.25E-02	3.82E-01	1.24E+00		3.82E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Cobalt-57	5.25E-01	4.83E-01	1.53E+00		4.98E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Cobalt-57	-4.22E-01	4.18E-01	1.34E+00		4.30E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Cobalt-58	9.08E-01	5.34E-01	1.86E+00	1.50E+01	5.75E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Cobalt-58	-6.09E-01	5.21E-01	1.38E+00	1.50E+01	5.40E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Cobalt-58	9.79E-02	5.41E-01	1.79E+00	1.50E+01	5.41E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Cobalt-58	3.04E-01	6.53E-01	2.11E+00	1.50E+01	6.56E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Cobalt-60	-7.67E-03	6.16E-01	2.05E+00	1.50E+01	6.16E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Cobalt-60	5.79E-01	4.43E-01	1.58E+00	1.50E+01	4.63E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Cobalt-60	1.19E-01	5.34E-01	1.81E+00	1.50E+01	5.35E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Cobalt-60	-9.86E-01	5.87E-01	1.77E+00	1.50E+01	6.31E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Iodine-131	3.41E-01	1.00E+00	3.41E+00		1.01E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Iodine-131	2.95E-01	8.19E-01	2.80E+00		8.22E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Iodine-131	-3.32E-01	9.40E-01	3.01E+00		9.43E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Iodine-131	2.56E-01	1.49E+00	4.85E+00		1.50E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Iron-59	-1.02E+00	9.52E-01	3.00E+00	3.00E+01	9.82E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Iron-59	7.26E-01	8.83E-01	3.09E+00	3.00E+01	9.00E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Iron-59	6.12E-02	1.12E+00	3.62E+00	3.00E+01	1.12E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Iron-59	-7.60E-01	2.03E+00	4.55E+00	3.00E+01	2.04E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Lanthanum-140	-2.47E-01	1.04E+00	3.37E+00	1.50E+01	1.05E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Lanthanum-140	1.59E+00	8.96E-01	3.22E+00	1.50E+01	9.71E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Lanthanum-140	-1.16E+00	8.77E-01	2.68E+00	1.50E+01	9.18E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Lanthanum-140	1.88E+00	1.39E+00	4.83E+00	1.50E+01	1.46E+00	pCi/L	U

GW-1(537440001) - Ground Water	10-Mar-21	Manganese-54	-9.07E-01	6.01E-01	1.78E+00	1.50E+01	6.38E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Manganese-54	-1.79E-01	4.45E-01	1.40E+00	1.50E+01	4.47E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Manganese-54	-4.78E-01	4.70E-01	1.48E+00	1.50E+01	4.84E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Manganese-54	9.16E-01	5.77E-01	2.04E+00	1.50E+01	6.15E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Niobium-95	-1.16E+00	8.22E-01	1.87E+00	1.50E+01	8.66E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Niobium-95	-1.01E+00	7.40E-01	1.46E+00	1.50E+01	7.77E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Niobium-95	5.20E-01	5.68E-01	1.93E+00	1.50E+01	5.81E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Niobium-95	-1.11E-01	5.95E-01	1.99E+00	1.50E+01	5.95E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Potassium-40	7.05E+00	1.10E+01	1.57E+01		1.10E+01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Potassium-40	1.42E+01	1.28E+01	1.42E+01		1.29E+01	pCi/L	UI
GW-1(555477001) - Ground Water	9-Sep-21	Potassium-40	5.75E+00	1.13E+01	1.77E+01		1.13E+01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Potassium-40	-7.66E+00	1.07E+01	2.74E+01		1.09E+01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Ruthenium-103	6.42E-01	6.33E-01	1.97E+00		6.51E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Ruthenium-103	-1.10E-01	5.12E-01	1.51E+00		5.13E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Ruthenium-103	-6.27E-01	6.56E-01	1.77E+00		6.72E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Ruthenium-103	1.22E-01	6.70E-01	2.00E+00		6.71E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Ruthenium-106	1.03E+01	4.82E+00	1.71E+01		5.39E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Ruthenium-106	2.73E+00	3.77E+00	1.27E+01		3.83E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Ruthenium-106	-6.64E-01	4.38E+00	1.46E+01		4.38E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Ruthenium-106	-2.86E+00	5.07E+00	1.63E+01		5.12E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Selenium-75	1.13E-02	7.15E-01	2.44E+00		7.15E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Selenium-75	6.89E-01	5.55E-01	1.96E+00		5.78E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Selenium-75	-1.53E+00	8.43E-01	2.25E+00		9.16E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Selenium-75	7.71E-02	6.53E-01	2.19E+00		6.54E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Silver-108m	5.56E-01	4.79E-01	1.66E+00		4.97E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Silver-108m	-9.61E-02	3.85E-01	1.28E+00		3.86E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Silver-108m	-5.21E-01	4.72E-01	1.46E+00		4.88E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Silver-108m	-5.32E-01	4.72E-01	1.43E+00		4.88E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Silver-110m	1.26E+00	6.41E-01	2.29E+00		7.06E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Silver-110m	-3.66E-01	6.55E-01	2.03E+00		6.60E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Silver-110m	2.97E-01	7.15E-01	2.38E+00		7.19E-01	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Silver-110m	1.14E+00	7.52E-01	2.65E+00		7.98E-01	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Thorium-228	5.36E-01	2.21E+00	4.73E+00		2.21E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Thorium-228	6.05E-01	1.62E+00	4.71E+00		1.63E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Thorium-228	2.95E+00	2.28E+00	2.95E+00		2.28E+00	pCi/L	UI
GW-1(563869001) - Ground Water	2-Dec-21	Thorium-228	-3.32E+00	1.60E+00	3.44E+00		1.78E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Tritium	1.21E+02	9.17E+01	2.71E+02	5.00E+02	9.25E+01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Tritium	1.90E+02	1.13E+02	2.94E+02	5.00E+02	1.14E+02	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Tritium	8.78E+01	1.27E+02	4.09E+02	5.00E+02	1.28E+02	pCi/L	U

GW-1(563869001) - Ground Water	2-Dec-21	Tritium	1.87E+02	1.40E+02	4.39E+02	5.00E+02	1.41E+02	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Zinc-65	-2.38E-01	1.26E+00	3.67E+00	3.00E+01	1.26E+00	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Zinc-65	-1.12E+00	9.43E-01	2.88E+00	3.00E+01	9.79E-01	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Zinc-65	-6.52E-02	1.21E+00	3.38E+00	3.00E+01	1.21E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Zinc-65	-1.33E+00	1.22E+00	3.44E+00	3.00E+01	1.25E+00	pCi/L	U
GW-1(537440001) - Ground Water	10-Mar-21	Zirconium-95	-4.53E-01	8.36E-01	2.60E+00	1.50E+01	8.43E-01	pCi/L	U
GW-1(547038001) - Ground Water	10-Jun-21	Zirconium-95	9.55E-01	9.86E-01	2.90E+00	1.50E+01	1.01E+00	pCi/L	U
GW-1(555477001) - Ground Water	9-Sep-21	Zirconium-95	-3.12E+00	1.81E+00	2.81E+00	1.50E+01	1.95E+00	pCi/L	U
GW-1(563869001) - Ground Water	2-Dec-21	Zirconium-95	3.21E-01	1.22E+00	3.63E+00	1.50E+01	1.22E+00	pCi/L	U

GW-2

Ground Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
GW-2(537440002) - Ground Water	10-Mar-21	Actinium-228	-9.17E+00	4.79E+00	1.14E+01		5.25E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Actinium-228	6.13E-01	3.87E+00	7.92E+00		3.87E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Actinium-228	8.58E+00	4.34E+00	8.58E+00		5.64E+00	pCi/L	UI
GW-2(563869002) - Ground Water	2-Dec-21	Actinium-228	5.45E-01	3.33E+00	7.36E+00		3.33E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Antimony-124	1.79E+00	1.81E+00	6.45E+00		1.86E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Antimony-124	1.72E+00	1.37E+00	4.82E+00		1.42E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Antimony-124	9.10E-02	1.21E+00	3.99E+00		1.21E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Antimony-124	-3.92E-01	1.17E+00	3.67E+00		1.17E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Antimony-125	1.62E-01	1.87E+00	6.13E+00		1.87E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Antimony-125	-8.56E-01	1.51E+00	4.82E+00		1.53E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Antimony-125	3.39E-01	1.43E+00	4.86E+00		1.43E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Antimony-125	-2.43E+00	1.28E+00	4.05E+00		1.40E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Barium-140	1.18E+01	3.91E+00	1.40E+01	1.50E+01	4.79E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Barium-140	3.03E+00	3.00E+00	9.87E+00	1.50E+01	3.08E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Barium-140	4.14E-01	2.80E+00	9.35E+00	1.50E+01	2.80E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Barium-140	-3.29E+00	3.23E+00	1.03E+01	1.50E+01	3.33E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Beryllium-7	1.04E-01	6.46E+00	2.09E+01		6.46E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Beryllium-7	-6.70E-01	5.02E+00	1.60E+01		5.02E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Beryllium-7	1.72E+00	4.66E+00	1.58E+01		4.68E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Beryllium-7	6.36E+00	4.50E+00	1.56E+01		4.74E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Cerium-141	2.98E-01	1.29E+00	4.06E+00		1.30E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Cerium-141	-2.04E+00	1.14E+00	3.44E+00		1.24E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Cerium-141	3.25E+00	2.78E+00	3.25E+00		2.81E+00	pCi/L	UI
GW-2(563869002) - Ground Water	2-Dec-21	Cerium-141	-6.31E-01	9.88E-01	3.17E+00		9.99E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Cerium-144	-2.52E+00	4.53E+00	1.40E+01		4.57E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Cerium-144	-8.20E+00	3.97E+00	1.19E+01		4.41E+00	pCi/L	U

GW-2(555477002) - Ground Water	9-Sep-21	Cerium-144	5.10E+00	3.86E+00	1.28E+01		4.04E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Cerium-144	1.84E+00	3.31E+00	1.09E+01		3.34E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Cesium-134	1.13E+00	8.88E-01	3.13E+00	1.50E+01	9.26E-01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Cesium-134	-1.91E-01	6.00E-01	1.97E+00	1.50E+01	6.01E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Cesium-134	9.25E-01	6.47E-01	2.02E+00	1.50E+01	6.82E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Cesium-134	-1.44E-01	5.52E-01	1.74E+00	1.50E+01	5.53E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Cesium-137	1.41E+00	9.18E-01	2.96E+00	1.80E+01	9.75E-01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Cesium-137	1.37E-01	5.74E-01	1.95E+00	1.80E+01	5.75E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Cesium-137	-1.99E+00	8.63E-01	1.85E+00	1.80E+01	9.80E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Cesium-137	-6.16E-01	4.88E-01	1.50E+00	1.80E+01	5.09E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Chromium-51	8.00E-01	6.40E+00	2.13E+01		6.40E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Chromium-51	-6.04E+00	5.29E+00	1.70E+01		5.48E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Chromium-51	-1.06E+00	5.18E+00	1.77E+01		5.18E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Chromium-51	-5.50E+00	4.77E+00	1.59E+01		4.95E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Cobalt-57	2.29E-01	5.85E-01	1.86E+00		5.88E-01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Cobalt-57	4.46E-01	5.25E-01	1.68E+00		5.35E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Cobalt-57	-2.79E-01	5.06E-01	1.63E+00		5.10E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Cobalt-57	-1.72E-01	4.40E-01	1.43E+00		4.42E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Cobalt-58	7.51E-01	7.73E-01	2.70E+00	1.50E+01	7.93E-01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Cobalt-58	-3.74E-01	5.71E-01	1.85E+00	1.50E+01	5.78E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Cobalt-58	1.53E+00	9.55E-01	1.53E+00	1.50E+01	9.58E-01	pCi/L	UI
GW-2(563869002) - Ground Water	2-Dec-21	Cobalt-58	3.59E-01	4.98E-01	1.64E+00	1.50E+01	5.05E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Cobalt-60	-6.90E-01	1.02E+00	2.90E+00	1.50E+01	1.04E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Cobalt-60	-3.00E-03	5.93E-01	2.00E+00	1.50E+01	5.93E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Cobalt-60	5.11E-01	6.02E-01	2.09E+00	1.50E+01	6.14E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Cobalt-60	-8.44E-01	4.76E-01	1.39E+00	1.50E+01	5.16E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Iodine-131	-2.21E-01	1.45E+00	4.26E+00		1.46E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Iodine-131	-8.13E-01	1.10E+00	3.55E+00		1.12E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Iodine-131	-6.39E-01	9.94E-01	3.33E+00		1.01E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Iodine-131	7.21E-01	1.37E+00	4.70E+00		1.38E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Iron-59	8.39E-01	1.61E+00	5.43E+00	3.00E+01	1.63E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Iron-59	4.62E-01	1.18E+00	3.88E+00	3.00E+01	1.18E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Iron-59	-2.07E+00	1.04E+00	3.19E+00	3.00E+01	1.15E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Iron-59	-4.31E-01	1.09E+00	3.59E+00	3.00E+01	1.10E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Lanthanum-140	2.20E+00	1.23E+00	4.60E+00	1.50E+01	1.33E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Lanthanum-140	-8.17E-01	9.92E-01	3.14E+00	1.50E+01	1.01E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Lanthanum-140	-5.00E-01	9.64E-01	3.07E+00	1.50E+01	9.71E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Lanthanum-140	1.06E+00	1.13E+00	3.86E+00	1.50E+01	1.15E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Manganese-54	2.37E-01	7.61E-01	2.58E+00	1.50E+01	7.63E-01	pCi/L	U

GW-2(547038002) - Ground Water	10-Jun-21	Manganese-54	4.56E-01	5.65E-01	1.74E+00	1.50E+01	5.65E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Manganese-54	8.99E-02	4.68E-01	1.52E+00	1.50E+01	4.68E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Manganese-54	-4.19E-02	4.90E-01	1.55E+00	1.50E+01	4.90E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Niobium-95	2.46E+00	9.13E-01	3.08E+00	1.50E+01	1.08E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Niobium-95	8.52E-01	6.71E-01	2.08E+00	1.50E+01	7.00E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Niobium-95	6.87E-01	1.10E+00	1.54E+00	1.50E+01	1.10E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Niobium-95	-4.04E-01	5.50E-01	1.71E+00	1.50E+01	5.58E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Potassium-40	1.51E+01	2.13E+01	2.73E+01		2.14E+01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Potassium-40	-8.46E+00	1.19E+01	2.46E+01		1.21E+01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Potassium-40	1.69E+01	1.84E+01	1.69E+01		1.84E+01	pCi/L	UI
GW-2(563869002) - Ground Water	2-Dec-21	Potassium-40	8.76E+00	1.56E+01	1.65E+01		1.57E+01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Ruthenium-103	7.02E-01	8.31E-01	2.76E+00		8.47E-01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Ruthenium-103	4.94E-01	6.06E-01	1.79E+00		6.17E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Ruthenium-103	6.82E-02	6.05E-01	1.82E+00		6.05E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Ruthenium-103	1.23E-02	5.85E-01	1.74E+00		5.85E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Ruthenium-106	-4.33E+00	7.05E+00	2.18E+01		7.13E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Ruthenium-106	5.44E+00	4.78E+00	1.67E+01		4.95E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Ruthenium-106	5.80E+00	4.82E+00	1.65E+01		5.01E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Ruthenium-106	-2.07E+00	4.13E+00	1.32E+01		4.16E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Selenium-75	5.55E-01	8.70E-01	2.97E+00		8.80E-01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Selenium-75	7.28E-01	7.29E-01	2.49E+00		7.50E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Selenium-75	-1.88E-01	8.26E-01	2.56E+00		8.27E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Selenium-75	8.40E-01	7.19E-01	2.32E+00		7.45E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Silver-108m	1.56E-01	6.50E-01	2.14E+00		6.52E-01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Silver-108m	-7.53E-01	4.61E-01	1.41E+00		4.94E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Silver-108m	-3.18E-01	4.66E-01	1.54E+00		4.72E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Silver-108m	4.11E-02	4.12E-01	1.38E+00		4.12E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Silver-110m	8.60E-01	1.11E+00	3.42E+00		1.13E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Silver-110m	5.06E-01	7.51E-01	2.54E+00		7.61E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Silver-110m	2.44E-01	6.70E-01	2.19E+00		6.73E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Silver-110m	2.08E-01	6.69E-01	2.15E+00		6.70E-01	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Thorium-228	1.89E+00	1.98E+00	3.80E+00		1.98E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Thorium-228	2.51E+00	1.80E+00	3.27E+00		1.81E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Thorium-228	4.03E+00	2.16E+00	4.03E+00		2.43E+00	pCi/L	UI
GW-2(563869002) - Ground Water	2-Dec-21	Thorium-228	-3.45E-01	1.60E+00	3.73E+00		1.60E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Tritium	-7.05E-02	8.24E+01	2.71E+02	5.00E+02	8.24E+01	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Tritium	2.11E+02	1.10E+02	2.77E+02	5.00E+02	1.12E+02	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Tritium	-1.08E+02	1.23E+02	4.19E+02	5.00E+02	1.23E+02	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Tritium	1.23E+01	1.38E+02	4.53E+02	5.00E+02	1.38E+02	pCi/L	U

GW-2(537440002) - Ground Water	10-Mar-21	Zinc-65	-9.85E-01	1.72E+00	4.68E+00	3.00E+01	1.73E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Zinc-65	1.80E+00	1.16E+00	3.64E+00	3.00E+01	1.24E+00	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Zinc-65	2.81E+00	1.12E+00	3.89E+00	3.00E+01	1.30E+00	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Zinc-65	2.52E+00	1.31E+00	3.48E+00	3.00E+01	1.43E+00	pCi/L	U
GW-2(537440002) - Ground Water	10-Mar-21	Zirconium-95	3.59E+00	2.60E+00	5.30E+00	1.50E+01	2.73E+00	pCi/L	U
GW-2(547038002) - Ground Water	10-Jun-21	Zirconium-95	5.27E-01	9.58E-01	3.26E+00	1.50E+01	9.66E-01	pCi/L	U
GW-2(555477002) - Ground Water	9-Sep-21	Zirconium-95	-7.66E-01	9.52E-01	2.97E+00	1.50E+01	9.68E-01	pCi/L	U
GW-2(563869002) - Ground Water	2-Dec-21	Zirconium-95	7.24E-01	8.63E-01	2.88E+00	1.50E+01	8.79E-01	pCi/L	U

GW-3

Ground Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
GW-3(537440003) - Ground Water	10-Mar-21	Actinium-228	-1.57E+00	2.94E+00	6.48E+00		2.96E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Actinium-228	7.33E+00	3.69E+00	7.33E+00		5.79E+00	pCi/L	UI
GW-3(555477003) - Ground Water	9-Sep-21	Actinium-228	5.96E+00	5.05E+00	7.36E+00		5.24E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Actinium-228	-2.19E+00	3.71E+00	8.54E+00		3.75E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Antimony-124	9.28E-01	1.04E+00	3.68E+00		1.07E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Antimony-124	-1.60E+00	1.28E+00	3.82E+00		1.33E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Antimony-124	-1.36E+00	1.49E+00	3.92E+00		1.52E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Antimony-124	1.25E+00	1.45E+00	5.13E+00		1.48E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Antimony-125	1.74E+00	1.19E+00	4.23E+00		1.25E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Antimony-125	-6.15E-01	1.36E+00	4.36E+00		1.37E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Antimony-125	2.24E-01	1.16E+00	3.92E+00		1.17E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Antimony-125	-1.40E+00	1.26E+00	4.02E+00		1.30E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Barium-140	3.46E+00	2.33E+00	8.25E+00	1.50E+01	2.46E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Barium-140	4.22E-01	2.65E+00	8.54E+00	1.50E+01	2.65E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Barium-140	1.14E+00	2.35E+00	7.86E+00	1.50E+01	2.36E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Barium-140	-3.47E+00	3.30E+00	1.03E+01	1.50E+01	3.40E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Beryllium-7	-2.48E+00	3.77E+00	1.24E+01		3.82E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Beryllium-7	2.70E+00	4.27E+00	1.41E+01		4.31E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Beryllium-7	-8.95E-01	3.75E+00	1.24E+01		3.76E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Beryllium-7	-1.46E+00	4.94E+00	1.61E+01		4.95E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Cerium-141	2.46E+00	1.80E+00	2.46E+00		1.80E+00	pCi/L	UI
GW-3(547038003) - Ground Water	10-Jun-21	Cerium-141	2.77E+00	1.49E+00	2.77E+00		1.49E+00	pCi/L	UI
GW-3(555477003) - Ground Water	9-Sep-21	Cerium-141	-4.34E+00	1.24E+00	2.48E+00		1.60E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Cerium-141	7.98E-01	1.12E+00	3.36E+00		1.13E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Cerium-144	-7.14E-01	2.96E+00	9.69E+00		2.97E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Cerium-144	-1.53E+00	3.32E+00	1.12E+01		3.34E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Cerium-144	4.90E-01	2.89E+00	9.32E+00		2.90E+00	pCi/L	U

GW-3(563869003) - Ground Water	2-Dec-21	Cerium-144	-2.91E+00	3.41E+00	1.08E+01		3.48E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Cesium-134	1.18E-01	4.95E-01	1.63E+00	1.50E+01	4.96E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Cesium-134	-2.53E+00	9.22E-01	1.52E+00	1.50E+01	1.10E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Cesium-134	2.37E-01	4.80E-01	1.58E+00	1.50E+01	4.84E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Cesium-134	9.24E-02	5.78E-01	1.98E+00	1.50E+01	5.78E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Cesium-137	-3.05E-02	5.13E-01	1.69E+00	1.80E+01	5.13E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Cesium-137	8.46E-02	5.39E-01	1.72E+00	1.80E+01	5.39E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Cesium-137	-1.37E-01	4.69E-01	1.51E+00	1.80E+01	4.70E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Cesium-137	4.93E-02	5.45E-01	1.76E+00	1.80E+01	5.45E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Chromium-51	7.73E+00	4.47E+00	1.48E+01		4.82E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Chromium-51	-1.59E+00	4.87E+00	1.59E+01		4.89E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Chromium-51	-6.85E+00	4.15E+00	1.36E+01		4.45E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Chromium-51	5.99E+00	8.79E+00	1.80E+01		8.79E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Cobalt-57	5.78E-01	3.81E-01	1.30E+00		4.04E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Cobalt-57	-8.54E-02	4.41E-01	1.49E+00		4.42E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Cobalt-57	2.42E-01	3.87E-01	1.27E+00		3.92E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Cobalt-57	-5.00E-01	4.78E-01	1.39E+00		4.92E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Cobalt-58	-3.71E-02	4.79E-01	1.38E+00	1.50E+01	4.79E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Cobalt-58	-5.45E-01	5.06E-01	1.58E+00	1.50E+01	5.22E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Cobalt-58	-5.58E-01	4.85E-01	1.47E+00	1.50E+01	5.02E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Cobalt-58	7.32E-02	5.65E-01	1.93E+00	1.50E+01	5.65E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Cobalt-60	3.26E-02	4.31E-01	1.45E+00	1.50E+01	4.31E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Cobalt-60	4.68E-01	5.14E-01	1.77E+00	1.50E+01	5.25E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Cobalt-60	-4.00E-01	4.56E-01	1.44E+00	1.50E+01	4.66E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Cobalt-60	-3.86E-01	6.11E-01	1.92E+00	1.50E+01	6.18E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Iodine-131	-5.23E-01	7.71E-01	2.59E+00		7.81E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Iodine-131	7.64E-01	9.64E-01	3.22E+00		9.81E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Iodine-131	-3.21E-02	7.76E-01	2.62E+00		7.76E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Iodine-131	3.57E-01	1.48E+00	4.98E+00		1.48E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Iron-59	-1.74E+00	1.01E+00	2.81E+00	3.00E+01	1.09E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Iron-59	1.22E+00	1.01E+00	3.52E+00	3.00E+01	1.05E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Iron-59	-3.86E-01	1.06E+00	3.08E+00	3.00E+01	1.06E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Iron-59	3.00E-03	1.19E+00	3.93E+00	3.00E+01	1.19E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Lanthanum-140	-4.53E-01	7.02E-01	2.19E+00	1.50E+01	7.10E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Lanthanum-140	2.14E-01	9.10E-01	3.00E+00	1.50E+01	9.12E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Lanthanum-140	-1.00E+00	9.00E-01	2.32E+00	1.50E+01	9.30E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Lanthanum-140	5.63E-01	1.31E+00	4.32E+00	1.50E+01	1.32E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Manganese-54	3.54E-01	4.34E-01	1.47E+00	1.50E+01	4.42E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Manganese-54	-4.61E-01	4.81E-01	1.57E+00	1.50E+01	4.93E-01	pCi/L	U

GW-3(555477003) - Ground Water	9-Sep-21	Manganese-54	-2.34E-02	4.73E-01	1.51E+00	1.50E+01	4.73E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Manganese-54	6.45E-01	5.11E-01	1.82E+00	1.50E+01	5.33E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Niobium-95	1.39E-01	5.14E-01	1.70E+00	1.50E+01	5.15E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Niobium-95	7.45E-01	4.97E-01	1.77E+00	1.50E+01	5.27E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Niobium-95	2.00E-01	4.61E-01	1.51E+00	1.50E+01	4.63E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Niobium-95	1.46E-01	6.17E-01	1.98E+00	1.50E+01	6.18E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Potassium-40	1.49E+01	1.08E+01	1.49E+01		1.09E+01	pCi/L	UI
GW-3(547038003) - Ground Water	10-Jun-21	Potassium-40	-2.08E+01	9.56E+00	2.14E+01		1.07E+01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Potassium-40	-1.16E+01	1.07E+01	2.69E+01		1.10E+01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Potassium-40	1.96E+01	1.35E+01	1.96E+01		1.35E+01	pCi/L	UI
GW-3(537440003) - Ground Water	10-Mar-21	Ruthenium-103	3.46E-01	5.11E-01	1.60E+00		5.17E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Ruthenium-103	5.46E-01	5.44E-01	1.81E+00		5.59E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Ruthenium-103	6.41E-02	4.73E-01	1.41E+00		4.73E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Ruthenium-103	-4.68E-01	6.16E-01	1.97E+00		6.26E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Ruthenium-106	-2.52E+00	4.74E+00	1.36E+01		4.78E+00	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Ruthenium-106	-7.11E-01	4.54E+00	1.44E+01		4.54E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Ruthenium-106	4.91E-01	3.85E+00	1.27E+01		3.85E+00	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Ruthenium-106	-2.01E+00	4.75E+00	1.51E+01		4.78E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Selenium-75	-5.58E-01	6.33E-01	1.95E+00		6.46E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Selenium-75	-8.26E-01	6.92E-01	1.97E+00		7.19E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Selenium-75	-6.90E-01	5.72E-01	1.91E+00		5.94E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Selenium-75	6.72E-01	7.02E-01	2.23E+00		7.20E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Silver-108m	-3.21E-01	4.09E-01	1.35E+00		4.15E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Silver-108m	-1.29E-01	4.58E-01	1.47E+00		4.59E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Silver-108m	-6.70E-01	3.78E-01	1.19E+00		4.09E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Silver-108m	1.08E+00	4.28E-01	1.54E+00		4.98E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Silver-110m	7.44E-01	6.37E-01	2.19E+00		6.60E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Silver-110m	-4.02E-01	6.16E-01	2.02E+00		6.23E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Silver-110m	2.14E-01	6.05E-01	1.96E+00		6.07E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Silver-110m	4.81E-01	6.57E-01	2.29E+00		6.67E-01	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Thorium-228	2.59E+00	2.05E+00	2.59E+00		2.05E+00	pCi/L	UI
GW-3(547038003) - Ground Water	10-Jun-21	Thorium-228	1.45E+00	1.95E+00	2.80E+00		1.95E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Thorium-228	2.57E+00	1.74E+00	2.57E+00		1.75E+00	pCi/L	UI
GW-3(563869003) - Ground Water	2-Dec-21	Thorium-228	2.32E+00	2.02E+00	4.09E+00		2.09E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Tritium	1.65E+00	7.65E+01	2.51E+02	5.00E+02	7.65E+01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Tritium	1.36E+02	1.01E+02	2.75E+02	5.00E+02	1.02E+02	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Tritium	-5.26E+01	1.22E+02	4.08E+02	5.00E+02	1.22E+02	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Tritium	-1.28E+01	1.34E+02	4.43E+02	5.00E+02	1.34E+02	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Zinc-65	1.92E+00	9.33E-01	3.26E+00	3.00E+01	1.03E+00	pCi/L	U

GW-3(547038003) - Ground Water	10-Jun-21	Zinc-65	-1.88E+00	1.77E+00	3.36E+00	3.00E+01	1.82E+00	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Zinc-65	-7.58E-01	9.54E-01	2.66E+00	3.00E+01	9.70E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Zinc-65	7.22E-01	1.11E+00	3.81E+00	3.00E+01	1.13E+00	pCi/L	U
GW-3(537440003) - Ground Water	10-Mar-21	Zirconium-95	5.90E-01	8.11E-01	2.75E+00	1.50E+01	8.22E-01	pCi/L	U
GW-3(547038003) - Ground Water	10-Jun-21	Zirconium-95	5.67E-01	8.16E-01	2.84E+00	1.50E+01	8.27E-01	pCi/L	U
GW-3(555477003) - Ground Water	9-Sep-21	Zirconium-95	-1.59E-01	7.82E-01	2.50E+00	1.50E+01	7.83E-01	pCi/L	U
GW-3(563869003) - Ground Water	2-Dec-21	Zirconium-95	-1.35E+00	1.05E+00	3.13E+00	1.50E+01	1.10E+00	pCi/L	U

GW-4

Ground Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
GW-4(537440004) - Ground Water	10-Mar-21	Actinium-228	7.03E-01	2.14E+00	6.38E+00		2.14E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Actinium-228	6.70E+00	3.20E+00	6.70E+00		3.66E+00	pCi/L	UI
GW-4(555477004) - Ground Water	9-Sep-21	Actinium-228	1.17E-01	4.13E+00	5.95E+00		4.13E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Actinium-228	4.48E+00	4.00E+00	5.99E+00		4.13E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Antimony-124	-1.71E+00	1.33E+00	4.06E+00		1.38E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Antimony-124	1.62E+00	1.05E+00	3.83E+00		1.12E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Antimony-124	-2.51E+00	1.08E+00	2.99E+00		1.23E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Antimony-124	1.52E+00	1.04E+00	3.76E+00		1.10E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Antimony-125	2.96E-01	1.29E+00	4.01E+00		1.29E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Antimony-125	1.71E+00	1.15E+00	3.91E+00		1.22E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Antimony-125	7.93E-01	1.08E+00	3.77E+00		1.10E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Antimony-125	1.10E-01	1.05E+00	3.60E+00		1.05E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Barium-140	-2.64E+00	2.42E+00	7.82E+00	1.50E+01	2.50E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Barium-140	2.52E+00	4.30E+00	8.08E+00	1.50E+01	4.34E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Barium-140	1.51E+00	2.06E+00	7.11E+00	1.50E+01	2.09E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Barium-140	-3.82E+00	2.54E+00	8.02E+00	1.50E+01	2.69E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Beryllium-7	-3.67E+00	3.95E+00	1.30E+01		4.04E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Beryllium-7	1.23E+00	3.85E+00	1.26E+01		3.86E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Beryllium-7	3.05E+00	3.30E+00	1.16E+01		3.38E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Beryllium-7	4.24E+00	3.71E+00	1.30E+01		3.84E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Cerium-141	-3.98E+00	1.30E+00	2.81E+00		1.60E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Cerium-141	-9.53E-01	9.13E-01	2.54E+00		9.39E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Cerium-141	-6.12E-01	7.47E-01	2.42E+00		7.61E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Cerium-141	-8.06E-01	8.04E-01	2.60E+00		8.26E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Cerium-144	5.77E+00	3.30E+00	1.12E+01		3.56E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Cerium-144	3.02E+00	2.88E+00	9.20E+00		2.97E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Cerium-144	-1.54E+00	2.81E+00	9.17E+00		2.83E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Cerium-144	-3.27E+00	2.63E+00	8.47E+00		2.74E+00	pCi/L	U

GW-4(537440004) - Ground Water	10-Mar-21	Cesium-134	7.24E-01	4.82E-01	1.71E+00	1.50E+01	5.11E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Cesium-134	-9.41E-01	6.28E-01	1.32E+00	1.50E+01	6.66E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Cesium-134	7.09E-01	6.67E-01	1.71E+00	1.50E+01	6.88E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Cesium-134	-7.50E-03	4.39E-01	1.43E+00	1.50E+01	4.39E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Cesium-137	2.51E-01	4.79E-01	1.64E+00	1.80E+01	4.83E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Cesium-137	9.50E-01	4.54E-01	1.55E+00	1.80E+01	5.05E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Cesium-137	3.43E-01	4.35E-01	1.49E+00	1.80E+01	4.42E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Cesium-137	-2.26E-01	4.16E-01	1.34E+00	1.80E+01	4.19E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Chromium-51	-1.14E+01	6.65E+00	1.49E+01		7.17E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Chromium-51	5.46E+00	4.20E+00	1.44E+01		4.39E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Chromium-51	6.80E+00	4.32E+00	1.42E+01		4.61E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Chromium-51	2.27E+00	4.34E+00	1.39E+01		4.37E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Cobalt-57	-1.68E-01	4.14E-01	1.35E+00		4.16E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Cobalt-57	8.04E-01	3.66E-01	1.20E+00		4.12E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Cobalt-57	-6.46E-01	3.67E-01	1.17E+00		3.97E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Cobalt-57	5.23E-01	4.28E-01	1.20E+00		4.45E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Cobalt-58	-4.30E-01	4.64E-01	1.45E+00	1.50E+01	4.75E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Cobalt-58	-1.02E+00	4.14E-01	1.26E+00	1.50E+01	4.77E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Cobalt-58	-1.57E-01	4.56E-01	1.47E+00	1.50E+01	4.57E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Cobalt-58	-1.39E-01	4.22E-01	1.35E+00	1.50E+01	4.24E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Cobalt-60	-8.82E-01	5.19E-01	1.43E+00	1.50E+01	5.59E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Cobalt-60	-2.40E-01	7.69E-01	1.44E+00	1.50E+01	7.71E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Cobalt-60	4.75E-01	4.66E-01	1.66E+00	1.50E+01	4.79E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Cobalt-60	-1.78E-01	4.39E-01	1.44E+00	1.50E+01	4.41E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Iodine-131	-9.48E-01	1.04E+00	2.84E+00		1.06E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Iodine-131	2.39E-01	9.28E-01	3.08E+00		9.29E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Iodine-131	6.39E-01	7.97E-01	2.56E+00		8.11E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Iodine-131	3.33E+00	1.11E+00	3.83E+00		1.36E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Iron-59	-9.06E-01	1.06E+00	3.23E+00	3.00E+01	1.08E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Iron-59	1.60E-01	1.45E+00	3.08E+00	3.00E+01	1.45E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Iron-59	-9.86E-01	9.78E-01	2.95E+00	3.00E+01	1.01E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Iron-59	1.19E-02	8.92E-01	2.83E+00	3.00E+01	8.92E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Lanthanum-140	-1.10E+00	9.49E-01	2.96E+00	1.50E+01	9.83E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Lanthanum-140	3.75E-01	8.06E-01	2.79E+00	1.50E+01	8.10E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Lanthanum-140	-1.93E-01	8.46E-01	2.78E+00	1.50E+01	8.47E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Lanthanum-140	-5.48E-01	9.24E-01	2.93E+00	1.50E+01	9.33E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Manganese-54	3.78E-01	4.47E-01	1.53E+00	1.50E+01	4.55E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Manganese-54	-8.47E-01	4.64E-01	1.24E+00	1.50E+01	5.05E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Manganese-54	-7.35E-01	4.06E-01	1.21E+00	1.50E+01	4.41E-01	pCi/L	U

GW-4(563869004) - Ground Water	2-Dec-21	Manganese-54	-3.83E-01	3.57E-01	1.09E+00	1.50E+01	3.68E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Niobium-95	4.39E-01	4.88E-01	1.53E+00	1.50E+01	4.98E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Niobium-95	1.23E-01	7.35E-01	1.60E+00	1.50E+01	7.36E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Niobium-95	-2.90E-01	4.59E-01	1.47E+00	1.50E+01	4.64E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Niobium-95	2.63E-01	4.40E-01	1.48E+00	1.50E+01	4.44E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Potassium-40	-1.83E+01	1.04E+01	2.49E+01		1.12E+01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Potassium-40	-6.30E+00	8.67E+00	1.83E+01		8.79E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Potassium-40	-2.10E+01	9.65E+00	2.31E+01		1.08E+01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Potassium-40	-2.95E+01	7.49E+00	1.94E+01		1.02E+01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Ruthenium-103	2.21E-01	5.01E-01	1.73E+00		5.04E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Ruthenium-103	3.06E-01	4.98E-01	1.48E+00		5.03E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Ruthenium-103	8.78E-02	4.48E-01	1.53E+00		4.48E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Ruthenium-103	-4.59E-01	5.14E-01	1.50E+00		5.25E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Ruthenium-106	4.57E+00	4.20E+00	1.47E+01		4.34E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Ruthenium-106	-2.46E+00	4.00E+00	1.24E+01		4.04E+00	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Ruthenium-106	9.19E-01	3.66E+00	1.23E+01		3.66E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Ruthenium-106	8.89E-01	3.52E+00	1.18E+01		3.53E+00	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Selenium-75	-6.79E-01	6.84E-01	2.11E+00		7.02E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Selenium-75	8.88E-01	5.60E-01	1.94E+00		5.97E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Selenium-75	-6.45E-01	5.66E-01	1.74E+00		5.86E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Selenium-75	-3.09E-01	5.24E-01	1.63E+00		5.28E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Silver-108m	-5.14E-02	4.18E-01	1.28E+00		4.18E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Silver-108m	-1.71E-01	3.68E-01	1.18E+00		3.70E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Silver-108m	4.46E-02	3.53E-01	1.21E+00		3.53E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Silver-108m	3.19E-01	3.20E-01	1.13E+00		3.29E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Silver-110m	1.90E+00	7.89E-01	2.44E+00		9.06E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Silver-110m	-5.86E-01	5.54E-01	1.77E+00		5.70E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Silver-110m	2.17E-01	6.43E-01	2.12E+00		6.45E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Silver-110m	-2.24E-01	5.47E-01	1.73E+00		5.50E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Thorium-228	5.97E-01	1.65E+00	5.17E+00		1.65E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Thorium-228	2.39E+00	1.48E+00	2.39E+00		1.48E+00	pCi/L	UI
GW-4(555477004) - Ground Water	9-Sep-21	Thorium-228	1.77E+00	1.52E+00	3.22E+00		1.58E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Thorium-228	6.31E+00	1.77E+00	2.44E+00		1.79E+00	pCi/L	
GW-4(537440004) - Ground Water	10-Mar-21	Tritium	2.05E+02	9.87E+01	2.75E+02	5.00E+02	1.01E+02	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Tritium	1.37E+02	1.04E+02	2.84E+02	5.00E+02	1.05E+02	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Tritium	-2.47E+02	1.12E+02	3.95E+02	5.00E+02	1.12E+02	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Tritium	1.60E+02	1.39E+02	4.41E+02	5.00E+02	1.40E+02	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Zinc-65	-8.87E-01	1.10E+00	2.92E+00	3.00E+01	1.12E+00	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Zinc-65	-4.73E-01	9.02E-01	2.50E+00	3.00E+01	9.09E-01	pCi/L	U

GW-4(555477004) - Ground Water	9-Sep-21	Zinc-65	-2.86E-01	1.03E+00	2.84E+00	3.00E+01	1.03E+00	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Zinc-65	1.19E+00	8.76E-01	2.99E+00	3.00E+01	9.19E-01	pCi/L	U
GW-4(537440004) - Ground Water	10-Mar-21	Zirconium-95	-7.10E-01	8.46E-01	2.68E+00	1.50E+01	8.62E-01	pCi/L	U
GW-4(547038004) - Ground Water	9-Jun-21	Zirconium-95	-1.57E+00	7.61E-01	2.38E+00	1.50E+01	8.45E-01	pCi/L	U
GW-4(555477004) - Ground Water	9-Sep-21	Zirconium-95	9.79E-01	7.48E-01	2.60E+00	1.50E+01	7.83E-01	pCi/L	U
GW-4(563869004) - Ground Water	2-Dec-21	Zirconium-95	-5.92E-01	7.49E-01	2.35E+00	1.50E+01	7.61E-01	pCi/L	U

GW-4 QC

Ground Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
GW-4 QC(537440005) - Ground Water	10-Mar-21	Actinium-228	4.81E-01	3.42E+00	6.70E+00		3.42E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Actinium-228	-3.09E+00	3.37E+00	7.04E+00		3.45E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Actinium-228	-3.35E+00	3.41E+00	7.14E+00		3.49E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Actinium-228	5.75E+00	2.41E+00	8.87E+00		2.76E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Antimony-124	1.84E-02	1.20E+00	4.04E+00		1.20E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Antimony-124	-4.43E-01	1.03E+00	3.24E+00		1.03E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Antimony-124	2.95E+00	1.15E+00	4.31E+00		1.34E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Antimony-124	-1.02E+00	1.48E+00	4.45E+00		1.50E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Antimony-125	-1.55E+00	1.57E+00	4.70E+00		1.61E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Antimony-125	-1.07E+00	1.20E+00	3.89E+00		1.22E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Antimony-125	7.64E-02	1.19E+00	3.92E+00		1.19E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Antimony-125	-2.80E+00	1.40E+00	4.30E+00		1.54E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Barium-140	-2.32E+00	2.90E+00	9.59E+00	1.50E+01	2.95E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Barium-140	8.33E+00	4.32E+00	8.33E+00	1.50E+01	5.02E+00	pCi/L	UI
GW-4 QC(555477005) - Ground Water	9-Sep-21	Barium-140	7.43E-01	2.33E+00	7.61E+00	1.50E+01	2.33E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Barium-140	1.87E+00	4.02E+00	1.34E+01	1.50E+01	4.04E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Beryllium-7	2.23E+00	5.70E+00	1.63E+01		5.73E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Beryllium-7	-3.99E+00	3.98E+00	1.28E+01		4.09E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Beryllium-7	5.04E+00	4.56E+00	1.25E+01		4.57E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Beryllium-7	-2.08E+00	4.97E+00	1.61E+01		4.99E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Cerium-141	-1.52E+00	1.39E+00	3.43E+00		1.44E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Cerium-141	-8.79E+00	1.50E+00	2.93E+00		2.55E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Cerium-141	1.83E+00	1.54E+00	2.55E+00		1.54E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Cerium-141	2.85E-01	1.80E+00	2.64E+00		1.80E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Cerium-144	-1.15E+00	3.91E+00	1.29E+01		3.92E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Cerium-144	4.45E+00	3.30E+00	1.08E+01		3.46E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Cerium-144	-5.44E+00	3.08E+00	9.58E+00		3.33E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Cerium-144	-4.46E+00	4.17E+00	9.70E+00		4.30E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Cesium-134	1.34E-01	5.97E-01	2.00E+00	1.50E+01	5.98E-01	pCi/L	U

GW-4 QC(547038005) - Ground Water	9-Jun-21	Cesium-134	-1.28E+00	7.43E-01	1.51E+00	1.50E+01	8.01E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Cesium-134	-1.35E-01	4.76E-01	1.59E+00	1.50E+01	4.77E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Cesium-134	-1.49E-01	6.57E-01	2.06E+00	1.50E+01	6.58E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Cesium-137	-3.68E-01	5.20E-01	1.70E+00	1.80E+01	5.27E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Cesium-137	2.12E-01	4.51E-01	1.49E+00	1.80E+01	4.54E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Cesium-137	-2.52E-01	4.48E-01	1.39E+00	1.80E+01	4.51E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Cesium-137	2.00E-01	6.38E-01	2.08E+00	1.80E+01	6.40E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Chromium-51	-7.14E+00	5.48E+00	1.67E+01		5.73E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Chromium-51	-8.03E+00	4.47E+00	1.45E+01		4.85E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Chromium-51	-3.42E+00	4.11E+00	1.36E+01		4.19E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Chromium-51	-2.23E+00	5.32E+00	1.78E+01		5.35E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Cobalt-57	-4.53E-01	4.78E-01	1.56E+00		4.89E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Cobalt-57	3.79E-01	4.41E-01	1.43E+00		4.50E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Cobalt-57	-2.82E-02	4.02E-01	1.30E+00		4.02E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Cobalt-57	2.12E-01	4.04E-01	1.32E+00		4.07E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Cobalt-58	-1.34E-01	4.91E-01	1.60E+00	1.50E+01	4.92E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Cobalt-58	-9.54E-02	4.34E-01	1.38E+00	1.50E+01	4.35E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Cobalt-58	-1.78E-02	4.07E-01	1.37E+00	1.50E+01	4.07E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Cobalt-58	-5.39E-01	5.65E-01	1.84E+00	1.50E+01	5.79E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Cobalt-60	-2.48E-01	5.39E-01	1.66E+00	1.50E+01	5.43E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Cobalt-60	3.72E-01	4.33E-01	1.51E+00	1.50E+01	4.41E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Cobalt-60	-4.72E-01	5.26E-01	1.62E+00	1.50E+01	5.38E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Cobalt-60	-3.65E-01	6.40E-01	2.02E+00	1.50E+01	6.46E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Iodine-131	8.61E-01	1.14E+00	3.67E+00		1.16E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Iodine-131	1.91E+00	9.84E-01	3.47E+00		1.08E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Iodine-131	-7.79E-01	8.08E-01	2.63E+00		8.28E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Iodine-131	3.10E-01	1.33E+00	4.50E+00		1.33E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Iron-59	-6.91E-01	1.14E+00	3.56E+00	3.00E+01	1.15E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Iron-59	-2.13E+00	1.32E+00	3.17E+00	3.00E+01	1.41E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Iron-59	-7.14E-01	1.00E+00	3.18E+00	3.00E+01	1.02E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Iron-59	2.90E+00	1.16E+00	4.09E+00	3.00E+01	1.34E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Lanthanum-140	-2.32E-01	9.46E-01	3.15E+00	1.50E+01	9.47E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Lanthanum-140	8.89E-01	8.01E-01	2.81E+00	1.50E+01	8.28E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Lanthanum-140	-4.49E-03	7.60E-01	2.54E+00	1.50E+01	7.60E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Lanthanum-140	-4.19E+00	2.37E+00	4.63E+00	1.50E+01	2.56E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Manganese-54	5.70E-01	4.78E-01	1.67E+00	1.50E+01	4.97E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Manganese-54	-4.36E-01	4.21E-01	1.28E+00	1.50E+01	4.33E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Manganese-54	4.90E-01	4.37E-01	1.52E+00	1.50E+01	4.52E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Manganese-54	1.20E-01	5.76E-01	1.97E+00	1.50E+01	5.76E-01	pCi/L	U

GW-4 QC(537440005) - Ground Water	10-Mar-21	Niobium-95	8.73E-01	6.10E-01	1.96E+00	1.50E+01	6.43E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Niobium-95	-8.60E-02	5.85E-01	1.66E+00	1.50E+01	5.85E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Niobium-95	-1.18E+00	7.76E-01	1.56E+00	1.50E+01	8.24E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Niobium-95	1.47E+00	7.76E-01	2.43E+00	1.50E+01	8.49E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Potassium-40	6.75E+00	1.35E+01	1.62E+01		1.35E+01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Potassium-40	1.47E+01	1.31E+01	1.57E+01		1.31E+01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Potassium-40	1.44E+01	1.25E+01	1.44E+01		1.25E+01	pCi/L	UI
GW-4 QC(563869005) - Ground Water	2-Dec-21	Potassium-40	6.81E+00	1.36E+01	1.98E+01		1.36E+01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Ruthenium-103	2.77E-01	5.32E-01	1.85E+00		5.36E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Ruthenium-103	-5.24E-01	4.96E-01	1.59E+00		5.11E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Ruthenium-103	-1.83E-01	5.26E-01	1.51E+00		5.28E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Ruthenium-103	-1.65E-01	7.08E-01	2.05E+00		7.09E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Ruthenium-106	1.28E+00	4.62E+00	1.57E+01		4.63E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Ruthenium-106	3.64E+00	3.85E+00	1.30E+01		3.95E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Ruthenium-106	-5.51E+00	4.38E+00	1.34E+01		4.57E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Ruthenium-106	4.40E+00	5.23E+00	1.75E+01		5.33E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Selenium-75	2.79E-01	7.29E-01	2.36E+00		7.32E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Selenium-75	1.45E+00	6.14E-01	2.20E+00		7.02E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Selenium-75	5.30E-01	5.84E-01	2.03E+00		5.98E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Selenium-75	-6.28E-01	6.31E-01	2.10E+00		6.48E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Silver-108m	6.44E-02	4.87E-01	1.52E+00		4.87E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Silver-108m	3.99E-01	3.92E-01	1.34E+00		4.03E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Silver-108m	1.83E-02	3.84E-01	1.27E+00		3.84E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Silver-108m	-7.83E-02	4.57E-01	1.51E+00		4.57E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Silver-110m	1.89E+00	9.85E-01	2.38E+00		1.08E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Silver-110m	-1.03E+00	6.22E-01	1.82E+00		6.68E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Silver-110m	2.84E-01	6.20E-01	2.10E+00		6.23E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Silver-110m	7.07E-01	7.84E-01	2.75E+00		8.01E-01	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Thorium-228	-5.97E-01	1.66E+00	5.21E+00		1.67E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Thorium-228	9.16E-01	1.51E+00	3.68E+00		1.52E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Thorium-228	8.23E-01	1.91E+00	2.67E+00		1.91E+00	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Thorium-228	6.78E-01	1.94E+00	2.96E+00		1.95E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Tritium	9.25E+01	8.60E+01	2.60E+02	5.00E+02	8.65E+01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Tritium	-7.70E+00	8.42E+01	2.80E+02	5.00E+02	8.42E+01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Tritium	-1.58E+02	1.14E+02	3.92E+02	5.00E+02	1.14E+02	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Tritium	4.94E+01	1.38E+02	4.48E+02	5.00E+02	1.38E+02	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Zinc-65	4.79E-01	1.18E+00	3.51E+00	3.00E+01	1.19E+00	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Zinc-65	-2.73E+00	1.81E+00	3.20E+00	3.00E+01	1.92E+00	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Zinc-65	7.06E-01	1.03E+00	3.09E+00	3.00E+01	1.05E+00	pCi/L	U

GW-4 QC(563869005) - Ground Water	2-Dec-21	Zinc-65	-2.69E+00	1.27E+00	3.51E+00	3.00E+01	1.41E+00	pCi/L	U
GW-4 QC(537440005) - Ground Water	10-Mar-21	Zirconium-95	-1.48E-01	9.89E-01	3.27E+00	1.50E+01	9.90E-01	pCi/L	U
GW-4 QC(547038005) - Ground Water	9-Jun-21	Zirconium-95	-4.93E-02	7.66E-01	2.46E+00	1.50E+01	7.67E-01	pCi/L	U
GW-4 QC(555477005) - Ground Water	9-Sep-21	Zirconium-95	5.86E-01	7.72E-01	2.68E+00	1.50E+01	7.84E-01	pCi/L	U
GW-4 QC(563869005) - Ground Water	2-Dec-21	Zirconium-95	1.46E+00	1.21E+00	4.07E+00	1.50E+01	1.26E+00	pCi/L	U

M-8

Milk

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
M-8(532203001) - Milk	14-Jan-21	Actinium-228	8.85E+00	7.18E+00	8.85E+00		8.54E+00	pCi/L	UI
M-8(535079001) - Milk	11-Feb-21	Actinium-228	2.36E+00	4.87E+00	7.85E+00		4.90E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Actinium-228	8.93E+00	4.47E+00	9.32E+00		4.93E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Actinium-228	-7.40E+00	6.30E+00	1.48E+01		6.53E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Actinium-228	-3.64E-01	3.16E+00	7.68E+00		3.16E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Actinium-228	-4.36E+00	3.57E+00	8.97E+00		3.71E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Actinium-228	3.81E+00	3.91E+00	1.13E+01		4.01E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Actinium-228	-1.60E+00	3.41E+00	7.98E+00		3.43E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Actinium-228	8.76E-01	4.05E+00	1.10E+01		4.05E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Actinium-228	-9.47E-01	4.08E+00	9.83E+00		4.09E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Actinium-228	3.11E+00	5.15E+00	8.85E+00		5.20E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Actinium-228	-1.16E+00	3.39E+00	8.03E+00		3.40E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Actinium-228	-3.93E+00	3.51E+00	8.12E+00		3.62E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Actinium-228	3.60E-02	4.14E+00	9.62E+00		4.14E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Actinium-228	2.58E+00	5.62E+00	7.69E+00		5.63E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Actinium-228	-2.09E+00	3.86E+00	9.70E+00		3.89E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Actinium-228	-5.48E+00	3.96E+00	7.09E+00		4.17E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Actinium-228	5.29E+00	4.62E+00	7.93E+00		4.79E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Actinium-228	-5.02E+00	3.90E+00	8.36E+00		4.07E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Antimony-124	5.96E-01	1.06E+00	3.70E+00		1.07E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Antimony-124	1.50E+00	1.16E+00	4.07E+00		1.21E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Antimony-124	2.92E+00	1.16E+00	4.45E+00		1.34E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Antimony-124	2.16E+00	1.81E+00	6.54E+00		1.88E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Antimony-124	-1.20E-01	9.30E-01	3.08E+00		9.31E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Antimony-124	4.60E-01	1.27E+00	4.19E+00		1.28E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Antimony-124	9.69E-01	1.68E+00	5.58E+00		1.69E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Antimony-124	1.54E+00	1.05E+00	3.79E+00		1.11E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Antimony-124	2.94E-01	1.67E+00	5.60E+00		1.67E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Antimony-124	7.12E-02	1.26E+00	4.04E+00		1.26E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Antimony-124	1.43E+00	1.20E+00	4.22E+00		1.25E+00	pCi/L	U

M-8(552733001) - Milk	12-Aug-21	Antimony-124	-1.40E+00	1.07E+00	3.17E+00		1.12E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Antimony-124	1.35E-01	9.69E-01	3.21E+00		9.70E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Antimony-124	8.06E-02	1.50E+00	4.99E+00		1.50E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Antimony-124	3.82E-01	1.22E+00	4.10E+00		1.23E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Antimony-124	-4.31E-01	1.48E+00	4.74E+00		1.48E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Antimony-124	-1.87E+00	1.04E+00	3.00E+00		1.13E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Antimony-124	-4.18E-01	1.16E+00	3.17E+00		1.16E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Antimony-124	-1.90E+00	1.50E+00	3.07E+00		1.56E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Antimony-125	6.14E-01	1.35E+00	4.54E+00		1.35E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Antimony-125	2.99E+00	1.24E+00	4.44E+00		1.43E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Antimony-125	-4.76E+00	1.79E+00	4.16E+00		2.11E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Antimony-125	-1.04E+00	2.04E+00	6.82E+00		2.05E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Antimony-125	-1.51E+00	1.31E+00	4.08E+00		1.35E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Antimony-125	2.95E+00	1.35E+00	4.79E+00		1.52E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Antimony-125	2.90E-03	1.64E+00	5.37E+00		1.64E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Antimony-125	-1.34E+00	1.23E+00	3.92E+00		1.27E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Antimony-125	-1.34E+00	2.00E+00	6.61E+00		2.02E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Antimony-125	6.97E-01	1.48E+00	5.02E+00		1.49E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Antimony-125	1.10E+00	1.52E+00	4.91E+00		1.54E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Antimony-125	5.41E-01	1.31E+00	3.99E+00		1.32E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Antimony-125	-2.18E+00	1.33E+00	4.05E+00		1.43E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Antimony-125	-8.57E-01	1.52E+00	4.92E+00		1.54E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Antimony-125	-1.32E+00	1.57E+00	5.18E+00		1.60E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Antimony-125	-4.94E-01	1.66E+00	5.55E+00		1.67E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Antimony-125	-1.39E+00	1.23E+00	4.05E+00		1.27E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Antimony-125	2.77E+00	1.33E+00	4.64E+00		1.48E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Antimony-125	-1.13E+00	1.30E+00	4.20E+00		1.33E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Barium-140	-1.06E+00	2.41E+00	7.80E+00	1.50E+01	2.43E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Barium-140	-1.89E-01	2.38E+00	7.84E+00	1.50E+01	2.38E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Barium-140	1.42E+00	2.24E+00	7.62E+00	1.50E+01	2.26E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Barium-140	3.31E-01	3.75E+00	1.26E+01	1.50E+01	3.75E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Barium-140	3.98E+00	2.24E+00	7.49E+00	1.50E+01	2.43E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Barium-140	-8.65E+00	4.33E+00	1.01E+01	1.50E+01	4.78E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Barium-140	1.31E+00	3.19E+00	1.05E+01	1.50E+01	3.20E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Barium-140	1.01E+00	2.60E+00	7.63E+00	1.50E+01	2.61E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Barium-140	6.35E+00	3.33E+00	1.20E+01	1.50E+01	3.65E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Barium-140	-9.04E+00	3.77E+00	7.94E+00	1.50E+01	4.32E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Barium-140	4.13E+00	3.66E+00	1.27E+01	1.50E+01	3.79E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Barium-140	-3.17E-01	2.25E+00	7.39E+00	1.50E+01	2.25E+00	pCi/L	U

M-8(553974002) - Milk	26-Aug-21	Barium-140	1.50E+00	2.12E+00	7.03E+00	1.50E+01	2.15E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Barium-140	-4.08E+00	3.10E+00	9.64E+00	1.50E+01	3.24E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Barium-140	-5.48E+00	3.73E+00	1.18E+01	1.50E+01	3.95E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Barium-140	-4.07E+00	3.93E+00	1.26E+01	1.50E+01	4.05E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Barium-140	3.44E-01	2.18E+00	7.37E+00	1.50E+01	2.19E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Barium-140	9.72E-01	2.09E+00	6.93E+00	1.50E+01	2.11E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Barium-140	-6.30E-01	2.44E+00	7.89E+00	1.50E+01	2.44E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Beryllium-7	2.34E+00	4.38E+00	1.47E+01		4.41E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Beryllium-7	-1.30E+00	4.03E+00	1.33E+01		4.04E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Beryllium-7	-1.29E-02	3.81E+00	1.28E+01		3.81E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Beryllium-7	5.91E+00	6.42E+00	2.24E+01		6.57E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Beryllium-7	-4.66E+00	4.07E+00	1.26E+01		4.22E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Beryllium-7	-3.61E+00	4.62E+00	1.50E+01		4.69E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Beryllium-7	1.02E+01	5.32E+00	1.84E+01		5.84E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Beryllium-7	6.22E-01	4.11E+00	1.35E+01		4.11E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Beryllium-7	-3.97E+00	6.29E+00	2.06E+01		6.36E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Beryllium-7	1.04E+01	4.87E+00	1.72E+01		5.44E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Beryllium-7	4.94E+00	5.30E+00	1.64E+01		5.43E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Beryllium-7	3.38E+00	4.04E+00	1.37E+01		4.11E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Beryllium-7	8.16E-01	3.95E+00	1.35E+01		3.96E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Beryllium-7	-4.97E+00	5.10E+00	1.62E+01		5.23E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Beryllium-7	3.45E-01	5.13E+00	1.72E+01		5.13E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Beryllium-7	4.91E+00	5.47E+00	1.88E+01		5.59E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Beryllium-7	-2.21E-01	3.57E+00	1.21E+01		3.57E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Beryllium-7	6.04E-01	4.00E+00	1.32E+01		4.00E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Beryllium-7	-2.38E+00	4.40E+00	1.42E+01		4.44E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Cerium-141	-2.95E+00	1.30E+00	3.00E+00		1.47E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Cerium-141	-1.09E+00	1.07E+00	2.56E+00		1.10E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Cerium-141	-9.85E-01	9.32E-01	2.68E+00		9.60E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Cerium-141	-1.03E-01	1.26E+00	4.16E+00		1.26E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Cerium-141	3.01E-02	8.03E-01	2.72E+00		8.03E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Cerium-141	-2.14E+00	1.68E+00	3.31E+00		1.75E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Cerium-141	-6.44E-01	9.42E-01	2.90E+00		9.54E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Cerium-141	1.37E+00	9.72E-01	2.63E+00		1.02E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Cerium-141	-5.79E-01	1.44E+00	4.64E+00		1.45E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Cerium-141	-9.30E-01	1.21E+00	2.97E+00		1.23E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Cerium-141	-6.70E-01	1.43E+00	3.55E+00		1.44E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Cerium-141	3.24E-02	1.46E+00	2.60E+00		1.46E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Cerium-141	4.81E-01	9.02E-01	2.74E+00		9.09E-01	pCi/L	U

M-8(555472001) - Milk	9-Sep-21	Cerium-141	-8.93E-01	1.11E+00	3.71E+00		1.13E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Cerium-141	-6.32E-01	1.27E+00	4.07E+00		1.28E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Cerium-141	-3.49E+00	1.33E+00	4.05E+00		1.56E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Cerium-141	-2.89E+00	1.21E+00	2.59E+00		1.39E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Cerium-141	5.64E-01	9.81E-01	2.87E+00		9.90E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Cerium-141	-2.99E+00	1.31E+00	3.01E+00		1.49E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Cerium-144	2.90E+00	3.54E+00	1.17E+01		3.61E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Cerium-144	3.15E+00	3.17E+00	1.04E+01		3.25E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Cerium-144	1.01E+01	5.37E+00	1.01E+01		5.40E+00	pCi/L	UI
M-8(537625001) - Milk	11-Mar-21	Cerium-144	-4.66E-01	4.75E+00	1.58E+01		4.75E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Cerium-144	1.28E+00	3.29E+00	1.07E+01		3.30E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Cerium-144	5.97E+00	3.45E+00	1.16E+01		3.72E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Cerium-144	-3.19E+00	3.56E+00	1.10E+01		3.63E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Cerium-144	2.18E+00	3.24E+00	1.06E+01		3.28E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Cerium-144	-5.98E+00	5.49E+00	1.74E+01		5.66E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Cerium-144	-1.53E+00	3.73E+00	1.21E+01		3.75E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Cerium-144	-2.66E+00	3.60E+00	1.20E+01		3.65E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Cerium-144	1.42E+00	3.32E+00	1.08E+01		3.34E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Cerium-144	4.44E+00	3.19E+00	1.09E+01		3.35E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Cerium-144	-1.72E+00	4.03E+00	1.36E+01		4.05E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Cerium-144	2.48E+00	4.28E+00	1.40E+01		4.32E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Cerium-144	-4.10E-01	4.41E+00	1.43E+01		4.41E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Cerium-144	2.50E+00	2.93E+00	9.78E+00		2.99E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Cerium-144	2.25E-02	3.62E+00	1.14E+01		3.62E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Cerium-144	-1.91E+00	3.73E+00	1.16E+01		3.75E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Cesium-134	-2.63E-01	6.12E-01	1.91E+00	1.50E+01	6.15E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Cesium-134	-3.73E-01	6.21E-01	1.85E+00	1.50E+01	6.27E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Cesium-134	-4.73E-01	6.38E-01	2.01E+00	1.50E+01	6.47E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Cesium-134	1.25E+00	9.69E-01	3.34E+00	1.50E+01	1.01E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Cesium-134	-3.52E-01	5.46E-01	1.79E+00	1.50E+01	5.52E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Cesium-134	8.91E-01	1.20E+00	2.17E+00	1.50E+01	1.21E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Cesium-134	-6.42E-01	1.04E+00	2.71E+00	1.50E+01	1.05E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Cesium-134	-4.53E-01	5.56E-01	1.83E+00	1.50E+01	5.66E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Cesium-134	-5.05E-02	9.11E-01	2.96E+00	1.50E+01	9.11E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Cesium-134	-2.11E-01	6.95E-01	2.18E+00	1.50E+01	6.96E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Cesium-134	-1.47E+00	8.61E-01	2.09E+00	1.50E+01	9.27E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Cesium-134	1.22E-02	5.92E-01	1.90E+00	1.50E+01	5.92E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Cesium-134	3.22E-01	5.43E-01	1.81E+00	1.50E+01	5.48E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Cesium-134	6.27E-01	6.51E-01	2.16E+00	1.50E+01	6.67E-01	pCi/L	U

M-8(556799001) - Milk	23-Sep-21	Cesium-134	-7.18E-01	6.33E-01	1.95E+00	1.50E+01	6.55E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Cesium-134	2.06E-01	7.30E-01	2.39E+00	1.50E+01	7.32E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Cesium-134	6.60E-02	5.45E-01	1.79E+00	1.50E+01	5.45E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Cesium-134	-4.71E-03	5.68E-01	1.81E+00	1.50E+01	5.68E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Cesium-134	-5.97E-02	6.27E-01	1.99E+00	1.50E+01	6.27E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Cesium-137	-1.51E+00	8.41E-01	1.80E+00	1.80E+01	9.12E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Cesium-137	1.41E+00	5.43E-01	1.92E+00	1.80E+01	6.35E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Cesium-137	5.57E-02	5.34E-01	1.76E+00	1.80E+01	5.34E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Cesium-137	4.33E-01	9.04E-01	3.04E+00	1.80E+01	9.10E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Cesium-137	1.39E+00	4.95E-01	1.79E+00	1.80E+01	5.92E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Cesium-137	1.75E+00	1.32E+00	1.75E+00	1.80E+01	1.32E+00	pCi/L	UI
M-8(545937001) - Milk	27-May-21	Cesium-137	3.24E-01	7.79E-01	2.53E+00	1.80E+01	7.83E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Cesium-137	1.09E-01	5.21E-01	1.67E+00	1.80E+01	5.22E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Cesium-137	1.11E-01	8.36E-01	2.77E+00	1.80E+01	8.37E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Cesium-137	-2.85E-01	6.13E-01	1.94E+00	1.80E+01	6.16E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Cesium-137	-1.60E-01	6.84E-01	1.98E+00	1.80E+01	6.85E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Cesium-137	-6.52E-01	5.34E-01	1.66E+00	1.80E+01	5.56E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Cesium-137	9.97E-01	8.81E-01	1.70E+00	1.80E+01	8.82E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Cesium-137	1.05E-01	8.38E-01	2.05E+00	1.80E+01	8.38E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Cesium-137	2.70E-01	6.36E-01	2.11E+00	1.80E+01	6.39E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Cesium-137	4.06E-01	6.56E-01	2.20E+00	1.80E+01	6.63E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Cesium-137	-2.34E-01	4.77E-01	1.55E+00	1.80E+01	4.81E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Cesium-137	7.47E-01	5.35E-01	1.80E+00	1.80E+01	5.62E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Cesium-137	1.17E+00	1.05E+00	1.72E+00	1.80E+01	1.05E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Chromium-51	-6.55E+00	4.34E+00	1.43E+01		4.60E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Chromium-51	-4.64E+00	4.25E+00	1.41E+01		4.38E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Chromium-51	7.43E+00	4.23E+00	1.51E+01		4.57E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Chromium-51	-4.95E+00	7.93E+00	2.23E+01		8.01E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Chromium-51	-2.12E+00	4.52E+00	1.46E+01		4.54E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Chromium-51	-6.29E+00	8.21E+00	1.79E+01		8.34E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Chromium-51	-5.58E+00	5.39E+00	1.76E+01		5.55E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Chromium-51	-5.35E+00	4.36E+00	1.43E+01		4.55E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Chromium-51	-9.86E+00	7.38E+00	2.17E+01		7.74E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Chromium-51	3.82E+00	4.65E+00	1.62E+01		4.73E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Chromium-51	-7.84E+00	5.99E+00	1.87E+01		6.26E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Chromium-51	-1.54E+00	4.17E+00	1.41E+01		4.18E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Chromium-51	-2.37E+00	4.41E+00	1.41E+01		4.45E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Chromium-51	1.12E+00	6.29E+00	1.88E+01		6.30E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Chromium-51	-4.86E-02	6.07E+00	2.08E+01		6.07E+00	pCi/L	U

M-8(558702001) - Milk	7-Oct-21	Chromium-51	7.28E+00	7.83E+00	2.04E+01		8.02E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Chromium-51	-2.17E+00	4.59E+00	1.42E+01		4.61E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Chromium-51	-7.50E-02	4.40E+00	1.48E+01		4.40E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Chromium-51	6.55E+00	4.66E+00	1.61E+01		4.91E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Cobalt-57	-1.66E-01	4.57E-01	1.48E+00		4.58E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Cobalt-57	-1.67E-01	4.20E-01	1.35E+00		4.22E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Cobalt-57	5.90E-02	4.47E-01	1.45E+00		4.47E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Cobalt-57	-9.77E-01	6.19E-01	2.00E+00		6.59E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Cobalt-57	-3.91E-01	3.98E-01	1.34E+00		4.09E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Cobalt-57	-3.78E-02	4.44E-01	1.45E+00		4.44E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Cobalt-57	2.83E-01	4.39E-01	1.40E+00		4.44E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Cobalt-57	3.63E-01	4.29E-01	1.41E+00		4.38E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Cobalt-57	-1.87E-01	7.12E-01	2.32E+00		7.13E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Cobalt-57	9.54E-02	4.56E-01	1.51E+00		4.57E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Cobalt-57	-3.63E-01	4.67E-01	1.56E+00		4.74E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Cobalt-57	-3.24E-01	4.14E-01	1.31E+00		4.21E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Cobalt-57	1.84E-01	4.09E-01	1.39E+00		4.12E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Cobalt-57	2.95E-02	5.41E-01	1.84E+00		5.41E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Cobalt-57	-3.05E-01	5.70E-01	1.84E+00		5.75E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Cobalt-57	-4.51E-01	5.93E-01	1.90E+00		6.02E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Cobalt-57	2.16E-01	4.27E-01	1.32E+00		4.30E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Cobalt-57	7.97E-01	6.57E-01	1.58E+00		6.58E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Cobalt-57	4.52E-01	4.91E-01	1.58E+00		5.02E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Cobalt-58	-6.57E-01	5.43E-01	1.64E+00		5.64E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Cobalt-58	1.33E-01	5.55E-01	1.61E+00		5.56E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Cobalt-58	8.14E-03	5.39E-01	1.75E+00		5.39E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Cobalt-58	-1.37E+00	9.09E-01	2.73E+00		9.63E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Cobalt-58	-8.20E-03	5.16E-01	1.72E+00		5.16E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Cobalt-58	8.27E-01	5.99E-01	2.01E+00		6.29E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Cobalt-58	3.59E-01	7.06E-01	2.43E+00		7.10E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Cobalt-58	8.82E-02	5.11E-01	1.53E+00		5.11E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Cobalt-58	-4.32E-01	7.69E-01	2.42E+00		7.75E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Cobalt-58	-4.65E-01	6.75E-01	1.82E+00		6.84E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Cobalt-58	-1.90E-01	6.34E-01	2.06E+00		6.36E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Cobalt-58	6.18E-01	5.21E-01	1.75E+00		5.41E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Cobalt-58	-3.95E-01	5.04E-01	1.62E+00		5.13E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Cobalt-58	-8.20E-01	6.13E-01	1.85E+00		6.43E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Cobalt-58	-6.91E-01	6.11E-01	1.88E+00		6.32E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Cobalt-58	5.86E-01	6.83E-01	2.29E+00		6.97E-01	pCi/L	U

M-8(560556002) - Milk	28-Oct-21	Cobalt-58	-3.74E-01	4.95E-01	1.57E+00		5.03E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Cobalt-58	2.19E-01	5.05E-01	1.63E+00		5.07E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Cobalt-58	-8.32E-01	5.50E-01	1.64E+00		5.84E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Cobalt-60	-1.54E-01	5.91E-01	1.91E+00		5.92E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Cobalt-60	3.00E-01	5.78E-01	1.97E+00		5.83E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Cobalt-60	4.10E-01	5.51E-01	1.92E+00		5.59E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Cobalt-60	9.63E-02	9.35E-01	3.14E+00		9.35E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Cobalt-60	2.38E-01	6.03E-01	1.97E+00		6.05E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Cobalt-60	-1.87E+00	9.22E-01	1.88E+00		1.02E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Cobalt-60	1.77E+00	8.32E-01	2.97E+00		9.29E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Cobalt-60	-8.48E-01	5.39E-01	1.60E+00		5.75E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Cobalt-60	-9.51E-01	9.97E-01	2.96E+00		1.02E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Cobalt-60	2.92E-01	6.30E-01	2.12E+00		6.34E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Cobalt-60	7.89E-02	6.27E-01	2.11E+00		6.27E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Cobalt-60	1.52E-01	5.96E-01	2.00E+00		5.97E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Cobalt-60	-3.86E-02	5.62E-01	1.88E+00		5.62E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Cobalt-60	2.72E-01	6.65E-01	2.27E+00		6.68E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Cobalt-60	-8.37E-01	6.60E-01	2.07E+00		6.89E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Cobalt-60	3.99E-01	6.56E-01	2.26E+00		6.63E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Cobalt-60	7.21E-03	5.57E-01	1.88E+00		5.57E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Cobalt-60	3.15E-02	6.12E-01	2.03E+00		6.12E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Cobalt-60	1.80E-01	5.54E-01	1.86E+00		5.56E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Iodine-131	-2.39E-01	3.48E-01	1.16E+00	1.00E+00	3.53E-01	pCi/L	DLU
M-8(535079001) - Milk	11-Feb-21	Iodine-131	1.49E-01	1.91E-01	6.46E-01	1.00E+00	1.94E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Iodine-131	2.52E-02	1.40E-01	4.79E-01	1.00E+00	1.41E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Iodine-131	-2.05E-01	1.88E-01	6.15E-01	1.00E+00	1.94E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Iodine-131	4.08E-02	2.02E-01	6.73E-01	1.00E+00	2.02E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Iodine-131	1.41E-01	3.16E-01	1.09E+00	1.00E+00	3.18E-01	pCi/L	DLU
M-8(545937001) - Milk	27-May-21	Iodine-131	1.97E-01	1.96E-01	6.86E-01	1.00E+00	2.02E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Iodine-131	3.04E-01	2.48E-01	8.29E-01	1.00E+00	2.57E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Iodine-131	2.51E-01	1.78E-01	5.98E-01	1.00E+00	1.87E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Iodine-131	2.97E-02	2.33E-01	7.12E-01	1.00E+00	2.33E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Iodine-131	3.85E-01	2.74E-01	9.30E-01	1.00E+00	2.89E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Iodine-131	1.09E-01	1.34E-01	4.64E-01	1.00E+00	1.36E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Iodine-131	1.24E-01	1.49E-01	5.18E-01	1.00E+00	1.52E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Iodine-131	1.20E-01	2.49E-01	8.30E-01	1.00E+00	2.51E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Iodine-131	1.44E-01	2.77E-01	9.21E-01	1.00E+00	2.79E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Iodine-131	-1.69E-01	2.65E-01	8.35E-01	1.00E+00	2.68E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Iodine-131	5.06E-02	3.10E-01	9.97E-01	1.00E+00	3.10E-01	pCi/L	U

M-8(562015002) - Milk	11-Nov-21	Iodine-131	4.94E-01	3.60E-01	1.15E+00	1.00E+00	3.78E-01	pCi/L	DLU
M-8(564675002) - Milk	9-Dec-21	Iodine-131	-7.31E-02	2.43E-01	7.71E-01	1.00E+00	2.43E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Iron-59	3.32E-03	1.24E+00	4.11E+00		1.24E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Iron-59	-1.11E+00	1.21E+00	3.94E+00		1.24E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Iron-59	1.08E-01	1.39E+00	4.43E+00		1.39E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Iron-59	1.97E-01	1.96E+00	6.67E+00		1.96E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Iron-59	-8.75E-01	1.18E+00	3.75E+00		1.20E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Iron-59	-1.63E+00	2.52E+00	5.03E+00		2.55E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Iron-59	6.35E+00	4.17E+00	6.35E+00		5.09E+00	pCi/L	UI
M-8(547044001) - Milk	10-Jun-21	Iron-59	-3.00E+00	1.28E+00	3.88E+00		1.47E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Iron-59	-1.86E+00	1.84E+00	5.48E+00		1.90E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Iron-59	6.49E-01	1.42E+00	4.81E+00		1.43E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Iron-59	7.39E-02	1.53E+00	4.91E+00		1.53E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Iron-59	-2.15E-01	1.16E+00	3.88E+00		1.16E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Iron-59	5.60E-01	1.15E+00	3.74E+00		1.16E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Iron-59	2.05E+00	1.42E+00	5.02E+00		1.50E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Iron-59	3.32E-01	1.58E+00	5.40E+00		1.58E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Iron-59	-1.66E+00	1.60E+00	5.20E+00		1.65E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Iron-59	4.63E-01	1.17E+00	3.80E+00		1.18E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Iron-59	2.23E+00	1.21E+00	3.84E+00		1.32E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Iron-59	-6.16E-01	1.19E+00	3.91E+00		1.20E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Lanthanum-140	-1.81E+00	7.21E-01	1.91E+00	1.50E+01	8.36E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Lanthanum-140	4.04E-01	7.19E-01	2.18E+00	1.50E+01	7.25E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Lanthanum-140	-2.66E-01	6.61E-01	2.13E+00	1.50E+01	6.64E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Lanthanum-140	8.28E-01	1.11E+00	3.88E+00	1.50E+01	1.13E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Lanthanum-140	2.20E-01	6.55E-01	2.23E+00	1.50E+01	6.57E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Lanthanum-140	-8.46E-01	1.03E+00	3.15E+00	1.50E+01	1.05E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Lanthanum-140	-1.95E+00	1.17E+00	3.41E+00	1.50E+01	1.26E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Lanthanum-140	-2.19E+00	7.11E-01	1.94E+00	1.50E+01	8.75E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Lanthanum-140	4.70E-01	1.02E+00	3.51E+00	1.50E+01	1.02E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Lanthanum-140	-1.25E+00	8.97E-01	2.59E+00	1.50E+01	9.43E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Lanthanum-140	-7.20E-01	1.04E+00	3.31E+00	1.50E+01	1.06E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Lanthanum-140	1.52E-01	7.36E-01	2.44E+00	1.50E+01	7.37E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Lanthanum-140	-9.93E-01	7.32E-01	1.88E+00	1.50E+01	7.68E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Lanthanum-140	-1.31E+00	9.67E-01	2.95E+00	1.50E+01	1.02E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Lanthanum-140	-1.52E+00	1.14E+00	3.39E+00	1.50E+01	1.19E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Lanthanum-140	-2.25E+00	1.21E+00	2.67E+00	1.50E+01	1.32E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Lanthanum-140	-7.49E-01	6.68E-01	2.05E+00	1.50E+01	6.91E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Lanthanum-140	-7.37E-02	9.69E-01	1.96E+00	1.50E+01	9.69E-01	pCi/L	U

M-8(564675002) - Milk	9-Dec-21	Lanthanum-140	-1.39E+00	9.36E-01	2.33E+00	1.50E+01	9.91E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Manganese-54	3.28E-01	5.10E-01	1.77E+00		5.16E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Manganese-54	5.86E-01	5.13E-01	1.72E+00		5.31E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Manganese-54	-3.93E-01	5.08E-01	1.58E+00		5.16E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Manganese-54	7.33E-01	8.77E-01	2.95E+00		8.93E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Manganese-54	-1.07E+00	4.78E-01	1.48E+00		5.40E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Manganese-54	6.43E-01	5.62E-01	1.86E+00		5.82E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Manganese-54	-1.83E-01	7.15E-01	2.40E+00		7.16E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Manganese-54	3.43E-01	4.77E-01	1.64E+00		4.83E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Manganese-54	7.70E-01	9.72E-01	2.79E+00		9.73E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Manganese-54	4.72E-02	1.47E+00	2.08E+00		1.47E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Manganese-54	-3.90E-01	5.94E-01	1.90E+00		6.01E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Manganese-54	-3.84E-01	5.02E-01	1.56E+00		5.10E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Manganese-54	-6.84E-01	5.21E-01	1.64E+00		5.45E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Manganese-54	1.24E+00	6.27E-01	2.15E+00		6.92E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Manganese-54	-3.25E-02	6.20E-01	1.99E+00		6.20E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Manganese-54	5.64E-01	6.57E-01	2.19E+00		6.70E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Manganese-54	1.64E-01	9.06E-01	1.52E+00		9.06E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Manganese-54	-2.58E-02	4.79E-01	1.52E+00		4.79E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Manganese-54	-3.94E-02	5.41E-01	1.71E+00		5.42E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Niobium-95	4.95E-01	5.82E-01	1.91E+00		5.93E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Niobium-95	7.03E-01	7.17E-01	1.69E+00		7.18E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Niobium-95	-7.47E-02	5.55E-01	1.80E+00		5.56E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Niobium-95	-5.51E-01	8.26E-01	2.60E+00		8.36E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Niobium-95	2.50E-01	4.76E-01	1.61E+00		4.79E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Niobium-95	2.59E-01	5.89E-01	1.92E+00		5.92E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Niobium-95	-8.57E-02	6.84E-01	2.32E+00		6.84E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Niobium-95	-3.32E-01	5.24E-01	1.74E+00		5.30E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Niobium-95	9.64E-01	8.14E-01	2.81E+00		8.45E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Niobium-95	-1.12E+00	9.66E-01	1.96E+00		1.00E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Niobium-95	-8.61E-01	9.59E-01	1.95E+00		9.80E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Niobium-95	4.50E-01	6.78E-01	1.78E+00		6.86E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Niobium-95	3.70E-01	5.02E-01	1.69E+00		5.09E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Niobium-95	2.52E-01	6.54E-01	2.13E+00		6.56E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Niobium-95	-2.42E-01	6.51E-01	2.08E+00		6.53E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Niobium-95	-4.59E-01	7.12E-01	2.25E+00		7.20E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Niobium-95	8.32E-01	4.76E-01	1.66E+00		5.14E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Niobium-95	1.09E+00	5.25E-01	1.80E+00		5.84E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Niobium-95	1.62E+00	1.17E+00	1.77E+00		1.17E+00	pCi/L	U

M-8(532203001) - Milk	14-Jan-21	Potassium-40	1.59E+03	3.08E+01	1.74E+01		8.35E+01	pCi/L	
M-8(535079001) - Milk	11-Feb-21	Potassium-40	1.44E+03	3.18E+01	1.72E+01		7.41E+01	pCi/L	
M-8(536220001) - Milk	25-Feb-21	Potassium-40	1.48E+03	3.41E+01	1.35E+01		7.54E+01	pCi/L	
M-8(537625001) - Milk	11-Mar-21	Potassium-40	1.51E+03	4.67E+01	2.71E+01		8.67E+01	pCi/L	
M-8(540354001) - Milk	8-Apr-21	Potassium-40	1.43E+03	2.99E+01	1.35E+01		7.68E+01	pCi/L	
M-8(544751001) - Milk	13-May-21	Potassium-40	1.48E+03	3.27E+01	1.60E+01		7.51E+01	pCi/L	
M-8(545937001) - Milk	27-May-21	Potassium-40	1.49E+03	3.86E+01	2.18E+01		7.98E+01	pCi/L	
M-8(547044001) - Milk	10-Jun-21	Potassium-40	1.42E+03	2.89E+01	1.54E+01		7.05E+01	pCi/L	
M-8(548318001) - Milk	24-Jun-21	Potassium-40	1.42E+03	4.67E+01	2.24E+01		8.67E+01	pCi/L	
M-8(549273001) - Milk	8-Jul-21	Potassium-40	1.42E+03	3.77E+01	2.08E+01		7.86E+01	pCi/L	
M-8(550493002) - Milk	22-Jul-21	Potassium-40	1.50E+03	3.32E+01	1.84E+01		8.07E+01	pCi/L	
M-8(552733001) - Milk	12-Aug-21	Potassium-40	1.42E+03	3.23E+01	1.59E+01		7.32E+01	pCi/L	
M-8(553974002) - Milk	26-Aug-21	Potassium-40	1.45E+03	2.77E+01	1.52E+01		7.65E+01	pCi/L	
M-8(555472001) - Milk	9-Sep-21	Potassium-40	1.49E+03	3.55E+01	2.05E+01		8.54E+01	pCi/L	
M-8(556799001) - Milk	23-Sep-21	Potassium-40	1.48E+03	3.54E+01	1.66E+01		8.49E+01	pCi/L	
M-8(558702001) - Milk	7-Oct-21	Potassium-40	1.50E+03	3.62E+01	2.15E+01		8.60E+01	pCi/L	
M-8(560556002) - Milk	28-Oct-21	Potassium-40	1.48E+03	3.16E+01	1.40E+01		8.25E+01	pCi/L	
M-8(562015002) - Milk	11-Nov-21	Potassium-40	1.41E+03	2.92E+01	1.42E+01		8.00E+01	pCi/L	
M-8(564675002) - Milk	9-Dec-21	Potassium-40	1.46E+03	2.98E+01	1.48E+01		8.29E+01	pCi/L	
M-8(532203001) - Milk	14-Jan-21	Ruthenium-103	-8.13E-01	6.00E-01	1.68E+00		6.29E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Ruthenium-103	-4.39E-01	5.24E-01	1.70E+00		5.34E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Ruthenium-103	-7.97E-01	5.20E-01	1.65E+00		5.52E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Ruthenium-103	-1.79E-01	9.14E-01	2.74E+00		9.15E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Ruthenium-103	-4.84E-01	4.99E-01	1.55E+00		5.12E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Ruthenium-103	-4.11E-01	6.51E-01	1.88E+00		6.58E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Ruthenium-103	-1.38E+00	7.20E-01	1.92E+00		7.90E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Ruthenium-103	8.39E-01	5.48E-01	1.69E+00		5.83E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Ruthenium-103	-1.99E-01	7.31E-01	2.43E+00		7.32E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Ruthenium-103	-4.04E-01	7.05E-01	1.85E+00		7.11E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Ruthenium-103	-5.63E-01	6.16E-01	2.04E+00		6.29E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Ruthenium-103	-1.71E-01	4.88E-01	1.60E+00		4.90E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Ruthenium-103	-2.87E-01	4.78E-01	1.60E+00		4.83E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Ruthenium-103	-1.45E+00	6.35E-01	1.93E+00		7.20E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Ruthenium-103	4.09E-01	7.16E-01	2.19E+00		7.22E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Ruthenium-103	1.83E-01	8.01E-01	2.42E+00		8.02E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Ruthenium-103	1.39E-01	4.96E-01	1.52E+00		4.97E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Ruthenium-103	5.83E-01	4.70E-01	1.60E+00		4.90E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Ruthenium-103	-1.40E+00	5.52E-01	1.68E+00		6.42E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Ruthenium-106	1.11E+00	4.58E+00	1.49E+01		4.58E+00	pCi/L	U

M-8(535079001) - Milk	11-Feb-21	Ruthenium-106	-5.09E+00	4.42E+00	1.39E+01		4.58E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Ruthenium-106	-1.78E+00	4.52E+00	1.47E+01		4.54E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Ruthenium-106	-4.00E-01	6.76E+00	2.24E+01		6.76E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Ruthenium-106	2.79E+00	4.03E+00	1.39E+01		4.08E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Ruthenium-106	-8.77E+00	4.74E+00	1.44E+01		5.17E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Ruthenium-106	2.37E+00	6.85E+00	1.99E+01		6.87E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Ruthenium-106	-3.38E+00	4.69E+00	1.46E+01		4.75E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Ruthenium-106	-6.24E+00	6.72E+00	2.13E+01		6.88E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Ruthenium-106	2.38E-01	5.62E+00	1.83E+01		5.62E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Ruthenium-106	4.03E+00	4.76E+00	1.63E+01		4.85E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Ruthenium-106	5.38E+00	4.67E+00	1.58E+01		4.83E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Ruthenium-106	-6.52E+00	4.32E+00	1.39E+01		4.59E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Ruthenium-106	1.03E+00	5.36E+00	1.75E+01		5.37E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Ruthenium-106	4.82E+00	5.28E+00	1.79E+01		5.40E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Ruthenium-106	-1.06E-01	5.96E+00	1.96E+01		5.96E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Ruthenium-106	-1.67E+00	4.10E+00	1.34E+01		4.12E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Ruthenium-106	-1.03E+01	7.13E+00	1.42E+01		7.53E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Ruthenium-106	5.38E-01	4.61E+00	1.50E+01		4.62E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Selenium-75	8.05E-01	6.54E-01	2.30E+00		6.80E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Selenium-75	-1.44E-01	6.42E-01	2.20E+00		6.43E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Selenium-75	1.97E-01	6.72E-01	2.12E+00		6.74E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Selenium-75	-1.26E+00	1.04E+00	3.21E+00		1.09E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Selenium-75	-2.26E-01	6.45E-01	2.12E+00		6.47E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Selenium-75	5.54E-01	7.63E-01	2.42E+00		7.74E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Selenium-75	-7.38E-01	7.47E-01	2.47E+00		7.67E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Selenium-75	-2.95E-01	6.29E-01	2.13E+00		6.33E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Selenium-75	4.03E-01	1.11E+00	3.53E+00		1.11E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Selenium-75	-1.07E+00	8.09E-01	2.43E+00		8.48E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Selenium-75	3.92E-01	7.63E-01	2.51E+00		7.68E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Selenium-75	4.06E-01	6.29E-01	2.19E+00		6.36E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Selenium-75	-9.57E-02	6.44E-01	2.09E+00		6.44E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Selenium-75	1.09E-01	8.25E-01	2.76E+00		8.26E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Selenium-75	-1.18E+00	8.96E-01	2.71E+00		9.38E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Selenium-75	5.46E-01	9.54E-01	3.03E+00		9.63E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Selenium-75	-5.23E-04	6.20E-01	1.96E+00		6.20E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Selenium-75	4.25E-01	6.66E-01	2.28E+00		6.73E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Selenium-75	6.16E-02	7.02E-01	2.38E+00		7.02E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Silver-108m	-2.36E-01	4.54E-01	1.42E+00		4.57E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Silver-108m	6.14E-01	4.02E-01	1.40E+00		4.27E-01	pCi/L	U

M-8(536220001) - Milk	25-Feb-21	Silver-108m	-6.61E-01	4.18E-01	1.33E+00		4.46E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Silver-108m	-1.24E-01	6.45E-01	2.18E+00		6.46E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Silver-108m	5.06E-02	4.40E-01	1.42E+00		4.40E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Silver-108m	-1.10E-01	4.47E-01	1.48E+00		4.48E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Silver-108m	6.17E-01	5.81E-01	1.96E+00		5.99E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Silver-108m	-2.64E-01	4.17E-01	1.35E+00		4.21E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Silver-108m	6.88E-01	6.84E-01	2.40E+00		7.02E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Silver-108m	-1.94E-01	4.95E-01	1.64E+00		4.97E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Silver-108m	-7.35E-01	4.90E-01	1.49E+00		5.19E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Silver-108m	-2.74E-01	4.64E-01	1.36E+00		4.69E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Silver-108m	-1.83E-01	4.34E-01	1.36E+00		4.36E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Silver-108m	-1.41E-01	5.28E-01	1.72E+00		5.29E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Silver-108m	4.65E-01	5.06E-01	1.75E+00		5.18E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Silver-108m	-2.72E-01	5.24E-01	1.73E+00		5.28E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Silver-108m	-8.46E-01	3.81E-01	1.21E+00		4.29E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Silver-108m	2.20E-02	4.40E-01	1.45E+00		4.40E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Silver-108m	-1.88E-01	4.55E-01	1.49E+00		4.57E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Silver-110m	-1.23E+00	6.85E-01	2.18E+00		7.44E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Silver-110m	-4.01E-02	8.14E-01	2.30E+00		8.14E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Silver-110m	-7.48E-01	6.75E-01	2.05E+00		6.97E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Silver-110m	3.26E+00	2.16E+00	3.86E+00		2.29E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Silver-110m	-3.78E-01	6.71E-01	2.18E+00		6.76E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Silver-110m	-3.49E-01	7.61E-01	2.54E+00		7.65E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Silver-110m	8.72E-02	9.81E-01	3.32E+00		9.81E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Silver-110m	-1.17E+00	7.07E-01	2.23E+00		7.59E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Silver-110m	4.60E-01	1.11E+00	3.68E+00		1.12E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Silver-110m	-5.14E-01	8.11E-01	2.68E+00		8.20E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Silver-110m	-6.81E-02	7.98E-01	2.60E+00		7.99E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Silver-110m	-9.68E-01	7.44E-01	2.24E+00		7.78E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Silver-110m	2.31E+00	9.58E-01	2.31E+00		1.19E+00	pCi/L	UI
M-8(555472001) - Milk	9-Sep-21	Silver-110m	-1.53E-01	8.31E-01	2.63E+00		8.32E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Silver-110m	-1.53E+00	8.17E-01	2.40E+00		8.93E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Silver-110m	-2.23E-01	9.24E-01	2.93E+00		9.25E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Silver-110m	-6.19E-02	6.90E-01	2.23E+00		6.90E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Silver-110m	-5.92E-01	6.24E-01	2.05E+00		6.40E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Silver-110m	7.83E-01	6.99E-01	2.46E+00		7.23E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Strontium-89	4.90E-01	6.89E-01	2.12E+00	1.00E+01	8.85E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Strontium-89	-2.04E+00	2.84E-01	1.09E+00	1.00E+01	7.49E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Strontium-89	-2.32E-01	4.77E-01	1.60E+00	1.00E+01	7.59E-01	pCi/L	U

M-8(537625001) - Milk	11-Mar-21	Strontium-89	1.17E+00	4.82E-01	1.33E+00	1.00E+01	5.94E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Strontium-89	-1.34E+00	5.20E-01	2.02E+00	1.00E+01	5.81E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Strontium-89	-1.18E-01	6.46E-01	2.16E+00	1.00E+01	7.38E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Strontium-89	7.43E-01	7.41E-01	2.29E+00	1.00E+01	8.87E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Strontium-89	7.23E-01	4.81E-01	1.36E+00	1.00E+01	5.23E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Strontium-89	-2.74E-01	6.90E-01	2.35E+00	1.00E+01	7.85E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Strontium-89	3.85E-01	7.05E-01	2.25E+00	1.00E+01	7.50E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Strontium-89	1.08E-01	7.14E-01	2.32E+00	1.00E+01	8.21E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Strontium-89	9.60E-01	9.36E-01	2.90E+00	1.00E+01	9.77E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Strontium-89	-8.93E-01	3.98E-01	1.56E+00	1.00E+01	5.59E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Strontium-89	-3.21E-01	3.56E-01	1.28E+00	1.00E+01	6.39E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Strontium-89	3.69E+00	1.50E+00	4.37E+00	1.00E+01	1.59E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Strontium-89	-1.05E+00	4.21E-01	1.72E+00	1.00E+01	4.74E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Strontium-89	-1.02E+00	7.76E-01	2.75E+00	1.00E+01	8.13E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Strontium-89	1.01E+00	4.72E-01	1.33E+00	1.00E+01	5.66E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Strontium-89	-1.87E+00	3.80E-01	1.84E+00	1.00E+01	6.49E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Strontium-90	8.68E-01	4.17E-01	1.23E+00	2.00E+00	4.23E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Strontium-90	2.30E-01	4.23E-01	1.34E+00	2.00E+00	4.24E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Strontium-90	9.39E-01	4.46E-01	1.64E+00	2.00E+00	5.77E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Strontium-90	-2.16E-01	3.32E-01	1.55E+00	2.00E+00	4.52E-01	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Strontium-90	-5.18E-01	4.48E-01	1.87E+00	2.00E+00	5.55E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Strontium-90	6.97E-01	2.77E-01	1.21E+00	2.00E+00	3.87E-01	pCi/L	U
M-8(545937001) - Milk	27-May-21	Strontium-90	-1.03E-02	3.97E-01	1.68E+00	2.00E+00	5.09E-01	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Strontium-90	-1.99E+00	1.90E-01	1.82E+00	2.00E+00	5.04E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Strontium-90	-2.78E-01	3.08E-01	1.83E+00	2.00E+00	5.51E-01	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Strontium-90	-2.01E-01	2.07E-01	8.45E-01	2.00E+00	2.48E-01	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Strontium-90	4.36E-01	4.09E-01	1.76E+00	2.00E+00	5.54E-01	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Strontium-90	9.14E-02	1.85E-01	9.57E-01	2.00E+00	2.93E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Strontium-90	-9.00E-02	3.95E-01	1.44E+00	2.00E+00	4.29E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Strontium-90	9.37E-01	3.65E-01	1.23E+00	2.00E+00	4.53E-01	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Strontium-90	-2.15E-01	2.63E-01	1.86E+00	2.00E+00	5.60E-01	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Strontium-90	-2.54E-01	1.72E-01	7.14E-01	2.00E+00	2.11E-01	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Strontium-90	6.13E-01	2.07E-01	7.23E-01	2.00E+00	2.41E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Strontium-90	2.33E-01	2.37E-01	1.32E+00	2.00E+00	4.03E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Strontium-90	1.57E+00	4.30E-01	1.66E+00	2.00E+00	6.33E-01	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Zinc-65	-2.48E+00	1.34E+00	4.19E+00		1.47E+00	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Zinc-65	-2.52E+00	1.28E+00	4.01E+00		1.41E+00	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Zinc-65	-6.35E-02	1.26E+00	4.28E+00		1.26E+00	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Zinc-65	-4.03E+00	2.17E+00	6.74E+00		2.36E+00	pCi/L	U

M-8(540354001) - Milk	8-Apr-21	Zinc-65	-1.63E+00	1.38E+00	4.34E+00		1.43E+00	pCi/L	U
M-8(544751001) - Milk	13-May-21	Zinc-65	-2.40E+00	1.34E+00	4.18E+00		1.46E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Zinc-65	4.63E-01	1.74E+00	5.83E+00		1.74E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Zinc-65	-1.38E+00	1.81E+00	4.05E+00		1.84E+00	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Zinc-65	5.89E-01	2.04E+00	5.88E+00		2.05E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Zinc-65	-6.81E-01	1.58E+00	5.16E+00		1.59E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Zinc-65	-2.27E-02	1.63E+00	4.54E+00		1.63E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Zinc-65	9.59E-01	1.37E+00	4.19E+00		1.38E+00	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Zinc-65	1.03E+00	1.46E+00	4.20E+00		1.48E+00	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Zinc-65	1.77E-01	2.16E+00	4.74E+00		2.16E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Zinc-65	-4.90E-01	1.56E+00	5.22E+00		1.56E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Zinc-65	-1.27E+00	1.75E+00	5.02E+00		1.77E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Zinc-65	1.39E-01	1.41E+00	4.28E+00		1.41E+00	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Zinc-65	9.66E-01	1.24E+00	4.26E+00		1.26E+00	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Zinc-65	2.64E+00	1.43E+00	4.55E+00		1.56E+00	pCi/L	U
M-8(532203001) - Milk	14-Jan-21	Zirconium-95	5.91E-01	9.21E-01	3.01E+00		9.32E-01	pCi/L	U
M-8(535079001) - Milk	11-Feb-21	Zirconium-95	1.13E-01	9.37E-01	3.04E+00		9.38E-01	pCi/L	U
M-8(536220001) - Milk	25-Feb-21	Zirconium-95	-7.42E-01	8.85E-01	2.77E+00		9.02E-01	pCi/L	U
M-8(537625001) - Milk	11-Mar-21	Zirconium-95	7.19E-01	1.51E+00	5.03E+00		1.51E+00	pCi/L	U
M-8(540354001) - Milk	8-Apr-21	Zirconium-95	-1.50E-01	8.23E-01	2.74E+00		8.24E-01	pCi/L	U
M-8(544751001) - Milk	13-May-21	Zirconium-95	-1.49E+00	1.26E+00	3.37E+00		1.31E+00	pCi/L	U
M-8(545937001) - Milk	27-May-21	Zirconium-95	2.32E+00	1.35E+00	4.55E+00		1.46E+00	pCi/L	U
M-8(547044001) - Milk	10-Jun-21	Zirconium-95	4.06E-01	9.01E-01	3.09E+00		9.06E-01	pCi/L	U
M-8(548318001) - Milk	24-Jun-21	Zirconium-95	-4.58E-01	1.40E+00	4.48E+00		1.40E+00	pCi/L	U
M-8(549273001) - Milk	8-Jul-21	Zirconium-95	-1.23E-01	1.12E+00	3.55E+00		1.12E+00	pCi/L	U
M-8(550493002) - Milk	22-Jul-21	Zirconium-95	6.78E-01	1.07E+00	3.61E+00		1.09E+00	pCi/L	U
M-8(552733001) - Milk	12-Aug-21	Zirconium-95	9.78E-01	9.09E-01	3.05E+00		9.37E-01	pCi/L	U
M-8(553974002) - Milk	26-Aug-21	Zirconium-95	-2.56E-01	8.66E-01	2.83E+00		8.68E-01	pCi/L	U
M-8(555472001) - Milk	9-Sep-21	Zirconium-95	-2.60E-01	1.13E+00	3.60E+00		1.13E+00	pCi/L	U
M-8(556799001) - Milk	23-Sep-21	Zirconium-95	1.97E+00	1.10E+00	3.82E+00		1.19E+00	pCi/L	U
M-8(558702001) - Milk	7-Oct-21	Zirconium-95	-7.03E-02	1.22E+00	3.96E+00		1.22E+00	pCi/L	U
M-8(560556002) - Milk	28-Oct-21	Zirconium-95	6.58E-01	8.66E-01	2.92E+00		8.80E-01	pCi/L	U
M-8(562015002) - Milk	11-Nov-21	Zirconium-95	-2.76E-01	8.70E-01	2.74E+00		8.72E-01	pCi/L	U
M-8(564675002) - Milk	9-Dec-21	Zirconium-95	-8.12E-01	9.53E-01	2.94E+00		9.72E-01	pCi/L	U

M-8QC

Milk

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
M-8QC(532203002) - Milk	14-Jan-21	Actinium-228	-5.66E+00	3.20E+00	7.51E+00		3.46E+00	pCi/L	U

M-8QC(535079002) - Milk	11-Feb-21	Actinium-228	1.59E+00	5.00E+00	7.76E+00		5.00E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Actinium-228	8.16E+00	3.48E+00	9.47E+00		3.97E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Actinium-228	1.46E+00	3.85E+00	6.04E+00		3.85E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Actinium-228	3.47E+00	5.06E+00	7.32E+00		5.06E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Actinium-228	4.27E+00	3.60E+00	8.03E+00		3.74E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Actinium-228	-1.00E+01	3.54E+00	7.93E+00		4.24E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Actinium-228	3.81E+00	2.44E+00	8.64E+00		2.60E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Actinium-228	2.91E-01	3.36E+00	8.54E+00		3.36E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Actinium-228	2.25E-01	4.95E+00	9.04E+00		4.95E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Actinium-228	4.87E-02	3.88E+00	9.66E+00		3.88E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Actinium-228	5.54E+00	3.49E+00	6.56E+00		3.50E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Actinium-228	9.32E+00	3.88E+00	9.32E+00		5.38E+00	pCi/L	UI
M-8QC(556799002) - Milk	23-Sep-21	Actinium-228	8.97E-01	5.04E+00	9.56E+00		5.04E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Actinium-228	-1.16E+01	5.43E+00	1.21E+01		6.07E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Actinium-228	5.82E+00	5.30E+00	7.86E+00		5.47E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Actinium-228	4.58E+00	4.15E+00	5.39E+00		4.16E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Actinium-228	1.91E+00	2.84E+00	7.06E+00		2.84E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Antimony-124	-1.37E+00	1.01E+00	3.10E+00		1.06E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Antimony-124	-1.77E+00	1.22E+00	3.45E+00		1.29E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Antimony-124	-2.95E-02	1.22E+00	3.91E+00		1.22E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Antimony-124	-5.52E-01	7.98E-01	2.54E+00		8.08E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Antimony-124	6.96E-01	1.18E+00	3.99E+00		1.20E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Antimony-124	3.01E-01	9.69E-01	3.22E+00		9.72E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Antimony-124	-5.27E-01	1.07E+00	3.36E+00		1.08E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Antimony-124	-3.66E-01	1.34E+00	4.37E+00		1.34E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Antimony-124	1.40E-01	1.13E+00	3.72E+00		1.13E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Antimony-124	-1.61E-02	1.23E+00	4.00E+00		1.23E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Antimony-124	4.50E-01	1.46E+00	4.29E+00		1.47E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Antimony-124	1.90E-01	9.53E-01	3.15E+00		9.54E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Antimony-124	4.21E-01	1.46E+00	4.31E+00		1.47E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Antimony-124	1.40E+00	1.27E+00	4.49E+00		1.32E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Antimony-124	8.79E-01	1.65E+00	5.59E+00		1.66E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Antimony-124	-2.80E-01	9.81E-01	3.17E+00		9.83E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Antimony-124	-4.01E-01	8.97E-01	2.50E+00		9.02E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Antimony-124	3.74E+00	1.98E+00	3.74E+00		1.99E+00	pCi/L	UI
M-8QC(532203002) - Milk	14-Jan-21	Antimony-125	-3.61E-01	1.31E+00	4.24E+00		1.31E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Antimony-125	8.11E-01	1.58E+00	5.37E+00		1.59E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Antimony-125	-7.43E-01	1.42E+00	4.62E+00		1.44E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Antimony-125	-7.72E-01	1.16E+00	3.86E+00		1.18E+00	pCi/L	U

M-8QC(544751002) - Milk	13-May-21	Antimony-125	4.73E-01	1.41E+00	4.62E+00		1.41E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Antimony-125	1.10E+00	1.34E+00	4.59E+00		1.36E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Antimony-125	-8.28E-01	1.30E+00	4.27E+00		1.31E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Antimony-125	-1.02E+00	1.45E+00	4.82E+00		1.47E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Antimony-125	-7.41E-01	2.06E+00	4.76E+00		2.06E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Antimony-125	-1.76E+00	1.50E+00	4.88E+00		1.55E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Antimony-125	5.17E-01	1.58E+00	5.16E+00		1.59E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Antimony-125	-5.58E-01	1.37E+00	4.56E+00		1.38E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Antimony-125	9.01E-01	1.50E+00	5.13E+00		1.51E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Antimony-125	-1.89E+00	1.58E+00	4.94E+00		1.64E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Antimony-125	4.17E-01	1.80E+00	6.16E+00		1.80E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Antimony-125	-1.19E+00	1.43E+00	4.45E+00		1.46E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Antimony-125	2.46E+00	1.21E+00	3.93E+00		1.34E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Antimony-125	3.01E-01	1.29E+00	4.31E+00		1.29E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Barium-140	6.38E-01	2.47E+00	7.59E+00	1.50E+01	2.47E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Barium-140	2.61E-01	2.66E+00	8.83E+00	1.50E+01	2.67E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Barium-140	-1.33E+00	2.65E+00	8.47E+00	1.50E+01	2.67E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Barium-140	1.89E+00	1.93E+00	6.60E+00	1.50E+01	1.98E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Barium-140	1.36E+00	3.51E+00	1.13E+01	1.50E+01	3.52E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Barium-140	3.48E+00	2.40E+00	8.25E+00	1.50E+01	2.53E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Barium-140	2.60E+00	2.30E+00	7.88E+00	1.50E+01	2.38E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Barium-140	-1.84E-01	3.10E+00	9.37E+00	1.50E+01	3.10E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Barium-140	6.92E-01	2.47E+00	8.38E+00	1.50E+01	2.48E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Barium-140	-4.33E-01	4.00E+00	1.18E+01	1.50E+01	4.00E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Barium-140	7.67E-01	2.68E+00	8.59E+00	1.50E+01	2.68E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Barium-140	1.96E+00	2.32E+00	7.87E+00	1.50E+01	2.37E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Barium-140	-6.89E+00	3.05E+00	9.37E+00	1.50E+01	3.45E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Barium-140	3.32E+00	3.50E+00	1.15E+01	1.50E+01	3.59E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Barium-140	-1.24E+00	4.30E+00	1.43E+01	1.50E+01	4.31E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Barium-140	1.86E+00	2.23E+00	7.65E+00	1.50E+01	2.27E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Barium-140	-3.25E+00	1.94E+00	6.20E+00	1.50E+01	2.09E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Barium-140	-3.34E+00	2.32E+00	7.21E+00	1.50E+01	2.45E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Beryllium-7	9.46E+00	4.05E+00	1.39E+01		4.61E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Beryllium-7	2.96E+00	4.61E+00	1.57E+01		4.66E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Beryllium-7	-1.62E+00	4.61E+00	1.49E+01		4.63E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Beryllium-7	-4.25E-01	3.63E+00	1.22E+01		3.63E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Beryllium-7	1.62E+00	5.02E+00	1.63E+01		5.04E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Beryllium-7	-1.55E+01	8.56E+00	1.40E+01		9.30E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Beryllium-7	3.72E+00	3.98E+00	1.36E+01		4.08E+00	pCi/L	U

M-8QC(548318002) - Milk	24-Jun-21	Beryllium-7	6.62E+00	4.50E+00	1.62E+01		4.76E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Beryllium-7	4.86E+00	4.23E+00	1.48E+01		4.38E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Beryllium-7	5.17E-01	5.28E+00	1.77E+01		5.28E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Beryllium-7	-2.12E-01	5.17E+00	1.48E+01		5.17E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Beryllium-7	-3.26E+00	4.41E+00	1.45E+01		4.48E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Beryllium-7	1.52E-01	5.25E+00	1.76E+01		5.25E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Beryllium-7	1.26E-01	5.10E+00	1.64E+01		5.10E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Beryllium-7	8.72E+00	6.01E+00	2.12E+01		6.35E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Beryllium-7	-5.87E+00	4.10E+00	1.34E+01		4.32E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Beryllium-7	1.62E+00	3.73E+00	1.27E+01		3.74E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Beryllium-7	-4.14E-01	4.18E+00	1.37E+01		4.18E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Cerium-141	-1.39E+00	8.41E-01	2.59E+00		9.02E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Cerium-141	-1.66E+00	1.25E+00	3.27E+00		1.31E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Cerium-141	-1.01E+00	9.14E-01	2.80E+00		9.44E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Cerium-141	-6.76E-02	8.77E-01	2.80E+00		8.77E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Cerium-141	6.45E-01	1.00E+00	3.22E+00		1.01E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Cerium-141	-2.04E-01	9.11E-01	2.94E+00		9.13E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Cerium-141	-2.11E+00	1.30E+00	2.70E+00		1.39E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Cerium-141	-1.81E+00	1.01E+00	3.13E+00		1.09E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Cerium-141	-1.88E+00	1.24E+00	3.00E+00		1.32E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Cerium-141	-1.02E+00	1.15E+00	3.65E+00		1.17E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Cerium-141	-8.13E-01	1.03E+00	3.16E+00		1.05E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Cerium-141	-1.63E+00	9.57E-01	2.76E+00		1.03E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Cerium-141	-1.36E+00	1.71E+00	3.70E+00		1.74E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Cerium-141	1.00E+00	1.19E+00	3.76E+00		1.21E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Cerium-141	3.83E-01	1.32E+00	4.07E+00		1.32E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Cerium-141	3.45E-01	1.55E+00	2.89E+00		1.55E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Cerium-141	-1.92E+00	1.23E+00	2.54E+00		1.30E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Cerium-141	2.60E+00	2.01E+00	2.60E+00		2.01E+00	pCi/L	UI
M-8QC(532203002) - Milk	14-Jan-21	Cerium-144	8.65E+00	3.63E+00	9.37E+00		3.64E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Cerium-144	-3.51E+00	4.09E+00	1.29E+01		4.17E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Cerium-144	-2.69E+00	3.40E+00	1.05E+01		3.45E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Cerium-144	-6.35E+00	3.33E+00	1.04E+01		3.65E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Cerium-144	3.37E-01	3.34E+00	1.07E+01		3.35E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Cerium-144	-2.88E+00	3.34E+00	1.07E+01		3.41E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Cerium-144	-2.57E+00	3.27E+00	1.04E+01		3.32E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Cerium-144	2.16E+00	3.92E+00	1.30E+01		3.95E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Cerium-144	-1.98E-01	3.59E+00	1.21E+01		3.59E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Cerium-144	5.48E+00	3.71E+00	1.24E+01		3.92E+00	pCi/L	U

M-8QC(552733002) - Milk	12-Aug-21	Cerium-144	-1.76E+00	4.08E+00	1.27E+01		4.10E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Cerium-144	1.61E+00	3.46E+00	1.13E+01		3.48E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Cerium-144	-1.76E+00	4.17E+00	1.34E+01		4.20E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Cerium-144	3.43E+00	3.94E+00	1.25E+01		4.02E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Cerium-144	-2.98E+00	4.64E+00	1.41E+01		4.69E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Cerium-144	-4.37E+00	3.29E+00	1.09E+01		3.45E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Cerium-144	4.46E+00	3.21E+00	1.07E+01		3.37E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Cerium-144	-4.82E+00	4.61E+00	1.06E+01		4.75E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Cesium-134	3.58E-01	4.99E-01	1.70E+00	1.50E+01	5.06E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Cesium-134	6.32E-01	6.95E-01	2.33E+00	1.50E+01	7.10E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Cesium-134	-8.42E-01	8.75E-01	2.22E+00	1.50E+01	8.97E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Cesium-134	1.13E-01	5.43E-01	1.79E+00	1.50E+01	5.44E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Cesium-134	8.67E-01	6.21E-01	2.14E+00	1.50E+01	6.54E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Cesium-134	-1.28E-01	6.74E-01	1.92E+00	1.50E+01	6.75E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Cesium-134	-1.83E-01	5.65E-01	1.79E+00	1.50E+01	5.67E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Cesium-134	-3.71E-01	7.13E-01	2.29E+00	1.50E+01	7.18E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Cesium-134	3.47E-01	6.05E-01	2.02E+00	1.50E+01	6.10E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Cesium-134	3.03E-01	7.06E-01	2.31E+00	1.50E+01	7.10E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Cesium-134	6.29E-02	6.62E-01	2.21E+00	1.50E+01	6.62E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Cesium-134	-1.04E+00	5.95E-01	1.80E+00	1.50E+01	6.43E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Cesium-134	2.36E-01	6.23E-01	2.05E+00	1.50E+01	6.26E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Cesium-134	2.98E-01	6.41E-01	2.16E+00	1.50E+01	6.45E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Cesium-134	1.94E+00	1.15E+00	2.86E+00	1.50E+01	1.24E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Cesium-134	-5.14E-01	8.65E-01	1.84E+00	1.50E+01	8.73E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Cesium-134	4.20E-01	4.86E-01	1.63E+00	1.50E+01	4.96E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Cesium-134	4.09E-01	5.30E-01	1.84E+00	1.50E+01	5.38E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Cesium-137	-3.93E-01	4.89E-01	1.63E+00	1.80E+01	4.98E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Cesium-137	7.63E-01	6.53E-01	2.23E+00	1.80E+01	6.77E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Cesium-137	-3.59E-01	5.99E-01	1.87E+00	1.80E+01	6.04E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Cesium-137	7.12E-01	4.65E-01	1.60E+00	1.80E+01	4.94E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Cesium-137	-4.19E-02	5.61E-01	1.88E+00	1.80E+01	5.61E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Cesium-137	6.72E-01	5.45E-01	1.84E+00	1.80E+01	5.67E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Cesium-137	2.96E-01	5.10E-01	1.69E+00	1.80E+01	5.14E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Cesium-137	-6.89E-01	6.89E-01	1.92E+00	1.80E+01	7.07E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Cesium-137	-5.31E-01	7.66E-01	1.91E+00	1.80E+01	7.76E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Cesium-137	2.29E-01	8.08E-01	1.78E+00	1.80E+01	8.08E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Cesium-137	-1.43E-01	5.72E-01	1.91E+00	1.80E+01	5.73E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Cesium-137	-1.08E-01	5.65E-01	1.83E+00	1.80E+01	5.66E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Cesium-137	-8.05E-01	8.92E-01	2.13E+00	1.80E+01	9.12E-01	pCi/L	U

M-8QC(556799002) - Milk	23-Sep-21	Cesium-137	6.60E-01	5.71E-01	1.99E+00	1.80E+01	5.92E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Cesium-137	-5.74E-01	7.47E-01	2.39E+00	1.80E+01	7.58E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Cesium-137	-8.00E-02	5.30E-01	1.76E+00	1.80E+01	5.31E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Cesium-137	-5.64E-01	4.83E-01	1.54E+00	1.80E+01	5.00E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Cesium-137	-7.56E-01	5.17E-01	1.57E+00	1.80E+01	5.47E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Chromium-51	6.76E+00	4.32E+00	1.48E+01		4.60E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Chromium-51	9.33E+00	5.36E+00	1.90E+01		5.79E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Chromium-51	-2.80E-01	4.74E+00	1.58E+01		4.74E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Chromium-51	7.56E+00	3.99E+00	1.41E+01		4.37E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Chromium-51	1.70E+00	5.25E+00	1.76E+01		5.27E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Chromium-51	5.33E+00	4.59E+00	1.60E+01		4.75E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Chromium-51	-3.64E-01	4.26E+00	1.45E+01		4.26E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Chromium-51	-4.54E+00	5.48E+00	1.67E+01		5.58E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Chromium-51	-1.15E+01	5.04E+00	1.54E+01		5.71E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Chromium-51	-2.75E+00	6.04E+00	2.05E+01		6.07E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Chromium-51	-1.44E+00	5.10E+00	1.67E+01		5.11E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Chromium-51	-3.58E+00	4.50E+00	1.52E+01		4.58E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Chromium-51	-2.62E+00	5.40E+00	1.83E+01		5.43E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Chromium-51	8.92E-01	6.04E+00	2.00E+01		6.04E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Chromium-51	-1.53E+01	7.73E+00	2.30E+01		8.52E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Chromium-51	-1.62E-01	4.86E+00	1.49E+01		4.86E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Chromium-51	5.46E-01	4.23E+00	1.32E+01		4.23E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Chromium-51	-3.54E+00	4.43E+00	1.48E+01		4.51E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Cobalt-57	2.26E-02	3.87E-01	1.24E+00		3.87E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Cobalt-57	-5.78E-01	5.13E-01	1.62E+00		5.31E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Cobalt-57	3.78E-01	4.25E-01	1.36E+00		4.34E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Cobalt-57	-1.53E-01	4.33E-01	1.39E+00		4.35E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Cobalt-57	3.22E-01	4.37E-01	1.42E+00		4.44E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Cobalt-57	3.57E-01	4.35E-01	1.44E+00		4.43E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Cobalt-57	7.29E-01	4.17E-01	1.39E+00		4.51E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Cobalt-57	-4.66E-01	5.12E-01	1.65E+00		5.24E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Cobalt-57	-3.40E-01	4.36E-01	1.45E+00		4.43E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Cobalt-57	-1.57E-01	4.95E-01	1.61E+00		4.96E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Cobalt-57	2.26E-01	5.21E-01	1.65E+00		5.23E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Cobalt-57	-3.71E-01	4.32E-01	1.39E+00		4.40E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Cobalt-57	-6.90E-01	5.42E-01	1.72E+00		5.66E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Cobalt-57	1.23E+00	5.27E-01	1.73E+00		6.01E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Cobalt-57	5.55E-01	5.43E-01	1.84E+00		5.58E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Cobalt-57	4.49E-01	4.09E-01	1.40E+00		4.22E-01	pCi/L	U

M-8QC(562015001) - Milk	11-Nov-21	Cobalt-57	2.33E-01	4.07E-01	1.34E+00		4.11E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Cobalt-57	-3.26E-01	4.27E-01	1.38E+00		4.34E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Cobalt-58	2.83E-02	5.03E-01	1.68E+00		5.03E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Cobalt-58	2.42E-01	6.30E-01	2.06E+00		6.32E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Cobalt-58	-6.15E-01	5.95E-01	1.95E+00		6.12E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Cobalt-58	5.86E-02	4.32E-01	1.42E+00		4.32E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Cobalt-58	-2.57E-01	5.67E-01	1.85E+00		5.70E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Cobalt-58	5.09E-01	5.72E-01	1.89E+00		5.84E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Cobalt-58	4.71E-01	5.81E-01	1.92E+00		5.92E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Cobalt-58	-8.39E-01	6.27E-01	1.91E+00		6.57E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Cobalt-58	-1.96E+00	6.10E-01	1.66E+00		7.64E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Cobalt-58	-1.26E-01	6.80E-01	2.17E+00		6.81E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Cobalt-58	-1.37E+00	5.86E-01	1.79E+00		6.69E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Cobalt-58	-4.09E-01	5.80E-01	1.82E+00		5.88E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Cobalt-58	-1.72E-01	6.51E-01	2.08E+00		6.52E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Cobalt-58	6.06E-01	6.15E-01	2.11E+00		6.31E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Cobalt-58	2.64E-01	8.24E-01	2.71E+00		8.27E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Cobalt-58	3.50E-01	5.05E-01	1.69E+00		5.12E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Cobalt-58	-1.10E-01	4.55E-01	1.47E+00		4.56E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Cobalt-58	8.73E-02	4.98E-01	1.70E+00		4.98E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Cobalt-60	2.90E-01	5.47E-01	1.88E+00		5.52E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Cobalt-60	1.73E+00	7.05E-01	2.38E+00		8.13E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Cobalt-60	7.57E-02	8.25E-01	2.38E+00		8.25E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Cobalt-60	4.71E-01	4.92E-01	1.73E+00		5.04E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Cobalt-60	-7.86E-01	6.10E-01	1.93E+00		6.37E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Cobalt-60	6.73E-01	5.77E-01	2.00E+00		5.99E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Cobalt-60	5.79E-01	5.75E-01	2.00E+00		5.91E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Cobalt-60	8.03E-01	6.99E-01	2.40E+00		7.24E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Cobalt-60	-2.40E+00	8.56E-01	1.96E+00		1.03E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Cobalt-60	-6.86E-01	6.66E-01	2.03E+00		6.86E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Cobalt-60	3.95E-01	8.08E-01	2.29E+00		8.14E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Cobalt-60	5.52E-02	5.73E-01	1.91E+00		5.73E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Cobalt-60	5.01E-01	6.58E-01	2.27E+00		6.69E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Cobalt-60	-2.28E-01	6.45E-01	2.14E+00		6.47E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Cobalt-60	1.16E-01	7.44E-01	2.50E+00		7.44E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Cobalt-60	2.27E-02	5.71E-01	1.91E+00		5.71E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Cobalt-60	9.15E-01	5.11E-01	1.83E+00		5.54E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Cobalt-60	-4.12E-01	5.99E-01	1.88E+00		6.07E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Iodine-131	-4.46E-01	4.64E-01	1.46E+00	1.00E+00	4.75E-01	pCi/L	DLU

M-8QC(535079002) - Milk	11-Feb-21	Iodine-131	-1.06E-01	2.15E-01	6.91E-01	1.00E+00	2.17E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Iodine-131	1.84E-01	1.82E-01	6.16E-01	1.00E+00	1.87E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Iodine-131	-2.19E-02	2.15E-01	7.25E-01	1.00E+00	2.15E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Iodine-131	-1.37E-01	3.05E-01	9.91E-01	1.00E+00	3.06E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Iodine-131	-1.33E-01	2.09E-01	7.05E-01	1.00E+00	2.12E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Iodine-131	-2.95E-01	2.15E-01	7.01E-01	1.00E+00	2.26E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Iodine-131	-1.45E-02	1.32E-01	4.32E-01	1.00E+00	1.32E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Iodine-131	4.00E-02	2.03E-01	6.98E-01	1.00E+00	2.04E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Iodine-131	3.57E-01	2.60E-01	9.09E-01	1.00E+00	2.72E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Iodine-131	-2.37E-01	1.38E-01	4.53E-01	1.00E+00	1.49E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Iodine-131	7.62E-02	1.57E-01	5.44E-01	1.00E+00	1.58E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Iodine-131	-2.23E-01	2.33E-01	7.70E-01	1.00E+00	2.39E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Iodine-131	1.23E-01	2.60E-01	8.97E-01	1.00E+00	2.61E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Iodine-131	-2.39E-01	2.20E-01	7.22E-01	1.00E+00	2.26E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Iodine-131	1.58E-01	2.87E-01	9.91E-01	1.00E+00	2.90E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Iodine-131	-2.23E-01	3.94E-01	1.25E+00	1.00E+00	3.97E-01	pCi/L	DLU
M-8QC(564675001) - Milk	9-Dec-21	Iodine-131	2.07E-01	2.02E-01	6.87E-01	1.00E+00	2.08E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Iron-59	-1.57E-01	1.21E+00	3.92E+00		1.21E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Iron-59	-4.25E-01	1.49E+00	4.95E+00		1.49E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Iron-59	2.17E-01	1.32E+00	4.41E+00		1.32E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Iron-59	-1.62E-01	1.07E+00	3.39E+00		1.07E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Iron-59	1.01E+00	1.49E+00	4.31E+00		1.51E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Iron-59	3.39E-01	1.17E+00	3.99E+00		1.18E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Iron-59	-5.23E-01	1.44E+00	4.21E+00		1.45E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Iron-59	-1.11E+00	1.62E+00	4.39E+00		1.64E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Iron-59	-3.89E+00	1.70E+00	4.24E+00		1.93E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Iron-59	-3.22E+00	1.38E+00	4.24E+00		1.57E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Iron-59	-2.44E+00	1.51E+00	4.63E+00		1.62E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Iron-59	-7.69E-01	1.10E+00	3.64E+00		1.12E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Iron-59	-1.29E+00	1.31E+00	4.26E+00		1.34E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Iron-59	-2.03E+00	1.57E+00	4.84E+00		1.64E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Iron-59	1.69E+00	1.83E+00	6.41E+00		1.87E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Iron-59	-7.68E-01	1.14E+00	3.58E+00		1.16E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Iron-59	-3.59E-01	1.04E+00	3.27E+00		1.05E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Iron-59	2.38E+00	1.29E+00	4.51E+00		1.41E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Lanthanum-140	-7.70E-01	7.12E-01	2.25E+00	1.50E+01	7.34E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Lanthanum-140	-1.35E-01	8.84E-01	2.49E+00	1.50E+01	8.85E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Lanthanum-140	-6.49E-01	8.55E-01	2.63E+00	1.50E+01	8.69E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Lanthanum-140	-3.92E-01	6.04E-01	1.95E+00	1.50E+01	6.11E-01	pCi/L	U

M-8QC(544751002) - Milk	13-May-21	Lanthanum-140	-2.30E-01	1.13E+00	3.67E+00	1.50E+01	1.13E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Lanthanum-140	-1.83E+00	8.96E-01	2.15E+00	1.50E+01	9.94E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Lanthanum-140	-1.13E+00	8.40E-01	2.53E+00	1.50E+01	8.81E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Lanthanum-140	-2.16E+00	7.47E-01	1.76E+00	1.50E+01	9.01E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Lanthanum-140	-1.94E+00	1.05E+00	2.26E+00	1.50E+01	1.15E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Lanthanum-140	-1.78E-01	1.16E+00	3.77E+00	1.50E+01	1.17E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Lanthanum-140	-4.53E-01	7.91E-01	2.54E+00	1.50E+01	7.98E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Lanthanum-140	-4.09E-01	6.50E-01	2.05E+00	1.50E+01	6.58E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Lanthanum-140	2.14E-03	1.10E+00	3.18E+00	1.50E+01	1.10E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Lanthanum-140	1.51E+00	1.22E+00	4.32E+00	1.50E+01	1.27E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Lanthanum-140	-1.97E-01	1.48E+00	4.82E+00	1.50E+01	1.48E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Lanthanum-140	-8.06E-01	7.01E-01	2.18E+00	1.50E+01	7.26E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Lanthanum-140	-3.44E-01	5.22E-01	1.67E+00	1.50E+01	5.29E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Lanthanum-140	-6.66E-01	7.89E-01	2.54E+00	1.50E+01	8.04E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Manganese-54	-1.80E-01	4.37E-01	1.44E+00		4.39E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Manganese-54	-3.00E-01	6.29E-01	1.97E+00		6.33E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Manganese-54	2.69E-01	1.00E+00	2.00E+00		1.00E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Manganese-54	-3.60E-02	4.34E-01	1.41E+00		4.34E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Manganese-54	-1.66E-01	5.74E-01	1.88E+00		5.75E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Manganese-54	3.97E-01	5.78E-01	1.89E+00		5.85E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Manganese-54	-5.22E-01	5.40E-01	1.66E+00		5.53E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Manganese-54	-3.94E-01	5.84E-01	1.85E+00		5.92E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Manganese-54	-1.04E+00	5.43E-01	1.66E+00		5.95E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Manganese-54	1.35E-01	6.91E-01	1.99E+00		6.91E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Manganese-54	-1.65E-01	5.94E-01	1.95E+00		5.95E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Manganese-54	7.68E-03	5.89E-01	1.89E+00		5.89E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Manganese-54	-6.68E-01	6.14E-01	1.89E+00		6.34E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Manganese-54	1.56E-01	6.84E-01	2.01E+00		6.85E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Manganese-54	-4.97E-02	1.06E+00	2.39E+00		1.06E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Manganese-54	7.83E-01	6.59E-01	1.57E+00		6.60E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Manganese-54	-2.07E-01	5.34E-01	1.52E+00		5.36E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Manganese-54	2.52E-02	4.73E-01	1.60E+00		4.73E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Niobium-95	-8.30E-02	6.92E-01	1.65E+00		6.92E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Niobium-95	-4.57E-01	6.56E-01	2.05E+00		6.65E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Niobium-95	-7.29E-02	7.48E-01	2.10E+00		7.48E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Niobium-95	-4.04E-01	7.95E-01	1.50E+00		8.00E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Niobium-95	-3.88E-01	5.97E-01	1.95E+00		6.04E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Niobium-95	1.32E-01	5.63E-01	1.83E+00		5.64E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Niobium-95	-1.37E+00	7.96E-01	1.72E+00		8.59E-01	pCi/L	U

M-8QC(548318002) - Milk	24-Jun-21	Niobium-95	1.23E-01	6.34E-01	2.12E+00		6.35E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Niobium-95	7.57E-01	5.50E-01	1.89E+00		5.78E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Niobium-95	1.24E+00	6.57E-01	2.26E+00		7.19E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Niobium-95	4.65E-01	6.03E-01	2.06E+00		6.13E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Niobium-95	9.15E-01	5.40E-01	1.84E+00		5.81E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Niobium-95	1.03E+00	6.42E-01	2.20E+00		6.86E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Niobium-95	-2.05E-01	9.20E-01	2.11E+00		9.21E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Niobium-95	-1.29E+00	8.69E-01	2.68E+00		9.20E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Niobium-95	1.68E-01	5.30E-01	1.76E+00		5.31E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Niobium-95	-8.76E-01	7.12E-01	1.55E+00		7.41E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Niobium-95	-5.54E-01	4.79E-01	1.57E+00		4.96E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Potassium-40	1.51E+03	2.89E+01	1.34E+01		7.95E+01	pCi/L	
M-8QC(535079002) - Milk	11-Feb-21	Potassium-40	1.52E+03	3.86E+01	1.94E+01		8.04E+01	pCi/L	
M-8QC(537625002) - Milk	11-Mar-21	Potassium-40	1.39E+03	3.44E+01	1.70E+01		7.11E+01	pCi/L	
M-8QC(540354002) - Milk	8-Apr-21	Potassium-40	1.53E+03	2.83E+01	1.39E+01		7.72E+01	pCi/L	
M-8QC(544751002) - Milk	13-May-21	Potassium-40	1.51E+03	3.09E+01	1.71E+01		8.02E+01	pCi/L	
M-8QC(545937002) - Milk	27-May-21	Potassium-40	1.44E+03	2.86E+01	1.48E+01		7.99E+01	pCi/L	
M-8QC(547044002) - Milk	10-Jun-21	Potassium-40	1.46E+03	3.11E+01	1.46E+01		7.45E+01	pCi/L	
M-8QC(548318002) - Milk	24-Jun-21	Potassium-40	1.39E+03	3.92E+01	2.05E+01		7.35E+01	pCi/L	
M-8QC(549273002) - Milk	8-Jul-21	Potassium-40	1.41E+03	3.06E+01	1.72E+01		7.59E+01	pCi/L	
M-8QC(550493001) - Milk	22-Jul-21	Potassium-40	1.44E+03	3.28E+01	1.56E+01		8.17E+01	pCi/L	
M-8QC(552733002) - Milk	12-Aug-21	Potassium-40	1.40E+03	3.57E+01	1.95E+01		8.00E+01	pCi/L	
M-8QC(553974001) - Milk	26-Aug-21	Potassium-40	1.49E+03	3.15E+01	1.51E+01		8.33E+01	pCi/L	
M-8QC(555472002) - Milk	9-Sep-21	Potassium-40	1.54E+03	3.63E+01	1.68E+01		8.81E+01	pCi/L	
M-8QC(556799002) - Milk	23-Sep-21	Potassium-40	1.42E+03	3.13E+01	1.70E+01		7.92E+01	pCi/L	
M-8QC(558702002) - Milk	7-Oct-21	Potassium-40	1.50E+03	4.10E+01	2.26E+01		7.94E+01	pCi/L	
M-8QC(560556001) - Milk	28-Oct-21	Potassium-40	1.48E+03	2.93E+01	1.36E+01		7.84E+01	pCi/L	
M-8QC(562015001) - Milk	11-Nov-21	Potassium-40	1.47E+03	2.79E+01	1.42E+01		7.76E+01	pCi/L	
M-8QC(564675001) - Milk	9-Dec-21	Potassium-40	1.40E+03	3.06E+01	1.77E+01		7.68E+01	pCi/L	
M-8QC(532203002) - Milk	14-Jan-21	Ruthenium-103	-7.82E-01	5.24E-01	1.63E+00		5.55E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Ruthenium-103	-1.40E+00	5.92E-01	1.79E+00		6.77E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Ruthenium-103	-6.03E-01	5.41E-01	1.70E+00		5.60E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Ruthenium-103	-4.26E-01	4.58E-01	1.50E+00		4.69E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Ruthenium-103	-1.19E-02	6.14E-01	1.97E+00		6.14E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Ruthenium-103	-3.87E-01	5.30E-01	1.54E+00		5.38E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Ruthenium-103	-7.37E-01	5.11E-01	1.62E+00		5.39E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Ruthenium-103	4.09E-01	6.30E-01	1.99E+00		6.37E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Ruthenium-103	-1.73E+00	5.29E-01	1.64E+00		6.66E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Ruthenium-103	-2.81E-01	6.39E-01	2.10E+00		6.42E-01	pCi/L	U

M-8QC(552733002) - Milk	12-Aug-21	Ruthenium-103	-4.32E-01	6.89E-01	1.91E+00		6.96E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Ruthenium-103	-6.33E-01	5.60E-01	1.61E+00		5.79E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Ruthenium-103	-2.77E-01	6.35E-01	2.09E+00		6.38E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Ruthenium-103	-1.14E+00	7.71E-01	2.06E+00		8.16E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Ruthenium-103	-4.97E-01	7.70E-01	2.55E+00		7.79E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Ruthenium-103	-1.70E-01	4.95E-01	1.66E+00		4.96E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Ruthenium-103	-1.08E-02	5.12E-01	1.54E+00		5.12E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Ruthenium-103	1.69E-01	5.23E-01	1.56E+00		5.24E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Ruthenium-106	4.47E+00	4.24E+00	1.39E+01		4.37E+00	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Ruthenium-106	-4.19E+00	5.30E+00	1.68E+01		5.39E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Ruthenium-106	1.32E+01	5.95E+00	1.87E+01		6.71E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Ruthenium-106	-4.57E-01	3.85E+00	1.27E+01		3.85E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Ruthenium-106	3.38E+00	4.72E+00	1.62E+01		4.78E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Ruthenium-106	-1.47E+00	4.23E+00	1.37E+01		4.25E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Ruthenium-106	6.19E+00	4.64E+00	1.58E+01		4.86E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Ruthenium-106	-1.78E+00	5.48E+00	1.81E+01		5.50E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Ruthenium-106	5.62E+00	4.87E+00	1.68E+01		5.05E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Ruthenium-106	1.39E+00	5.04E+00	1.67E+01		5.05E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Ruthenium-106	1.23E+00	5.03E+00	1.71E+01		5.03E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Ruthenium-106	6.81E-01	4.58E+00	1.51E+01		4.59E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Ruthenium-106	3.83E+00	5.12E+00	1.73E+01		5.20E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Ruthenium-106	-6.39E-01	5.12E+00	1.73E+01		5.12E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Ruthenium-106	5.53E+00	6.26E+00	2.14E+01		6.39E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Ruthenium-106	8.04E+00	4.40E+00	1.54E+01		4.79E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Ruthenium-106	-1.15E+00	4.11E+00	1.35E+01		4.12E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Ruthenium-106	1.42E+00	4.32E+00	1.41E+01		4.34E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Selenium-75	1.87E-01	5.99E-01	2.03E+00		6.01E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Selenium-75	-4.31E-01	7.51E-01	2.55E+00		7.57E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Selenium-75	3.99E-01	1.42E+00	2.41E+00		1.43E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Selenium-75	1.88E-01	6.35E-01	1.99E+00		6.37E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Selenium-75	-4.98E-01	7.03E-01	2.34E+00		7.13E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Selenium-75	-6.21E-01	7.36E-01	2.26E+00		7.50E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Selenium-75	-5.01E-01	6.09E-01	2.06E+00		6.20E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Selenium-75	5.36E-01	7.80E-01	2.54E+00		7.90E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Selenium-75	-2.28E-01	7.52E-01	2.44E+00		7.54E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Selenium-75	-2.14E+00	1.16E+00	2.58E+00		1.27E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Selenium-75	-2.88E-01	7.64E-01	2.53E+00		7.67E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Selenium-75	-8.62E-01	7.70E-01	2.35E+00		7.97E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Selenium-75	4.64E-01	8.99E-01	2.84E+00		9.06E-01	pCi/L	U

M-8QC(556799002) - Milk	23-Sep-21	Selenium-75	4.35E-01	7.76E-01	2.62E+00		7.83E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Selenium-75	8.03E-01	9.52E-01	3.09E+00		9.70E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Selenium-75	6.58E-02	6.71E-01	2.19E+00		6.71E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Selenium-75	5.43E-01	6.56E-01	2.10E+00		6.68E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Selenium-75	-7.35E-02	6.26E-01	2.15E+00		6.27E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Silver-108m	4.59E-01	4.06E-01	1.36E+00		4.20E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Silver-108m	1.68E-01	5.67E-01	1.73E+00		5.68E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Silver-108m	4.89E-01	4.56E-01	1.55E+00		4.70E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Silver-108m	7.42E-02	3.77E-01	1.28E+00		3.77E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Silver-108m	-6.46E-01	4.66E-01	1.46E+00		4.90E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Silver-108m	-1.02E+00	6.89E-01	1.63E+00		7.29E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Silver-108m	1.05E-01	4.67E-01	1.41E+00		4.68E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Silver-108m	-5.45E-01	4.96E-01	1.62E+00		5.12E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Silver-108m	1.88E-01	5.11E-01	1.64E+00		5.13E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Silver-108m	2.24E-01	7.87E-01	1.85E+00		7.89E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Silver-108m	-4.04E-01	4.96E-01	1.56E+00		5.05E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Silver-108m	1.25E+00	9.23E-01	1.76E+00		9.69E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Silver-108m	-6.83E-01	5.03E-01	1.63E+00		5.28E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Silver-108m	-3.61E-01	5.06E-01	1.60E+00		5.13E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Silver-108m	-2.70E-01	5.69E-01	1.91E+00		5.73E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Silver-108m	4.81E-01	5.03E-01	1.46E+00		5.16E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Silver-108m	-2.10E-01	4.53E-01	1.36E+00		4.56E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Silver-108m	4.66E-02	3.97E-01	1.32E+00		3.97E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Silver-110m	9.87E-02	6.93E-01	2.31E+00		6.93E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Silver-110m	1.19E+00	1.45E+00	2.93E+00		1.48E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Silver-110m	1.35E+00	7.99E-01	2.85E+00		8.59E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Silver-110m	-6.39E-01	6.37E-01	1.99E+00		6.54E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Silver-110m	-2.56E+00	7.80E-01	2.28E+00		9.85E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Silver-110m	-2.26E-01	7.43E-01	2.35E+00		7.45E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Silver-110m	-9.29E-02	7.20E-01	2.28E+00		7.20E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Silver-110m	1.07E+00	8.79E-01	3.06E+00		9.14E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Silver-110m	3.83E-01	8.57E-01	2.50E+00		8.62E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Silver-110m	1.08E+00	7.66E-01	2.59E+00		8.07E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Silver-110m	6.96E-01	8.29E-01	2.81E+00		8.45E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Silver-110m	1.22E+00	7.30E-01	2.47E+00		7.84E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Silver-110m	-1.33E+00	8.30E-01	2.47E+00		8.87E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Silver-110m	4.67E-01	8.57E-01	2.88E+00		8.64E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Silver-110m	-2.09E+00	1.23E+00	3.15E+00		1.32E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Silver-110m	-1.81E-01	7.59E-01	2.46E+00		7.60E-01	pCi/L	U

M-8QC(562015001) - Milk	11-Nov-21	Silver-110m	1.95E-01	6.59E-01	2.15E+00		6.60E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Silver-110m	-6.27E-01	7.08E-01	2.31E+00		7.23E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Strontium-89	-2.48E+00	6.70E-01	2.88E+00	1.00E+01	8.97E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Strontium-89	9.21E-01	6.00E-01	1.71E+00	1.00E+01	8.42E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Strontium-89	7.27E-02	6.49E-01	2.13E+00	1.00E+01	8.05E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Strontium-89	3.66E-01	1.31E+00	4.25E+00	1.00E+01	1.46E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Strontium-89	-7.25E-01	8.99E-01	3.14E+00	1.00E+01	9.83E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Strontium-89	1.35E+00	7.37E-01	2.15E+00	1.00E+01	8.90E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Strontium-89	-1.63E+00	7.27E-01	2.74E+00	1.00E+01	7.91E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Strontium-89	-6.62E-01	8.03E-01	2.77E+00	1.00E+01	8.43E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Strontium-89	5.88E-01	7.08E-01	2.22E+00	1.00E+01	7.60E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Strontium-89	-5.58E-01	3.96E-01	1.48E+00	1.00E+01	5.38E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Strontium-89	-1.27E+00	5.56E-01	2.21E+00	1.00E+01	7.53E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Strontium-89	-2.08E-01	3.22E-01	1.12E+00	1.00E+01	5.35E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Strontium-89	1.22E-01	6.96E-01	2.26E+00	1.00E+01	8.54E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Strontium-89	-7.35E-02	7.10E-01	2.35E+00	1.00E+01	7.85E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Strontium-89	3.07E-01	9.34E-01	3.01E+00	1.00E+01	9.90E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Strontium-89	8.79E-01	1.25E+00	3.96E+00	1.00E+01	1.28E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Strontium-89	-1.08E+00	4.38E-01	1.83E+00	1.00E+01	7.03E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Strontium-89	-1.36E+00	7.09E-01	2.67E+00	1.00E+01	8.74E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Strontium-90	1.65E-01	5.18E-01	1.68E+00	2.00E+00	5.19E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Strontium-90	7.99E-04	3.25E-01	1.07E+00	2.00E+00	3.25E-01	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Strontium-90	7.64E-01	3.77E-01	1.52E+00	2.00E+00	5.18E-01	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Strontium-90	1.03E+00	4.82E-01	1.88E+00	2.00E+00	6.04E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Strontium-90	-3.63E-02	3.66E-01	1.88E+00	2.00E+00	5.71E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Strontium-90	-2.54E-01	4.01E-01	1.76E+00	2.00E+00	5.15E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Strontium-90	1.10E+00	3.09E-01	1.55E+00	2.00E+00	5.05E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Strontium-90	-7.91E-01	2.17E-01	1.33E+00	2.00E+00	3.87E-01	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Strontium-90	-2.87E-01	2.08E-01	8.55E-01	2.00E+00	2.49E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Strontium-90	-1.18E+00	3.76E-01	1.80E+00	2.00E+00	5.09E-01	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Strontium-90	1.74E+00	3.84E-01	1.92E+00	2.00E+00	6.30E-01	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Strontium-90	5.48E-01	4.43E-01	1.47E+00	2.00E+00	4.84E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Strontium-90	-5.23E-01	3.38E-01	1.52E+00	2.00E+00	4.13E-01	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Strontium-90	-1.29E+00	2.48E-01	1.86E+00	2.00E+00	5.27E-01	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Strontium-90	3.76E-01	2.43E-01	9.57E-01	2.00E+00	3.00E-01	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Strontium-90	2.29E-02	4.63E-01	1.72E+00	2.00E+00	5.24E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Strontium-90	4.09E-01	4.09E-01	1.75E+00	2.00E+00	5.39E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Strontium-90	-6.34E-02	3.67E-01	1.75E+00	2.00E+00	5.26E-01	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Zinc-65	-2.34E-01	1.14E+00	3.67E+00		1.14E+00	pCi/L	U

M-8QC(535079002) - Milk	11-Feb-21	Zinc-65	-3.30E-01	1.53E+00	5.09E+00		1.53E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Zinc-65	-1.35E+00	1.48E+00	4.76E+00		1.52E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Zinc-65	-2.86E+00	1.98E+00	3.72E+00		2.09E+00	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Zinc-65	1.82E+00	1.59E+00	4.66E+00		1.64E+00	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Zinc-65	-1.61E-01	1.15E+00	3.85E+00		1.15E+00	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Zinc-65	-1.06E+00	1.22E+00	3.99E+00		1.25E+00	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Zinc-65	3.52E-04	1.50E+00	4.83E+00		1.50E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Zinc-65	-3.47E-01	1.38E+00	4.37E+00		1.38E+00	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Zinc-65	1.59E+00	1.31E+00	4.59E+00		1.36E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Zinc-65	-1.56E+00	1.80E+00	4.93E+00		1.84E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Zinc-65	-4.09E-01	1.20E+00	4.00E+00		1.21E+00	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Zinc-65	-1.76E+00	1.38E+00	4.45E+00		1.44E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Zinc-65	-2.50E+00	1.74E+00	4.53E+00		1.83E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Zinc-65	2.27E+00	1.80E+00	5.99E+00		1.87E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Zinc-65	4.70E-01	1.46E+00	4.13E+00		1.46E+00	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Zinc-65	-1.20E+00	1.32E+00	3.55E+00		1.34E+00	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Zinc-65	-2.35E-01	1.28E+00	4.17E+00		1.28E+00	pCi/L	U
M-8QC(532203002) - Milk	14-Jan-21	Zirconium-95	-1.28E+00	8.41E-01	2.70E+00		8.93E-01	pCi/L	U
M-8QC(535079002) - Milk	11-Feb-21	Zirconium-95	6.45E-01	9.91E-01	3.30E+00		1.00E+00	pCi/L	U
M-8QC(537625002) - Milk	11-Mar-21	Zirconium-95	-3.15E-01	1.19E+00	3.29E+00		1.19E+00	pCi/L	U
M-8QC(540354002) - Milk	8-Apr-21	Zirconium-95	-8.45E-01	8.40E-01	2.66E+00		8.63E-01	pCi/L	U
M-8QC(544751002) - Milk	13-May-21	Zirconium-95	-5.41E-01	9.88E-01	3.23E+00		9.96E-01	pCi/L	U
M-8QC(545937002) - Milk	27-May-21	Zirconium-95	-2.50E-01	9.40E-01	3.01E+00		9.42E-01	pCi/L	U
M-8QC(547044002) - Milk	10-Jun-21	Zirconium-95	-7.60E-01	9.77E-01	3.06E+00		9.93E-01	pCi/L	U
M-8QC(548318002) - Milk	24-Jun-21	Zirconium-95	1.73E+00	1.14E+00	4.03E+00		1.21E+00	pCi/L	U
M-8QC(549273002) - Milk	8-Jul-21	Zirconium-95	-7.49E-01	8.79E-01	2.81E+00		8.97E-01	pCi/L	U
M-8QC(550493001) - Milk	22-Jul-21	Zirconium-95	-4.14E-01	1.15E+00	3.67E+00		1.15E+00	pCi/L	U
M-8QC(552733002) - Milk	12-Aug-21	Zirconium-95	9.80E-01	1.06E+00	3.65E+00		1.09E+00	pCi/L	U
M-8QC(553974001) - Milk	26-Aug-21	Zirconium-95	-6.51E-01	9.58E-01	3.03E+00		9.70E-01	pCi/L	U
M-8QC(555472002) - Milk	9-Sep-21	Zirconium-95	-1.99E+00	1.14E+00	3.45E+00		1.23E+00	pCi/L	U
M-8QC(556799002) - Milk	23-Sep-21	Zirconium-95	2.76E+00	1.06E+00	3.83E+00		1.24E+00	pCi/L	U
M-8QC(558702002) - Milk	7-Oct-21	Zirconium-95	6.75E-01	1.40E+00	4.66E+00		1.41E+00	pCi/L	U
M-8QC(560556001) - Milk	28-Oct-21	Zirconium-95	-1.65E+00	9.21E-01	2.87E+00		9.99E-01	pCi/L	U
M-8QC(562015001) - Milk	11-Nov-21	Zirconium-95	-2.28E-01	7.84E-01	2.54E+00		7.86E-01	pCi/L	U
M-8QC(564675001) - Milk	9-Dec-21	Zirconium-95	1.14E+00	8.96E-01	2.98E+00		9.35E-01	pCi/L	U

S-1

Sediment

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual

S-1(545427001) - Sediment	6-May-21	Actinium-228	1.07E+03	9.79E+01	1.12E+02		1.12E+02	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Actinium-228	6.72E+02	9.42E+01	1.41E+02		9.95E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Antimony-124	9.59E+00	2.64E+01	9.10E+01		2.65E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Antimony-124	-8.64E+01	3.06E+01	6.56E+01		3.67E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Antimony-125	-2.41E+01	2.45E+01	8.10E+01		2.52E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Antimony-125	4.10E+01	2.56E+01	9.01E+01		2.73E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Barium-140	9.88E+01	9.27E+01	3.36E+02		9.55E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Barium-140	9.20E+01	2.01E+02	7.12E+02		2.02E+02	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Beryllium-7	6.68E+01	1.04E+02	3.67E+02		1.05E+02	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Beryllium-7	-1.02E+02	1.18E+02	3.91E+02		1.20E+02	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Bismuth-214	6.72E+02	5.90E+01	6.11E+01		6.60E+01	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Bismuth-214	6.09E+02	6.51E+01	6.38E+01		7.02E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Cerium-141	4.45E+01	2.11E+01	7.61E+01		2.35E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Cerium-141	-2.62E+01	2.93E+01	9.89E+01		2.99E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Cerium-144	-9.36E+01	6.39E+01	2.07E+02		6.75E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Cerium-144	-1.62E+01	6.08E+01	2.11E+02		6.09E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Cesium-134	5.06E+01	2.34E+01	5.06E+01	1.50E+02	3.19E+01	pCi/kg	UI
S-1(560684001) - Sediment	13-Oct-21	Cesium-134	2.44E+01	2.03E+01	4.01E+01	1.50E+02	2.10E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Cesium-137	7.28E+01	1.76E+01	4.19E+01	1.80E+02	1.79E+01	pCi/kg	M
S-1(560684001) - Sediment	13-Oct-21	Cesium-137	4.92E+00	1.00E+01	3.50E+01	1.80E+02	1.01E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Chromium-51	1.70E+02	1.33E+02	4.51E+02		1.39E+02	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Chromium-51	-9.10E+00	1.79E+02	5.79E+02		1.79E+02	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Cobalt-57	-1.71E+00	7.81E+00	2.64E+01		7.82E+00	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Cobalt-57	-4.11E+00	7.79E+00	2.70E+01		7.85E+00	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Cobalt-58	-1.02E+01	1.19E+01	3.68E+01		1.21E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Cobalt-58	-2.45E+01	1.34E+01	3.74E+01		1.46E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Cobalt-60	1.01E+01	1.06E+01	3.88E+01		1.09E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Cobalt-60	-3.01E-02	1.20E+01	4.06E+01		1.20E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Iron-59	-8.07E+00	3.23E+01	1.01E+02		3.23E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Iron-59	-3.06E+00	3.76E+01	1.29E+02		3.77E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Lanthanum-140	-7.26E+01	3.79E+01	9.98E+01		4.15E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Lanthanum-140	-1.13E+01	6.75E+01	1.89E+02		6.75E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Lead-212	8.71E+02	4.27E+01	5.93E+01		5.52E+01	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Lead-212	6.87E+02	4.28E+01	5.84E+01		5.31E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Lead-214	7.61E+02	5.51E+01	7.53E+01		6.32E+01	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Lead-214	8.15E+02	5.84E+01	1.90E+02		6.86E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Manganese-54	1.03E+01	1.09E+01	3.80E+01		1.12E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Manganese-54	-1.23E+01	1.29E+01	3.99E+01		1.32E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Niobium-95	-2.76E+01	1.47E+01	4.35E+01		1.61E+01	pCi/kg	U

S-1(560684001) - Sediment	13-Oct-21	Niobium-95	-8.51E+00	1.65E+01	5.33E+01		1.67E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Potassium-40	1.51E+04	5.80E+02	3.89E+02		9.31E+02	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Potassium-40	1.48E+04	5.87E+02	3.41E+02		9.47E+02	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Radium-226	6.72E+02	5.90E+01	6.11E+01		6.60E+01	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Radium-226	6.09E+02	6.51E+01	6.38E+01		7.02E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Ruthenium-103	1.71E+01	1.40E+01	4.70E+01		1.45E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Ruthenium-103	-9.43E+00	1.59E+01	4.82E+01		1.61E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Ruthenium-106	-1.03E+01	7.95E+01	2.66E+02		7.96E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Ruthenium-106	-1.01E+02	8.69E+01	2.71E+02		9.01E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Selenium-75	-9.91E+00	1.53E+01	4.40E+01		1.55E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Selenium-75	-1.83E+01	1.57E+01	4.91E+01		1.63E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Silver-108m	-4.78E+00	8.52E+00	2.88E+01		8.59E+00	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Silver-108m	2.56E+00	8.20E+00	2.93E+01		8.22E+00	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Silver-110m	-1.29E+01	1.49E+01	4.55E+01		1.52E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Silver-110m	-7.83E+00	1.49E+01	4.65E+01		1.50E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Strontium-89	-1.61E+02	4.68E+01	1.63E+02	3.00E+02	1.06E+02	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Strontium-89	-3.61E+02	4.51E+01	1.78E+02	3.00E+02	8.53E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Strontium-90	5.52E+01	6.22E+01	2.61E+02	3.00E+02	8.27E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Strontium-90	1.58E+02	5.66E+01	2.04E+02	3.00E+02	6.64E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Thallium-208	2.62E+02	2.94E+01	3.40E+01		3.16E+01	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Thallium-208	1.20E+02	3.00E+01	3.43E+01		3.04E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Thorium-228	8.71E+02	4.27E+01	5.93E+01		5.52E+01	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Thorium-228	6.87E+02	4.28E+01	5.84E+01		5.31E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Thorium-230	6.72E+02	5.90E+01	6.11E+01		6.60E+01	pCi/kg	
S-1(560684001) - Sediment	13-Oct-21	Thorium-230	6.09E+02	6.51E+01	6.38E+01		7.02E+01	pCi/kg	
S-1(545427001) - Sediment	6-May-21	Zinc-65	2.68E+01	2.99E+01	9.26E+01		3.06E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Zinc-65	-1.38E+01	4.28E+01	8.92E+01		4.29E+01	pCi/kg	U
S-1(545427001) - Sediment	6-May-21	Zirconium-95	-1.82E+01	2.42E+01	7.67E+01		2.46E+01	pCi/kg	U
S-1(560684001) - Sediment	13-Oct-21	Zirconium-95	9.71E+00	2.93E+01	8.96E+01		2.94E+01	pCi/kg	U

S-2

Sediment

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
S-2(545427002) - Sediment	6-May-21	Actinium-228	7.29E+02	8.76E+01	1.08E+02		9.59E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Actinium-228	8.64E+02	2.26E+02	2.83E+02		2.29E+02	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Antimony-124	-1.08E+01	1.46E+01	4.11E+01		1.48E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Antimony-124	-9.17E+01	3.74E+01	0.00E+00		4.31E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Antimony-125	-8.50E+00	2.17E+01	7.55E+01		2.18E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Antimony-125	5.97E+00	4.09E+01	1.37E+02		4.09E+01	pCi/kg	U

S-2(545427002) - Sediment	6-May-21	Barium-140	6.82E+01	7.58E+01	2.79E+02		7.75E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Barium-140	2.50E+02	3.58E+02	1.22E+03		3.63E+02	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Beryllium-7	1.16E+02	8.06E+01	3.04E+02		8.51E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Beryllium-7	2.36E+02	2.03E+02	7.08E+02		2.10E+02	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Bismuth-214	6.00E+02	5.14E+01	5.67E+01		5.97E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Bismuth-214	1.23E+03	9.16E+01	1.21E+02		1.10E+02	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Cerium-141	-4.95E+00	1.57E+01	4.94E+01		1.57E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Cerium-141	5.88E+01	6.47E+01	1.28E+02		6.62E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Cerium-144	4.37E+01	4.18E+01	1.51E+02		4.31E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Cerium-144	1.01E+02	9.11E+01	3.05E+02		9.41E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Cesium-134	4.38E+01	1.88E+01	4.38E+01	1.50E+02	2.38E+01	pCi/kg	UI
S-2(560684002) - Sediment	13-Oct-21	Cesium-134	2.78E+01	2.53E+01	8.54E+01	1.50E+02	2.61E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Cesium-137	3.99E+01	1.51E+01	3.43E+01	1.80E+02	1.52E+01	pCi/kg	M
S-2(560684002) - Sediment	13-Oct-21	Cesium-137	-3.54E+00	1.85E+01	5.87E+01	1.80E+02	1.85E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Chromium-51	-9.50E+01	1.08E+02	3.35E+02		1.10E+02	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Chromium-51	-1.41E+02	2.67E+02	8.85E+02		2.69E+02	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Cobalt-57	8.07E+00	8.63E+00	1.90E+01		8.64E+00	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Cobalt-57	-1.90E+01	1.05E+01	3.21E+01		1.14E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Cobalt-58	9.26E+00	1.08E+01	3.82E+01		1.10E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Cobalt-58	-4.81E+00	2.80E+01	8.28E+01		2.80E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Cobalt-60	5.91E+00	1.11E+01	3.73E+01		1.12E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Cobalt-60	-8.89E+00	1.75E+01	5.36E+01		1.76E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Iron-59	-7.87E+00	2.56E+01	8.14E+01		2.57E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Iron-59	-4.48E+01	7.37E+01	2.35E+02		7.44E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Lanthanum-140	-1.96E+00	2.74E+01	9.17E+01		2.74E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Lanthanum-140	-5.94E+01	1.35E+02	4.08E+02		1.35E+02	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Lead-212	6.17E+02	3.50E+01	4.60E+01		5.04E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Lead-212	1.31E+03	5.66E+01	7.68E+01		8.00E+01	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Lead-214	6.86E+02	5.53E+01	6.16E+01		6.27E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Lead-214	1.56E+03	7.99E+01	3.37E+02		1.05E+02	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Manganese-54	-1.07E+01	9.40E+00	2.88E+01		9.73E+00	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Manganese-54	-3.96E+00	2.25E+01	7.55E+01		2.25E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Niobium-95	6.87E+00	1.13E+01	3.96E+01		1.14E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Niobium-95	9.65E-01	3.05E+01	8.60E+01		3.05E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Potassium-40	1.32E+04	5.42E+02	2.97E+02		8.13E+02	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Potassium-40	2.40E+04	9.95E+02	6.55E+02		1.44E+03	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Radium-226	6.00E+02	5.14E+01	5.67E+01		5.97E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Radium-226	1.23E+03	9.16E+01	1.21E+02		1.10E+02	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Ruthenium-103	-1.58E+00	1.05E+01	3.64E+01		1.05E+01	pCi/kg	U

S-2(560684002) - Sediment	13-Oct-21	Ruthenium-103	-3.22E+01	2.72E+01	8.34E+01		2.83E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Ruthenium-106	-8.35E+01	7.61E+01	2.43E+02		7.86E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Ruthenium-106	2.98E+02	1.41E+02	5.22E+02		1.57E+02	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Selenium-75	-8.43E+00	1.05E+01	3.33E+01		1.07E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Selenium-75	-2.20E+01	2.07E+01	6.81E+01		2.13E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Silver-108m	1.18E+00	6.53E+00	2.33E+01		6.54E+00	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Silver-108m	1.05E+01	1.61E+01	5.00E+01		1.63E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Silver-110m	-1.52E+01	1.09E+01	3.13E+01		1.15E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Silver-110m	-1.77E+01	2.62E+01	8.43E+01		2.65E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Strontium-89	-8.85E+01	7.76E+01	2.67E+02	3.00E+02	1.23E+02	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Strontium-89	-7.64E+02	6.09E+01	2.64E+02	3.00E+02	1.02E+02	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Strontium-90	1.38E+02	6.63E+01	2.63E+02	3.00E+02	8.88E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Strontium-90	2.13E+02	8.29E+01	2.97E+02	3.00E+02	9.69E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Thallium-208	1.64E+02	2.26E+01	2.86E+01		2.40E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Thallium-208	3.11E+02	4.88E+01	5.43E+01		5.12E+01	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Thorium-228	6.17E+02	3.50E+01	4.60E+01		5.04E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Thorium-228	1.31E+03	5.66E+01	7.68E+01		8.00E+01	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Thorium-230	6.00E+02	5.14E+01	5.67E+01		5.97E+01	pCi/kg	
S-2(560684002) - Sediment	13-Oct-21	Thorium-230	1.23E+03	9.16E+01	1.21E+02		1.10E+02	pCi/kg	
S-2(545427002) - Sediment	6-May-21	Zinc-65	4.15E+01	2.46E+01	8.40E+01		2.65E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Zinc-65	-5.80E+01	6.01E+01	1.59E+02		6.16E+01	pCi/kg	U
S-2(545427002) - Sediment	6-May-21	Zirconium-95	-1.16E+01	2.13E+01	6.94E+01		2.15E+01	pCi/kg	U
S-2(560684002) - Sediment	13-Oct-21	Zirconium-95	1.98E+01	4.52E+01	1.48E+02		4.55E+01	pCi/kg	U

S-3

Sediment

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
S-3(545427003) - Sediment	6-May-21	Actinium-228	2.66E+02	5.77E+01	1.05E+02		5.92E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Actinium-228	2.05E+02	8.94E+01	2.05E+02		1.03E+02	pCi/kg	UI
S-3(545427003) - Sediment	6-May-21	Antimony-124	-1.96E+01	1.75E+01	4.43E+01		1.81E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Antimony-124	2.35E+01	1.95E+01	7.88E+01		2.03E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Antimony-125	7.33E+00	1.75E+01	6.38E+01		1.76E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Antimony-125	-2.45E+01	2.02E+01	6.15E+01		2.10E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Barium-140	1.02E+01	8.10E+01	2.81E+02		8.11E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Barium-140	-3.62E+01	1.69E+02	5.80E+02		1.69E+02	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Beryllium-7	1.10E+02	7.63E+01	2.91E+02		8.06E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Beryllium-7	-7.16E+01	9.42E+01	3.19E+02		9.56E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Bismuth-214	2.13E+02	4.61E+01	5.25E+01		4.71E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Bismuth-214	1.60E+02	3.54E+01	6.26E+01		3.60E+01	pCi/kg	

S-3(545427003) - Sediment	6-May-21	Cerium-141	-2.07E+01	1.20E+01	3.98E+01		1.29E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Cerium-141	-1.33E+01	1.95E+01	6.07E+01		1.97E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Cerium-144	8.61E+01	6.50E+01	1.21E+02		6.51E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Cerium-144	-7.04E+01	4.06E+01	1.33E+02		4.38E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Cesium-134	1.68E+01	1.00E+01	3.89E+01	1.50E+02	1.08E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Cesium-134	9.09E+00	9.94E+00	3.31E+01	1.50E+02	1.02E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Cesium-137	-4.60E+00	9.46E+00	3.04E+01	1.80E+02	9.52E+00	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Cesium-137	5.76E+00	8.99E+00	3.17E+01	1.80E+02	9.09E+00	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Chromium-51	4.75E+01	9.00E+01	3.38E+02		9.07E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Chromium-51	1.30E+02	1.16E+02	4.32E+02		1.20E+02	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Cobalt-57	-4.57E+00	4.43E+00	1.56E+01		4.55E+00	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Cobalt-57	-4.18E+00	4.56E+00	1.56E+01		4.66E+00	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Cobalt-58	2.97E+00	9.00E+00	3.23E+01		9.03E+00	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Cobalt-58	-1.55E+01	1.08E+01	3.30E+01		1.14E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Cobalt-60	3.51E-01	1.38E+01	3.94E+01		1.38E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Cobalt-60	-1.32E+00	1.06E+01	3.52E+01		1.06E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Iron-59	-1.11E+01	2.45E+01	7.87E+01		2.46E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Iron-59	3.29E+01	4.23E+01	1.28E+02		4.31E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Lanthanum-140	4.13E-01	1.94E+01	6.57E+01		1.94E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Lanthanum-140	-4.73E+01	6.36E+01	1.87E+02		6.45E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Lead-212	1.67E+02	3.36E+01	4.25E+01		3.44E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Lead-212	1.47E+02	2.78E+01	4.14E+01		2.85E+01	pCi/kg	
S-3(545427003) - Sediment	6-May-21	Lead-214	2.54E+02	4.37E+01	4.97E+01		4.52E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Lead-214	2.00E+02	3.77E+01	5.85E+01		3.86E+01	pCi/kg	
S-3(545427003) - Sediment	6-May-21	Manganese-54	-4.53E+00	9.10E+00	3.06E+01		9.16E+00	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Manganese-54	-1.31E+01	1.06E+01	3.36E+01		1.10E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Niobium-95	6.58E+00	1.08E+01	3.94E+01		1.09E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Niobium-95	-1.42E+01	1.40E+01	4.45E+01		1.44E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Potassium-40	8.72E+03	4.95E+02	2.50E+02		6.55E+02	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Potassium-40	3.26E+02	4.94E+02	3.26E+02		7.65E+02	pCi/kg	UI
S-3(545427003) - Sediment	6-May-21	Radium-226	2.13E+02	4.61E+01	5.25E+01		4.71E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Radium-226	1.60E+02	3.54E+01	6.26E+01		3.60E+01	pCi/kg	
S-3(545427003) - Sediment	6-May-21	Ruthenium-103	1.46E+01	1.10E+01	4.12E+01		1.15E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Ruthenium-103	4.95E+01	4.66E+01	5.05E+01		4.66E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Ruthenium-106	-8.98E+01	6.93E+01	2.07E+02		7.25E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Ruthenium-106	-3.64E+01	8.46E+01	2.80E+02		8.50E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Selenium-75	5.09E+00	1.06E+01	3.69E+01		1.07E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Selenium-75	-1.29E+00	1.01E+01	3.58E+01		1.01E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Silver-108m	-2.51E+00	5.52E+00	1.89E+01		5.55E+00	pCi/kg	U

S-3(560684003) - Sediment	13-Oct-21	Silver-108m	-3.59E+00	6.38E+00	2.04E+01		6.43E+00	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Silver-110m	7.40E+00	1.17E+01	4.26E+01		1.19E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Silver-110m	1.38E+00	1.34E+01	4.63E+01		1.34E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Strontium-89	2.69E+02	9.64E+01	2.73E+02	3.00E+02	1.29E+02	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Strontium-89	-3.91E+02	6.85E+01	2.59E+02	3.00E+02	1.20E+02	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Strontium-90	-2.97E+02	5.20E+01	2.98E+02	3.00E+02	7.22E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Strontium-90	1.23E+02	7.49E+01	2.74E+02	3.00E+02	8.65E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Thallium-208	6.42E+01	2.08E+01	2.75E+01		2.09E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Thallium-208	4.40E+01	2.15E+01	2.98E+01		2.15E+01	pCi/kg	
S-3(545427003) - Sediment	6-May-21	Thorium-228	1.67E+02	3.36E+01	4.25E+01		3.44E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Thorium-228	1.47E+02	2.78E+01	4.14E+01		2.85E+01	pCi/kg	
S-3(545427003) - Sediment	6-May-21	Thorium-230	2.13E+02	4.61E+01	5.25E+01		4.71E+01	pCi/kg	
S-3(560684003) - Sediment	13-Oct-21	Thorium-230	1.60E+02	3.54E+01	6.26E+01		3.60E+01	pCi/kg	
S-3(545427003) - Sediment	6-May-21	Zinc-65	-5.55E+00	2.45E+01	8.05E+01		2.45E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Zinc-65	-9.47E+01	3.70E+01	1.04E+02		4.32E+01	pCi/kg	U
S-3(545427003) - Sediment	6-May-21	Zirconium-95	4.14E+00	1.59E+01	5.71E+01		1.59E+01	pCi/kg	U
S-3(560684003) - Sediment	13-Oct-21	Zirconium-95	-1.78E+01	2.56E+01	8.60E+01		2.59E+01	pCi/kg	U

S-4

Sediment

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
S-4(545427004) - Sediment	20-May-21	Actinium-228	2.06E+02	8.14E+01	2.55E+02		9.46E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Actinium-228	1.44E+02	4.70E+01	9.29E+01		4.76E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Antimony-124	1.79E+01	1.79E+01	7.16E+01		1.84E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Antimony-124	-1.71E-01	1.34E+01	4.41E+01		1.34E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Antimony-125	-4.97E+01	2.50E+01	7.49E+01		2.76E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Antimony-125	-2.55E+01	1.40E+01	4.40E+01		1.52E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Barium-140	1.86E+01	7.23E+01	2.28E+02		7.24E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Barium-140	-3.55E+02	2.08E+02	6.17E+02		2.24E+02	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Beryllium-7	1.76E+02	1.08E+02	4.11E+02		1.16E+02	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Beryllium-7	8.63E+00	6.98E+01	2.50E+02		6.99E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Bismuth-214	8.07E+01	7.32E+01	8.07E+01		7.34E+01	pCi/kg	UI
S-4(560684004) - Sediment	7-Oct-21	Bismuth-214	1.09E+02	3.46E+01	4.18E+01		3.50E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Cerium-141	-2.63E+01	1.37E+01	4.35E+01		1.50E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Cerium-141	-2.21E+01	1.53E+01	5.12E+01		1.62E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Cerium-144	1.81E+01	4.91E+01	1.77E+02		4.93E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Cerium-144	-2.77E+01	2.83E+01	9.74E+01		2.91E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Cesium-134	4.07E+00	1.28E+01	4.35E+01	1.50E+02	1.28E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Cesium-134	-2.64E+00	6.29E+00	2.02E+01	1.50E+02	6.32E+00	pCi/kg	U

S-4(545427004) - Sediment	20-May-21	Cesium-137	-1.21E+01	1.43E+01	4.50E+01	1.80E+02	1.45E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Cesium-137	1.63E+01	1.06E+01	2.15E+01	1.80E+02	1.06E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Chromium-51	1.26E+01	9.31E+01	3.40E+02		9.31E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Chromium-51	1.47E+02	1.13E+02	4.10E+02		1.19E+02	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Cobalt-57	4.53E+00	6.41E+00	2.36E+01		6.49E+00	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Cobalt-57	8.56E-01	3.63E+00	1.33E+01		3.63E+00	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Cobalt-58	9.41E+00	1.42E+01	4.94E+01		1.44E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Cobalt-58	8.28E+00	9.23E+00	3.33E+01		9.43E+00	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Cobalt-60	-1.17E+00	1.67E+01	5.56E+01		1.67E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Cobalt-60	8.57E+00	8.02E+00	3.00E+01		8.27E+00	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Iron-59	-2.27E+01	2.86E+01	9.09E+01		2.91E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Iron-59	-1.37E+01	2.97E+01	9.20E+01		2.99E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Lanthanum-140	3.93E+01	1.91E+01	8.04E+01		2.12E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Lanthanum-140	3.58E+01	5.55E+01	2.03E+02		5.62E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Lead-212	9.43E+01	3.38E+01	5.89E+01		3.41E+01	pCi/kg	
S-4(560684004) - Sediment	7-Oct-21	Lead-212	9.49E+01	2.06E+01	3.64E+01		2.15E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Lead-214	9.18E+01	4.40E+01	8.48E+01		4.42E+01	pCi/kg	
S-4(560684004) - Sediment	7-Oct-21	Lead-214	1.79E+02	3.67E+01	3.87E+01		3.78E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Manganese-54	-1.82E+01	1.05E+01	2.70E+01		1.14E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Manganese-54	6.84E+00	7.47E+00	2.68E+01		7.65E+00	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Niobium-95	-8.52E+00	1.28E+01	3.97E+01		1.29E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Niobium-95	2.79E+00	9.34E+00	3.23E+01		9.36E+00	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Potassium-40	8.71E+03	5.60E+02	3.32E+02		6.81E+02	pCi/kg	
S-4(560684004) - Sediment	7-Oct-21	Potassium-40	9.65E+03	4.07E+02	1.54E+02		6.31E+02	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Radium-226	8.07E+01	7.32E+01	8.07E+01		7.34E+01	pCi/kg	UI
S-4(560684004) - Sediment	7-Oct-21	Radium-226	1.09E+02	3.46E+01	4.18E+01		3.50E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Ruthenium-103	6.80E+00	1.22E+01	4.40E+01		1.23E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Ruthenium-103	1.76E+01	9.94E+00	3.91E+01		1.08E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Ruthenium-106	1.08E+02	1.23E+02	4.40E+02		1.25E+02	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Ruthenium-106	3.56E+01	5.61E+01	2.03E+02		5.67E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Selenium-75	1.79E+00	1.27E+01	4.28E+01		1.27E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Selenium-75	1.58E+01	8.57E+00	3.21E+01		9.36E+00	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Silver-108m	2.82E+00	1.00E+01	3.58E+01		1.00E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Silver-108m	-6.97E-01	4.31E+00	1.53E+01		4.32E+00	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Silver-110m	1.05E+01	1.95E+01	6.65E+01		1.96E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Silver-110m	-2.51E+01	1.09E+01	2.82E+01		1.24E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Strontium-89	7.83E+01	7.21E+01	2.26E+02	3.00E+02	9.79E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Strontium-89	6.67E+01	8.00E+01	2.60E+02	3.00E+02	9.73E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Strontium-90	-2.45E+01	5.92E+01	2.63E+02	3.00E+02	7.86E+01	pCi/kg	U

S-4(560684004) - Sediment	7-Oct-21	Strontium-90	-3.77E+01	4.18E+01	1.60E+02	3.00E+02	4.79E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Thallium-208	3.38E+01	2.19E+01	4.04E+01		2.19E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Thallium-208	6.58E+01	1.61E+01	1.96E+01		1.64E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Thorium-228	9.43E+01	3.38E+01	5.89E+01		3.41E+01	pCi/kg	
S-4(560684004) - Sediment	7-Oct-21	Thorium-228	9.49E+01	2.06E+01	3.64E+01		2.15E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Thorium-230	8.07E+01	7.32E+01	8.07E+01		7.34E+01	pCi/kg	UI
S-4(560684004) - Sediment	7-Oct-21	Thorium-230	1.09E+02	3.46E+01	4.18E+01		3.50E+01	pCi/kg	
S-4(545427004) - Sediment	20-May-21	Zinc-65	2.37E+01	2.54E+01	9.44E+01		2.60E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Zinc-65	-1.07E+01	1.89E+01	5.40E+01		1.90E+01	pCi/kg	U
S-4(545427004) - Sediment	20-May-21	Zirconium-95	-2.95E+00	2.27E+01	7.46E+01		2.27E+01	pCi/kg	U
S-4(560684004) - Sediment	7-Oct-21	Zirconium-95	1.27E+01	1.75E+01	6.26E+01		1.78E+01	pCi/kg	U

S-5

Sediment

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
S-5(545427005) - Sediment	4-May-21	Actinium-228	6.71E+02	1.07E+02	1.53E+02		1.13E+02	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Actinium-228	7.84E+02	1.05E+02	1.24E+02		1.12E+02	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Antimony-124	7.73E+00	3.24E+01	1.07E+02		3.24E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Antimony-124	-3.07E+00	4.39E+01	1.44E+02		4.39E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Antimony-125	3.68E+01	2.96E+01	1.05E+02		3.08E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Antimony-125	-1.67E+01	2.77E+01	9.15E+01		2.80E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Barium-140	5.56E+01	1.35E+02	4.55E+02		1.36E+02	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Barium-140	-3.67E+01	3.49E+02	1.17E+03		3.49E+02	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Beryllium-7	6.06E+01	1.37E+02	4.11E+02		1.38E+02	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Beryllium-7	5.71E+02	1.62E+02	4.70E+02		1.64E+02	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Bismuth-214	5.69E+02	5.49E+01	7.68E+01		6.03E+01	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Bismuth-214	6.63E+02	6.01E+01	7.97E+01		6.91E+01	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Cerium-141	4.28E+01	2.92E+01	9.51E+01		3.08E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Cerium-141	5.75E+01	6.54E+01	9.45E+01		6.58E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Cerium-144	-7.28E+01	7.33E+01	2.50E+02		7.53E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Cerium-144	5.96E+01	7.97E+01	1.81E+02		7.98E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Cesium-134	2.48E+01	1.68E+01	5.31E+01	1.50E+02	1.78E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Cesium-134	1.29E+01	1.44E+01	5.00E+01	1.50E+02	1.47E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Cesium-137	1.61E+01	1.46E+01	4.82E+01	1.80E+02	1.50E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Cesium-137	4.32E+01	2.26E+01	4.32E+01	1.80E+02	2.29E+01	pCi/kg	UI
S-5(545427005) - Sediment	4-May-21	Chromium-51	-4.36E+02	1.88E+02	5.43E+02		2.14E+02	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Chromium-51	-2.38E+02	2.35E+02	6.93E+02		2.42E+02	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Cobalt-57	-3.19E+00	9.45E+00	3.30E+01		9.48E+00	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Cobalt-57	4.37E-01	7.19E+00	2.38E+01		7.19E+00	pCi/kg	U

S-5(545427005) - Sediment	4-May-21	Cobalt-58	9.67E-01	1.39E+01	4.66E+01		1.39E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Cobalt-58	-1.13E+01	1.89E+01	5.92E+01		1.91E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Cobalt-60	5.80E+00	1.38E+01	4.68E+01		1.38E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Cobalt-60	1.88E+01	1.51E+01	5.24E+01		1.57E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Iron-59	-2.22E+00	4.00E+01	1.12E+02		4.00E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Iron-59	-8.72E+00	4.07E+01	1.27E+02		4.08E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Lanthanum-140	-4.88E+01	4.28E+01	1.26E+02		4.43E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Lanthanum-140	2.40E+02	1.47E+02	5.63E+02		1.57E+02	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Lead-212	8.64E+02	4.33E+01	7.03E+01		5.69E+01	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Lead-212	6.40E+02	3.83E+01	5.01E+01		5.27E+01	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Lead-214	8.11E+02	5.89E+01	8.62E+01		6.76E+01	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Lead-214	8.22E+02	6.27E+01	2.03E+02		7.24E+01	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Manganese-54	1.68E+01	1.51E+01	4.65E+01		1.56E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Manganese-54	9.99E+00	1.27E+01	4.37E+01		1.29E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Niobium-95	-1.39E+01	1.56E+01	5.09E+01		1.60E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Niobium-95	7.16E+00	2.12E+01	6.40E+01		2.12E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Potassium-40	1.69E+04	5.25E+02	2.70E+02		1.03E+03	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Potassium-40	1.24E+04	5.90E+02	3.31E+02		8.20E+02	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Radium-226	5.69E+02	5.49E+01	7.68E+01		6.03E+01	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Radium-226	6.63E+02	6.01E+01	7.97E+01		6.91E+01	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Ruthenium-103	-3.72E+01	1.48E+01	4.39E+01		1.71E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Ruthenium-103	1.46E+01	1.78E+01	6.33E+01		1.82E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Ruthenium-106	8.69E+00	1.10E+02	3.60E+02		1.10E+02	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Ruthenium-106	5.02E+01	1.29E+02	3.50E+02		1.29E+02	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Selenium-75	1.15E+00	2.46E+01	5.70E+01		2.46E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Selenium-75	-1.93E+01	1.68E+01	5.01E+01		1.74E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Silver-108m	1.43E+01	9.98E+00	3.54E+01		1.05E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Silver-108m	1.07E+01	9.32E+00	3.35E+01		9.65E+00	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Silver-110m	8.76E+00	1.62E+01	5.54E+01		1.64E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Silver-110m	2.88E+00	1.71E+01	5.64E+01		1.72E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Strontium-89	6.64E+01	4.60E+01	1.47E+02	3.00E+02	9.70E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Strontium-89	-3.66E+02	5.38E+01	2.09E+02	3.00E+02	9.30E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Strontium-90	3.00E+01	6.20E+01	2.64E+02	3.00E+02	8.23E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Strontium-90	1.34E+02	5.10E+01	1.83E+02	3.00E+02	5.98E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Thallium-208	2.10E+02	2.85E+01	3.94E+01		2.99E+01	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Thallium-208	1.98E+02	3.55E+01	3.34E+01		3.69E+01	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Thorium-228	8.64E+02	4.33E+01	7.03E+01		5.69E+01	pCi/kg	
S-5(560684005) - Sediment	5-Oct-21	Thorium-228	6.40E+02	3.83E+01	5.01E+01		5.27E+01	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Thorium-230	5.69E+02	5.49E+01	7.68E+01		6.03E+01	pCi/kg	

S-5(560684005) - Sediment	5-Oct-21	Thorium-230	6.63E+02	6.01E+01	7.97E+01		6.91E+01	pCi/kg	
S-5(545427005) - Sediment	4-May-21	Zinc-65	1.05E+02	3.51E+01	1.05E+02		4.29E+01	pCi/kg	UI
S-5(560684005) - Sediment	5-Oct-21	Zinc-65	2.53E+01	2.77E+01	9.62E+01		2.84E+01	pCi/kg	U
S-5(545427005) - Sediment	4-May-21	Zirconium-95	-8.57E-01	2.53E+01	8.54E+01		2.53E+01	pCi/kg	U
S-5(560684005) - Sediment	5-Oct-21	Zirconium-95	3.67E+01	3.10E+01	1.10E+02		3.22E+01	pCi/kg	U

SW-2

Surface Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
SW-2(533330004) - Surface Water	26-Jan-21	Actinium-228	4.65E-01	1.76E+00	6.00E+00		1.77E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Actinium-228	2.41E+00	3.53E+00	5.09E+00		3.53E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Actinium-228	8.65E+00	4.78E+00	8.65E+00		5.64E+00	pCi/L	UI
SW-2(542322004) - Surface Water	27-Apr-21	Actinium-228	8.51E+00	3.84E+00	8.71E+00		4.33E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Actinium-228	4.31E+00	3.92E+00	4.31E+00		3.95E+00	pCi/L	UI
SW-2(548724004) - Surface Water	29-Jun-21	Actinium-228	-7.47E+00	2.81E+00	5.98E+00		3.31E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Actinium-228	-3.67E-01	2.53E+00	6.92E+00		2.53E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Actinium-228	4.71E+00	3.69E+00	7.85E+00		3.85E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Actinium-228	-6.15E+00	3.96E+00	6.68E+00		4.22E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Actinium-228	-2.13E-01	2.98E+00	7.02E+00		2.98E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Actinium-228	-1.50E+00	2.85E+00	6.35E+00		2.87E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Actinium-228	1.08E+01	4.70E+00	1.08E+01		5.79E+00	pCi/L	UI
SW-2(533330004) - Surface Water	26-Jan-21	Antimony-124	-7.24E-01	1.11E+00	3.40E+00		1.12E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Antimony-124	4.51E-01	1.29E+00	4.22E+00		1.29E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Antimony-124	-1.63E+00	1.36E+00	4.02E+00		1.41E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Antimony-124	4.52E+00	1.39E+00	5.61E+00		1.74E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Antimony-124	-2.20E-01	9.49E-01	3.10E+00		9.50E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Antimony-124	-7.48E-01	1.11E+00	3.40E+00		1.12E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Antimony-124	1.56E+00	1.18E+00	4.25E+00		1.24E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Antimony-124	-7.86E-01	1.33E+00	4.21E+00		1.34E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Antimony-124	-2.51E+00	9.59E-01	2.60E+00		1.13E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Antimony-124	-7.76E-03	1.01E+00	3.32E+00		1.01E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Antimony-124	-3.00E-01	1.19E+00	3.87E+00		1.19E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Antimony-124	2.56E+00	2.06E+00	7.38E+00		2.15E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Antimony-125	1.04E+00	1.16E+00	3.91E+00		1.18E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Antimony-125	4.05E-01	1.09E+00	3.68E+00		1.09E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Antimony-125	4.97E-01	1.51E+00	5.11E+00		1.51E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Antimony-125	1.71E+00	1.33E+00	4.75E+00		1.39E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Antimony-125	-3.87E-01	1.02E+00	3.42E+00		1.02E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Antimony-125	1.51E-01	9.83E-01	3.30E+00		9.84E-01	pCi/L	U

SW-2(550834004) - Surface Water	27-Jul-21	Antimony-125	2.45E+00	1.70E+00	4.21E+00		1.79E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Antimony-125	-2.48E+00	1.40E+00	4.28E+00		1.52E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Antimony-125	2.43E+00	1.24E+00	4.15E+00		1.37E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Antimony-125	-4.23E-01	1.22E+00	3.84E+00		1.23E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Antimony-125	-2.00E-01	1.77E+00	4.06E+00		1.77E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Antimony-125	3.43E+00	1.92E+00	6.51E+00		2.08E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Barium-140	-1.39E+00	1.95E+00	6.17E+00	1.50E+01	1.98E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Barium-140	-8.07E-01	2.34E+00	7.63E+00	1.50E+01	2.35E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Barium-140	-1.25E+00	2.73E+00	8.90E+00	1.50E+01	2.75E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Barium-140	-2.15E+00	2.84E+00	9.29E+00	1.50E+01	2.89E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Barium-140	2.87E+00	2.93E+00	1.01E+01	1.50E+01	3.01E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Barium-140	-1.65E+00	2.78E+00	8.96E+00	1.50E+01	2.80E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Barium-140	-1.34E+00	2.67E+00	8.57E+00	1.50E+01	2.69E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Barium-140	2.84E+00	3.03E+00	9.95E+00	1.50E+01	3.10E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Barium-140	4.17E+00	4.26E+00	8.05E+00	1.50E+01	4.37E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Barium-140	1.04E-01	2.69E+00	9.08E+00	1.50E+01	2.69E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Barium-140	1.37E+00	3.51E+00	1.06E+01	1.50E+01	3.52E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Barium-140	3.00E+00	3.65E+00	1.25E+01	1.50E+01	3.72E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Beryllium-7	3.23E+00	3.64E+00	1.23E+01		3.72E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Beryllium-7	-2.38E+00	3.93E+00	1.28E+01		3.97E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Beryllium-7	1.99E-01	4.55E+00	1.52E+01		4.55E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Beryllium-7	5.49E+00	4.51E+00	1.60E+01		4.69E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Beryllium-7	-2.28E+00	3.73E+00	1.23E+01		3.76E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Beryllium-7	2.63E+00	3.58E+00	1.21E+01		3.63E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Beryllium-7	-1.38E+01	5.43E+00	1.14E+01		6.32E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Beryllium-7	6.16E+00	4.57E+00	1.53E+01		4.79E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Beryllium-7	2.05E+00	3.61E+00	1.24E+01		3.65E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Beryllium-7	-3.85E-01	3.94E+00	1.33E+01		3.94E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Beryllium-7	6.67E-01	4.53E+00	1.36E+01		4.53E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Beryllium-7	-1.28E+01	9.16E+00	1.84E+01		9.64E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Cerium-141	-1.92E+00	7.11E-01	2.10E+00		8.41E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Cerium-141	3.48E-02	1.48E+00	2.46E+00		1.48E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Cerium-141	-2.38E+00	1.47E+00	3.28E+00		1.57E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Cerium-141	-6.80E-02	9.71E-01	2.95E+00		9.71E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Cerium-141	5.25E-01	9.77E-01	2.96E+00		9.85E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Cerium-141	2.46E+00	1.94E+00	2.46E+00		1.94E+00	pCi/L	UI
SW-2(550834004) - Surface Water	27-Jul-21	Cerium-141	8.25E-01	1.63E+00	2.62E+00		1.63E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Cerium-141	-6.87E-01	1.11E+00	3.11E+00		1.12E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Cerium-141	8.15E-01	1.66E+00	2.70E+00		1.66E+00	pCi/L	U

SW-2(560208005) - Surface Water	26-Oct-21	Cerium-141	-2.83E+00	1.41E+00	2.83E+00		1.56E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Cerium-141	-5.69E-01	9.99E-01	2.97E+00		1.01E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Cerium-141	2.32E-01	1.07E+00	3.21E+00		1.07E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Cerium-144	-4.49E+00	2.72E+00	8.25E+00		2.92E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Cerium-144	-4.29E+00	2.81E+00	8.88E+00		2.98E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Cerium-144	-2.74E+00	3.87E+00	1.24E+01		3.93E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Cerium-144	5.37E+00	3.42E+00	1.10E+01		3.65E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Cerium-144	2.85E+00	2.88E+00	9.52E+00		2.96E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Cerium-144	-1.18E+00	2.58E+00	8.33E+00		2.60E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Cerium-144	1.77E-01	3.00E+00	9.79E+00		3.00E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Cerium-144	3.47E+00	3.63E+00	1.16E+01		3.72E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Cerium-144	-2.48E+00	2.96E+00	9.85E+00		3.02E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Cerium-144	4.04E-01	3.02E+00	1.02E+01		3.02E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Cerium-144	-3.12E+00	2.94E+00	9.74E+00		3.03E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Cerium-144	-6.74E+00	3.99E+00	1.24E+01		4.29E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Cesium-134	-1.04E+00	4.66E-01	1.44E+00	1.50E+01	5.25E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Cesium-134	5.19E-01	4.70E-01	1.57E+00	1.50E+01	4.85E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Cesium-134	8.68E-01	6.39E-01	2.18E+00	1.50E+01	6.71E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Cesium-134	-1.86E+00	9.06E-01	1.95E+00	1.50E+01	1.01E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Cesium-134	4.11E-01	4.53E-01	1.53E+00	1.50E+01	4.63E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Cesium-134	6.73E-01	4.33E-01	1.47E+00	1.50E+01	4.61E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Cesium-134	-8.07E-01	4.45E-01	1.39E+00	1.50E+01	4.83E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Cesium-134	4.24E-01	5.81E-01	1.98E+00	1.50E+01	5.90E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Cesium-134	-8.69E-02	9.37E-01	1.66E+00	1.50E+01	9.37E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Cesium-134	-4.17E-01	7.78E-01	1.67E+00	1.50E+01	7.84E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Cesium-134	1.61E+00	8.54E-01	1.61E+00	1.50E+01	9.59E-01	pCi/L	UI
SW-2(566004005) - Surface Water	28-Dec-21	Cesium-134	-4.24E-01	7.62E-01	2.50E+00	1.50E+01	7.68E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Cesium-137	1.05E+00	4.77E-01	1.66E+00	1.80E+01	5.37E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Cesium-137	-2.07E+00	1.09E+00	1.91E+00	1.80E+01	1.19E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Cesium-137	-4.37E-01	5.55E-01	1.75E+00	1.80E+01	5.64E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Cesium-137	8.78E-01	5.41E-01	1.93E+00	1.80E+01	5.79E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Cesium-137	5.72E-01	4.00E-01	1.38E+00	1.80E+01	4.22E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Cesium-137	-1.63E+00	8.13E-01	1.70E+00	1.80E+01	8.98E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Cesium-137	4.29E-01	4.29E-01	1.44E+00	1.80E+01	4.41E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Cesium-137	8.45E-02	4.91E-01	1.67E+00	1.80E+01	4.92E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Cesium-137	-3.74E-01	4.53E-01	1.47E+00	1.80E+01	4.61E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Cesium-137	4.25E-02	4.73E-01	1.58E+00	1.80E+01	4.74E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Cesium-137	2.50E-04	4.72E-01	1.57E+00	1.80E+01	4.72E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Cesium-137	2.28E-01	7.96E-01	2.62E+00	1.80E+01	7.98E-01	pCi/L	U

SW-2(533330004) - Surface Water	26-Jan-21	Chromium-51	2.87E+00	5.35E+00	1.24E+01		5.35E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Chromium-51	1.69E+00	3.96E+00	1.37E+01		3.98E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Chromium-51	9.37E+00	5.30E+00	1.89E+01		5.74E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Chromium-51	-2.30E+00	5.42E+00	1.68E+01		5.45E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Chromium-51	-1.93E+00	5.51E+00	1.55E+01		5.52E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Chromium-51	-1.58E+00	4.17E+00	1.41E+01		4.19E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Chromium-51	-3.72E+00	4.26E+00	1.42E+01		4.35E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Chromium-51	-3.31E+00	5.14E+00	1.67E+01		5.20E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Chromium-51	-1.26E-01	4.71E+00	1.52E+01		4.71E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Chromium-51	4.72E+00	4.90E+00	1.62E+01		5.03E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Chromium-51	-3.44E+00	5.88E+00	1.66E+01		5.93E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Chromium-51	-2.06E+00	5.80E+00	1.88E+01		5.82E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Cobalt-57	-1.04E+00	5.36E-01	1.03E+00		5.89E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Cobalt-57	1.93E-01	3.66E-01	1.21E+00		3.69E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Cobalt-57	5.97E-01	4.94E-01	1.65E+00		5.14E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Cobalt-57	-4.81E-01	4.36E-01	1.41E+00		4.51E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Cobalt-57	1.65E-01	3.76E-01	1.24E+00		3.78E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Cobalt-57	8.53E-02	3.19E-01	1.05E+00		3.20E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Cobalt-57	-3.19E-01	4.13E-01	1.33E+00		4.20E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Cobalt-57	1.14E+00	4.77E-01	1.57E+00		5.47E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Cobalt-57	4.07E-01	3.82E-01	1.31E+00		3.93E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Cobalt-57	1.03E-01	3.72E-01	1.26E+00		3.73E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Cobalt-57	1.92E-01	3.91E-01	1.33E+00		3.94E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Cobalt-57	-1.68E-01	5.16E-01	1.68E+00		5.17E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Cobalt-58	2.28E-01	4.45E-01	1.54E+00	1.50E+01	4.48E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Cobalt-58	-4.87E-01	4.59E-01	1.39E+00	1.50E+01	4.73E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Cobalt-58	-5.25E-01	5.66E-01	1.73E+00	1.50E+01	5.79E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Cobalt-58	-5.33E-01	5.53E-01	1.72E+00	1.50E+01	5.67E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Cobalt-58	-4.17E-01	4.47E-01	1.40E+00	1.50E+01	4.58E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Cobalt-58	7.59E-01	4.08E-01	1.40E+00	1.50E+01	4.45E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Cobalt-58	4.28E-01	4.27E-01	1.50E+00	1.50E+01	4.39E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Cobalt-58	-2.76E-01	5.14E-01	1.67E+00	1.50E+01	5.18E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Cobalt-58	5.45E-02	4.81E-01	1.39E+00	1.50E+01	4.81E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Cobalt-58	-2.27E-01	4.96E-01	1.39E+00	1.50E+01	4.99E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Cobalt-58	4.24E-01	4.70E-01	1.59E+00	1.50E+01	4.80E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Cobalt-58	4.95E-01	7.18E-01	2.20E+00	1.50E+01	7.27E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Cobalt-60	7.50E-01	4.51E-01	1.62E+00	1.50E+01	4.84E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Cobalt-60	3.83E-01	4.79E-01	1.47E+00	1.50E+01	4.87E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Cobalt-60	-2.23E-01	5.42E-01	1.76E+00	1.50E+01	5.45E-01	pCi/L	U

SW-2(542322004) - Surface Water	27-Apr-21	Cobalt-60	1.93E+00	1.25E+00	1.93E+00	1.50E+01	1.26E+00	pCi/L	UI
SW-2(545938004) - Surface Water	25-May-21	Cobalt-60	-6.69E-02	3.93E-01	1.31E+00	1.50E+01	3.93E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Cobalt-60	-1.18E-01	4.26E-01	1.38E+00	1.50E+01	4.26E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Cobalt-60	-1.04E+00	5.71E-01	1.37E+00	1.50E+01	6.22E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Cobalt-60	-1.82E+00	9.15E-01	1.99E+00	1.50E+01	1.01E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Cobalt-60	3.57E-01	5.28E-01	1.60E+00	1.50E+01	5.35E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Cobalt-60	-8.52E-01	4.80E-01	1.48E+00	1.50E+01	5.20E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Cobalt-60	8.39E-01	4.16E-01	1.52E+00	1.50E+01	4.60E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Cobalt-60	-3.18E-01	7.50E-01	2.42E+00	1.50E+01	7.53E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Iodine-131	-1.23E-01	5.58E-01	1.84E+00		5.59E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Iodine-131	-2.42E+00	1.49E+00	2.87E+00		1.59E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Iodine-131	-1.16E+00	9.48E-01	3.11E+00		9.86E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Iodine-131	-5.24E-01	1.17E+00	3.56E+00		1.17E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Iodine-131	1.75E+00	1.47E+00	5.15E+00		1.53E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Iodine-131	1.17E+00	1.25E+00	4.31E+00		1.28E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Iodine-131	8.82E-01	9.99E-01	3.44E+00		1.02E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Iodine-131	-7.11E-01	1.11E+00	3.57E+00		1.12E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Iodine-131	-2.05E-01	9.64E-01	3.07E+00		9.65E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Iodine-131	1.17E+00	1.12E+00	3.69E+00		1.16E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Iodine-131	1.33E+00	1.56E+00	5.12E+00		1.60E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Iodine-131	1.61E+00	1.32E+00	4.46E+00		1.38E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Iron-59	-4.41E-01	9.26E-01	2.62E+00	3.00E+01	9.31E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Iron-59	-1.77E+00	7.79E-01	2.28E+00	3.00E+01	8.84E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Iron-59	2.04E+00	1.14E+00	4.14E+00	3.00E+01	1.23E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Iron-59	-2.81E-02	1.14E+00	3.64E+00	3.00E+01	1.14E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Iron-59	-3.63E-02	9.45E-01	3.00E+00	3.00E+01	9.45E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Iron-59	-1.01E+00	9.73E-01	3.12E+00	3.00E+01	1.00E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Iron-59	5.85E-01	9.17E-01	3.12E+00	3.00E+01	9.28E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Iron-59	1.33E+00	1.11E+00	3.81E+00	3.00E+01	1.16E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Iron-59	-5.09E-01	9.49E-01	2.97E+00	3.00E+01	9.57E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Iron-59	3.59E-01	9.46E-01	3.09E+00	3.00E+01	9.50E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Iron-59	3.02E-02	1.01E+00	3.25E+00	3.00E+01	1.01E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Iron-59	4.62E-01	1.47E+00	4.85E+00	3.00E+01	1.47E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Lanthanum-140	1.55E-01	7.06E-01	2.31E+00	1.50E+01	7.07E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Lanthanum-140	-1.10E+00	9.26E-01	2.79E+00	1.50E+01	9.61E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Lanthanum-140	1.09E+00	8.94E-01	3.16E+00	1.50E+01	9.29E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Lanthanum-140	6.48E-01	1.10E+00	3.41E+00	1.50E+01	1.11E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Lanthanum-140	-6.62E-01	9.29E-01	2.53E+00	1.50E+01	9.42E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Lanthanum-140	5.87E-01	9.93E-01	3.31E+00	1.50E+01	1.00E+00	pCi/L	U

SW-2(550834004) - Surface Water	27-Jul-21	Lanthanum-140	-5.34E-01	9.36E-01	3.05E+00	1.50E+01	9.45E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Lanthanum-140	-1.11E+00	1.12E+00	2.93E+00	1.50E+01	1.15E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Lanthanum-140	-1.06E+00	7.80E-01	2.38E+00	1.50E+01	8.18E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Lanthanum-140	-1.10E+00	8.55E-01	2.63E+00	1.50E+01	8.92E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Lanthanum-140	-1.36E+00	1.16E+00	3.61E+00	1.50E+01	1.20E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Lanthanum-140	-2.65E+00	1.34E+00	3.72E+00	1.50E+01	1.48E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Manganese-54	-6.88E-01	4.63E-01	1.48E+00	1.50E+01	4.90E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Manganese-54	-3.39E-01	4.34E-01	1.33E+00	1.50E+01	4.41E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Manganese-54	-5.70E-01	6.07E-01	1.86E+00	1.50E+01	6.22E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Manganese-54	-7.64E-01	5.38E-01	1.63E+00	1.50E+01	5.67E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Manganese-54	-4.66E-01	4.03E-01	1.25E+00	1.50E+01	4.17E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Manganese-54	2.07E-01	3.89E-01	1.26E+00	1.50E+01	3.92E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Manganese-54	-2.55E-01	4.37E-01	1.44E+00	1.50E+01	4.41E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Manganese-54	-4.50E-01	5.02E-01	1.60E+00	1.50E+01	5.13E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Manganese-54	-4.92E-02	4.39E-01	1.43E+00	1.50E+01	4.40E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Manganese-54	1.19E-01	4.38E-01	1.45E+00	1.50E+01	4.39E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Manganese-54	1.95E-01	4.38E-01	1.46E+00	1.50E+01	4.40E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Manganese-54	1.09E-01	7.16E-01	2.41E+00	1.50E+01	7.17E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Niobium-95	-2.44E-01	4.34E-01	1.34E+00	1.50E+01	4.38E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Niobium-95	-4.34E-01	4.52E-01	1.39E+00	1.50E+01	4.63E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Niobium-95	-1.10E-01	5.97E-01	1.91E+00	1.50E+01	5.97E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Niobium-95	4.32E-01	5.81E-01	1.98E+00	1.50E+01	5.90E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Niobium-95	4.68E-01	4.35E-01	1.48E+00	1.50E+01	4.49E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Niobium-95	4.76E-01	4.13E-01	1.38E+00	1.50E+01	4.28E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Niobium-95	-2.80E-01	4.59E-01	1.53E+00	1.50E+01	4.63E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Niobium-95	1.67E-02	4.92E-01	1.64E+00	1.50E+01	4.92E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Niobium-95	-2.03E+00	9.07E-01	1.57E+00	1.50E+01	1.02E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Niobium-95	3.24E-01	4.47E-01	1.51E+00	1.50E+01	4.53E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Niobium-95	5.32E-01	4.35E-01	1.50E+00	1.50E+01	4.53E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Niobium-95	-1.47E+00	1.23E+00	2.41E+00	1.50E+01	1.27E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Potassium-40	-1.42E+01	8.51E+00	2.14E+01		9.13E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Potassium-40	-1.96E+01	9.66E+00	2.09E+01		1.07E+01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Potassium-40	-2.81E+01	1.03E+01	2.35E+01		1.23E+01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Potassium-40	-1.21E+01	1.12E+01	2.86E+01		1.15E+01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Potassium-40	-2.40E+01	8.93E+00	2.25E+01		1.06E+01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Potassium-40	-8.69E+00	8.32E+00	2.03E+01		8.57E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Potassium-40	-1.80E+01	1.02E+01	2.09E+01		1.10E+01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Potassium-40	-1.25E+01	9.83E+00	2.46E+01		1.03E+01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Potassium-40	-6.75E+00	9.09E+00	2.18E+01		9.23E+00	pCi/L	U

SW-2(560208005) - Surface Water	26-Oct-21	Potassium-40	-5.96E+00	9.81E+00	2.31E+01		9.91E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Potassium-40	-1.44E+01	8.01E+00	2.12E+01		8.69E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Potassium-40	2.72E+01	8.43E+00	3.21E+01		1.06E+01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Ruthenium-103	-2.93E-01	4.53E-01	1.45E+00		4.58E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Ruthenium-103	5.50E-02	5.05E-01	1.51E+00		5.05E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Ruthenium-103	-1.30E-01	6.23E-01	1.84E+00		6.23E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Ruthenium-103	-1.47E+00	5.88E-01	1.81E+00		6.82E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Ruthenium-103	5.17E-01	4.91E-01	1.54E+00		5.06E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Ruthenium-103	3.28E-01	4.88E-01	1.48E+00		4.94E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Ruthenium-103	-4.66E-01	4.88E-01	1.55E+00		5.00E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Ruthenium-103	-4.56E-01	5.90E-01	1.84E+00		6.00E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Ruthenium-103	-6.01E-01	4.90E-01	1.61E+00		5.10E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Ruthenium-103	-1.24E+00	5.05E-01	1.61E+00		5.83E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Ruthenium-103	1.66E-01	5.67E-01	1.71E+00		5.68E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Ruthenium-103	-1.43E+00	8.45E-01	2.28E+00		9.09E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Ruthenium-106	1.15E+01	4.07E+00	1.44E+01		4.89E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Ruthenium-106	-2.23E+00	3.96E+00	1.26E+01		3.99E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Ruthenium-106	8.86E-01	5.03E+00	1.66E+01		5.04E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Ruthenium-106	-5.99E+00	4.71E+00	1.48E+01		4.92E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Ruthenium-106	1.62E+00	3.33E+00	1.12E+01		3.35E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Ruthenium-106	-2.73E+00	3.65E+00	1.16E+01		3.71E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Ruthenium-106	1.30E+00	4.22E+00	1.38E+01		4.23E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Ruthenium-106	-2.04E+00	4.49E+00	1.50E+01		4.51E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Ruthenium-106	4.13E-01	4.02E+00	1.35E+01		4.02E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Ruthenium-106	9.06E+00	3.99E+00	1.42E+01		4.53E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Ruthenium-106	-6.00E-01	3.86E+00	1.28E+01		3.86E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Ruthenium-106	3.70E+00	6.26E+00	1.87E+01		6.32E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Selenium-75	-3.05E-01	5.37E-01	1.79E+00		5.42E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Selenium-75	1.43E-01	5.97E-01	1.88E+00		5.98E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Selenium-75	-2.34E-01	7.97E-01	2.47E+00		7.99E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Selenium-75	-5.75E-01	6.99E-01	2.16E+00		7.12E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Selenium-75	1.91E+00	5.77E-01	1.96E+00		7.30E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Selenium-75	-1.60E+00	7.68E-01	1.68E+00		8.54E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Selenium-75	6.99E-02	5.67E-01	1.95E+00		5.67E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Selenium-75	-1.65E-01	6.43E-01	2.14E+00		6.45E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Selenium-75	3.67E-01	6.20E-01	2.05E+00		6.26E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Selenium-75	-9.78E-01	6.26E-01	1.97E+00		6.66E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Selenium-75	-3.18E-01	6.46E-01	2.09E+00		6.50E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Selenium-75	-3.89E-01	7.43E-01	2.45E+00		7.48E-01	pCi/L	U

SW-2(533330004) - Surface Water	26-Jan-21	Silver-108m	2.56E-01	4.11E-01	1.24E+00		4.15E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Silver-108m	3.37E-01	3.69E-01	1.27E+00		3.77E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Silver-108m	-3.46E-01	8.31E-01	1.80E+00		8.35E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Silver-108m	8.30E-02	4.28E-01	1.47E+00		4.28E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Silver-108m	9.25E-02	3.44E-01	1.17E+00		3.45E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Silver-108m	4.28E-01	3.21E-01	1.11E+00		3.37E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Silver-108m	2.13E-01	4.03E-01	1.36E+00		4.06E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Silver-108m	-7.43E-02	4.42E-01	1.42E+00		4.42E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Silver-108m	2.25E-01	4.18E-01	1.34E+00		4.21E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Silver-108m	2.60E-01	4.00E-01	1.29E+00		4.04E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Silver-108m	-1.77E-01	4.00E-01	1.25E+00		4.02E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Silver-108m	-5.37E-01	6.23E-01	1.90E+00		6.36E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Silver-110m	8.67E-01	5.89E-01	2.10E+00		6.22E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Silver-110m	-2.68E-01	5.31E-01	1.77E+00		5.35E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Silver-110m	-6.24E-01	7.56E-01	2.31E+00		7.70E-01	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Silver-110m	5.26E-01	6.65E-01	2.27E+00		6.77E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Silver-110m	-9.84E-01	5.47E-01	1.63E+00		5.93E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Silver-110m	-3.34E-01	5.01E-01	1.66E+00		5.07E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Silver-110m	-8.17E-01	5.99E-01	1.90E+00		6.29E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Silver-110m	-1.22E-03	6.49E-01	2.14E+00		6.49E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Silver-110m	9.42E-01	8.59E-01	1.95E+00		8.87E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Silver-110m	-7.28E-01	5.54E-01	1.71E+00		5.80E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Silver-110m	2.89E-01	5.82E-01	1.93E+00		5.86E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Silver-110m	-6.59E-01	9.90E-01	3.19E+00		1.00E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Strontium-89	1.70E+00	1.14E+00	3.48E+00	1.00E+01	1.19E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Strontium-89	9.64E-01	7.43E-01	2.23E+00	1.00E+01	7.79E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Strontium-89	-3.29E-01	1.11E+00	3.70E+00	1.00E+01	1.22E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Strontium-89	8.06E-02	5.94E-01	1.94E+00	1.00E+01	7.48E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Strontium-89	6.18E-01	5.33E-01	1.61E+00	1.00E+01	7.29E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Strontium-89	-1.13E+00	5.63E-01	2.07E+00	1.00E+01	5.97E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Strontium-89	-1.19E+00	3.51E-01	1.45E+00	1.00E+01	4.87E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Strontium-89	4.01E-01	5.53E-01	1.73E+00	1.00E+01	7.03E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Strontium-89	8.00E-01	4.71E-01	1.35E+00	1.00E+01	5.88E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Strontium-89	1.09E+00	6.16E-01	1.84E+00	1.00E+01	7.38E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Strontium-89	-6.81E-02	4.20E-01	1.40E+00	1.00E+01	7.22E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Strontium-89	-1.03E+00	5.99E-01	2.14E+00	1.00E+01	7.60E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Strontium-90	-1.53E-01	2.17E-01	1.05E+00	2.00E+00	3.17E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Strontium-90	-2.46E-01	1.81E-01	1.13E+00	2.00E+00	3.37E-01	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Strontium-90	-9.90E-02	4.36E-01	1.81E+00	2.00E+00	5.45E-01	pCi/L	U

SW-2(542322004) - Surface Water	27-Apr-21	Strontium-90	4.84E-01	4.36E-01	1.79E+00	2.00E+00	5.73E-01	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Strontium-90	3.36E-01	4.04E-01	1.65E+00	2.00E+00	5.25E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Strontium-90	8.03E-01	2.00E-01	1.95E+00	2.00E+00	6.14E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Strontium-90	4.40E-01	3.90E-01	1.66E+00	2.00E+00	5.35E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Strontium-90	-4.64E-01	3.73E-01	1.68E+00	2.00E+00	4.87E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Strontium-90	5.22E-01	4.47E-01	1.57E+00	2.00E+00	5.06E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Strontium-90	-7.92E-01	3.38E-01	1.58E+00	2.00E+00	4.30E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Strontium-90	4.74E-01	5.20E-01	1.78E+00	2.00E+00	5.61E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Strontium-90	7.97E-01	4.27E-01	1.35E+00	2.00E+00	4.72E-01	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Thorium-228	-2.72E+00	1.19E+00	2.87E+00		1.35E+00	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Thorium-228	2.27E+00	1.90E+00	3.38E+00		1.97E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Thorium-228	1.19E+00	2.24E+00	3.98E+00		2.26E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Thorium-228	2.79E+00	2.04E+00	3.91E+00		2.14E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Thorium-228	2.83E+00	1.70E+00	3.16E+00		1.82E+00	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Thorium-228	-9.88E-01	1.37E+00	2.94E+00		1.39E+00	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Thorium-228	8.12E-01	1.81E+00	3.31E+00		1.82E+00	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Thorium-228	2.62E+00	2.30E+00	4.18E+00		2.38E+00	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Thorium-228	6.96E-01	1.74E+00	3.16E+00		1.75E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Thorium-228	-9.16E-01	1.76E+00	3.27E+00		1.78E+00	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Thorium-228	2.00E+00	2.06E+00	3.23E+00		2.11E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Thorium-228	-7.01E-02	1.77E+00	4.12E+00		1.77E+00	pCi/L	U
SW-2(543406004) - Surface Water	30-Mar-21	Tritium	1.82E+02	1.25E+02	3.94E+02	5.00E+02	1.27E+02	pCi/L	U
SW-2(552151004) - Surface Water	29-Jun-21	Tritium	2.04E+02	1.28E+02	3.95E+02	5.00E+02	1.29E+02	pCi/L	U
SW-2(560834005) - Surface Water	28-Sep-21	Tritium	-7.08E+00	1.18E+02	3.89E+02	5.00E+02	1.18E+02	pCi/L	U
SW-2(568418005) - Surface Water	28-Dec-21	Tritium	4.42E+01	1.20E+02	3.90E+02	5.00E+02	1.20E+02	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Zinc-65	1.35E+00	8.46E-01	2.99E+00	3.00E+01	8.48E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Zinc-65	1.15E+00	1.22E+00	2.63E+00	3.00E+01	1.22E+00	pCi/L	U
SW-2(539721004) - Surface Water	30-Mar-21	Zinc-65	-1.84E+00	1.10E+00	3.38E+00	3.00E+01	1.18E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Zinc-65	-2.51E+00	1.24E+00	3.14E+00	3.00E+01	1.37E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Zinc-65	1.50E+00	8.29E-01	2.87E+00	3.00E+01	9.01E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Zinc-65	1.47E-01	8.22E-01	2.44E+00	3.00E+01	8.23E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Zinc-65	-2.39E-01	9.42E-01	3.06E+00	3.00E+01	9.44E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Zinc-65	3.24E+00	1.26E+00	3.24E+00	3.00E+01	1.27E+00	pCi/L	UI
SW-2(557418005) - Surface Water	28-Sep-21	Zinc-65	3.12E-01	1.52E+00	3.26E+00	3.00E+01	1.52E+00	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Zinc-65	-5.04E-01	9.59E-01	3.00E+00	3.00E+01	9.66E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Zinc-65	1.10E+00	1.02E+00	3.05E+00	3.00E+01	1.05E+00	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Zinc-65	-8.26E-01	1.58E+00	4.95E+00	3.00E+01	1.59E+00	pCi/L	U
SW-2(533330004) - Surface Water	26-Jan-21	Zirconium-95	3.65E-01	7.89E-01	2.56E+00	1.50E+01	7.93E-01	pCi/L	U
SW-2(535691004) - Surface Water	23-Feb-21	Zirconium-95	4.87E-03	7.77E-01	2.49E+00	1.50E+01	7.77E-01	pCi/L	U

SW-2(539721004) - Surface Water	30-Mar-21	Zirconium-95	-1.72E+00	1.23E+00	3.25E+00	1.50E+01	1.30E+00	pCi/L	U
SW-2(542322004) - Surface Water	27-Apr-21	Zirconium-95	3.52E-01	1.07E+00	3.58E+00	1.50E+01	1.07E+00	pCi/L	U
SW-2(545938004) - Surface Water	25-May-21	Zirconium-95	-5.84E-01	7.85E-01	2.50E+00	1.50E+01	7.97E-01	pCi/L	U
SW-2(548724004) - Surface Water	29-Jun-21	Zirconium-95	-3.59E-02	7.83E-01	2.50E+00	1.50E+01	7.83E-01	pCi/L	U
SW-2(550834004) - Surface Water	27-Jul-21	Zirconium-95	5.85E-01	8.46E-01	2.76E+00	1.50E+01	8.57E-01	pCi/L	U
SW-2(554504005) - Surface Water	31-Aug-21	Zirconium-95	6.36E-01	9.50E-01	3.25E+00	1.50E+01	9.62E-01	pCi/L	U
SW-2(557418005) - Surface Water	28-Sep-21	Zirconium-95	-6.74E-01	7.86E-01	2.51E+00	1.50E+01	8.02E-01	pCi/L	U
SW-2(560208005) - Surface Water	26-Oct-21	Zirconium-95	-9.59E-01	8.23E-01	2.60E+00	1.50E+01	8.54E-01	pCi/L	U
SW-2(563685005) - Surface Water	30-Nov-21	Zirconium-95	6.10E-01	8.41E-01	2.84E+00	1.50E+01	8.53E-01	pCi/L	U
SW-2(566004005) - Surface Water	28-Dec-21	Zirconium-95	-1.48E+00	1.22E+00	3.88E+00	1.50E+01	1.26E+00	pCi/L	U

SW-3

Surface Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
SW-3(533330005) - Surface Water	26-Jan-21	Actinium-228	-2.02E+00	3.56E+00	8.01E+00		3.60E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Actinium-228	6.56E+00	2.61E+00	7.17E+00		3.02E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Actinium-228	8.96E+00	5.13E+00	8.96E+00		5.57E+00	pCi/L	UI
SW-3(542322005) - Surface Water	27-Apr-21	Actinium-228	-2.22E+00	3.03E+00	6.70E+00		3.08E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Actinium-228	-1.49E+00	2.60E+00	5.81E+00		2.62E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Actinium-228	5.13E+00	3.28E+00	5.13E+00		3.33E+00	pCi/L	UI
SW-3(550834005) - Surface Water	27-Jul-21	Actinium-228	-5.17E+00	3.35E+00	6.50E+00		3.56E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Actinium-228	-5.51E+00	4.26E+00	8.53E+00		4.45E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Actinium-228	1.23E+00	4.67E+00	8.59E+00		4.68E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Actinium-228	-2.26E+00	3.84E+00	7.42E+00		3.88E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Actinium-228	-1.18E+00	2.69E+00	5.30E+00		2.71E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Actinium-228	-4.55E+00	3.73E+00	8.78E+00		3.88E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Antimony-124	2.42E+00	1.40E+00	5.12E+00		1.51E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Antimony-124	-1.09E+00	1.49E+00	4.64E+00		1.51E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Antimony-124	-4.56E-01	1.24E+00	4.00E+00		1.24E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Antimony-124	-2.08E-01	1.17E+00	3.75E+00		1.17E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Antimony-124	-1.45E+00	1.07E+00	2.90E+00		1.12E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Antimony-124	9.04E-01	1.26E+00	4.25E+00		1.28E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Antimony-124	-8.06E-01	1.00E+00	3.06E+00		1.02E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Antimony-124	4.07E-01	1.26E+00	4.25E+00		1.26E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Antimony-124	3.94E+00	8.46E-01	3.94E+00		1.39E+00	pCi/L	UI
SW-3(560208001) - Surface Water	26-Oct-21	Antimony-124	-1.50E+00	1.09E+00	3.30E+00		1.15E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Antimony-124	-9.99E-01	8.68E-01	2.68E+00		8.99E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Antimony-124	3.95E-01	1.62E+00	5.32E+00		1.62E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Antimony-125	-8.96E-01	1.48E+00	4.60E+00		1.49E+00	pCi/L	U

SW-3(535691005) - Surface Water	23-Feb-21	Antimony-125	-1.50E-01	1.38E+00	4.42E+00		1.38E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Antimony-125	-1.65E+00	1.36E+00	4.26E+00		1.41E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Antimony-125	-1.82E+00	1.25E+00	3.90E+00		1.32E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Antimony-125	-3.04E-01	1.00E+00	3.35E+00		1.00E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Antimony-125	-1.78E+00	1.21E+00	3.76E+00		1.28E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Antimony-125	-2.05E-01	1.20E+00	3.94E+00		1.20E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Antimony-125	2.01E+00	1.41E+00	4.83E+00		1.49E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Antimony-125	-2.17E+00	1.39E+00	4.23E+00		1.48E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Antimony-125	1.85E-01	1.27E+00	4.23E+00		1.27E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Antimony-125	5.53E-01	9.13E-01	3.17E+00		9.22E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Antimony-125	-7.37E-01	1.76E+00	4.98E+00		1.77E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Barium-140	1.38E+00	2.55E+00	7.71E+00	1.50E+01	2.57E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Barium-140	7.28E-01	2.94E+00	9.41E+00	1.50E+01	2.94E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Barium-140	1.18E-01	2.68E+00	8.62E+00	1.50E+01	2.68E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Barium-140	1.88E+00	2.56E+00	8.58E+00	1.50E+01	2.59E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Barium-140	-6.44E+00	4.52E+00	9.14E+00	1.50E+01	4.76E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Barium-140	-3.49E+00	3.23E+00	1.00E+01	1.50E+01	3.34E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Barium-140	2.92E+00	2.75E+00	9.28E+00	1.50E+01	2.83E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Barium-140	-3.00E+00	3.03E+00	9.50E+00	1.50E+01	3.11E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Barium-140	-8.61E-01	2.77E+00	9.32E+00	1.50E+01	2.78E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Barium-140	4.45E+00	4.37E+00	1.00E+01	1.50E+01	4.49E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Barium-140	5.70E+00	4.31E+00	9.51E+00	1.50E+01	4.51E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Barium-140	-9.85E-01	3.23E+00	1.02E+01	1.50E+01	3.24E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Beryllium-7	3.53E-01	4.26E+00	1.45E+01		4.26E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Beryllium-7	-5.53E+00	4.55E+00	1.39E+01		4.73E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Beryllium-7	5.78E-02	4.64E+00	1.50E+01		4.64E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Beryllium-7	1.38E+00	4.21E+00	1.39E+01		4.22E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Beryllium-7	3.96E+00	3.46E+00	1.20E+01		3.59E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Beryllium-7	8.84E+00	4.36E+00	1.49E+01		4.83E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Beryllium-7	2.05E+00	4.14E+00	1.38E+01		4.17E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Beryllium-7	-6.11E+00	4.88E+00	1.53E+01		5.09E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Beryllium-7	3.91E+00	6.06E+00	1.35E+01		6.06E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Beryllium-7	3.90E-01	4.45E+00	1.47E+01		4.45E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Beryllium-7	-8.54E+00	5.35E+00	1.13E+01		5.71E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Beryllium-7	5.36E+00	5.54E+00	1.85E+01		5.68E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Cerium-141	2.53E+00	1.69E+00	2.53E+00		1.69E+00	pCi/L	UI
SW-3(535691005) - Surface Water	23-Feb-21	Cerium-141	-1.97E+00	1.45E+00	3.27E+00		1.52E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Cerium-141	-2.55E-01	9.43E-01	2.96E+00		9.45E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Cerium-141	-7.64E-02	9.53E-01	2.96E+00		9.53E-01	pCi/L	U

SW-3(545938005) - Surface Water	25-May-21	Cerium-141	-2.95E+00	1.28E+00	2.61E+00		1.45E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Cerium-141	1.04E-01	9.04E-01	3.06E+00		9.04E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Cerium-141	-6.14E+00	1.67E+00	3.14E+00		2.20E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Cerium-141	1.23E+00	1.12E+00	3.49E+00		1.16E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Cerium-141	-1.21E+00	1.50E+00	3.40E+00		1.53E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Cerium-141	-4.21E-01	9.25E-01	2.94E+00		9.31E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Cerium-141	3.39E-01	7.27E-01	2.39E+00		7.31E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Cerium-141	8.46E-01	1.09E+00	3.73E+00		1.11E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Cerium-144	4.19E+00	3.49E+00	1.12E+01		3.63E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Cerium-144	-1.44E+00	3.53E+00	1.16E+01		3.55E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Cerium-144	-3.88E+00	3.54E+00	1.10E+01		3.65E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Cerium-144	-2.03E+00	3.37E+00	1.04E+01		3.40E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Cerium-144	1.96E+00	2.60E+00	8.51E+00		2.64E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Cerium-144	1.20E+00	2.98E+00	1.01E+01		2.99E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Cerium-144	-9.37E-01	3.32E+00	1.04E+01		3.33E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Cerium-144	-2.74E+00	3.64E+00	1.22E+01		3.69E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Cerium-144	1.07E+00	3.34E+00	1.15E+01		3.35E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Cerium-144	-9.78E-02	4.59E+00	1.04E+01		4.59E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Cerium-144	5.95E+00	3.64E+00	7.58E+00		3.65E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Cerium-144	9.85E+00	4.37E+00	1.41E+01		4.94E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Cesium-134	5.87E-01	5.72E-01	1.94E+00	1.50E+01	5.88E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Cesium-134	-8.52E-01	5.53E-01	1.76E+00	1.50E+01	5.88E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Cesium-134	-1.26E-01	5.49E-01	1.82E+00	1.50E+01	5.50E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Cesium-134	-8.22E-01	4.98E-01	1.42E+00	1.50E+01	5.34E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Cesium-134	5.75E-01	3.67E-01	1.28E+00	1.50E+01	3.91E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Cesium-134	-9.60E-01	4.67E-01	1.46E+00	1.50E+01	5.19E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Cesium-134	8.89E-01	4.87E-01	1.68E+00	1.50E+01	5.30E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Cesium-134	-4.10E-01	5.98E-01	1.86E+00	1.50E+01	6.06E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Cesium-134	7.29E-02	5.48E-01	1.82E+00	1.50E+01	5.48E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Cesium-134	4.45E-01	5.24E-01	1.84E+00	1.50E+01	5.35E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Cesium-134	4.12E-01	3.96E-01	1.36E+00	1.50E+01	4.08E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Cesium-134	5.55E-02	6.00E-01	2.04E+00	1.50E+01	6.01E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Cesium-137	5.12E-01	5.23E-01	1.79E+00	1.80E+01	5.37E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Cesium-137	2.94E-01	5.39E-01	1.86E+00	1.80E+01	5.44E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Cesium-137	9.99E-02	5.32E-01	1.82E+00	1.80E+01	5.33E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Cesium-137	-4.66E-01	5.50E-01	1.70E+00	1.80E+01	5.61E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Cesium-137	6.25E-01	3.73E-01	1.30E+00	1.80E+01	4.00E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Cesium-137	6.10E-01	4.92E-01	1.63E+00	1.80E+01	5.12E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Cesium-137	4.63E-01	4.74E-01	1.58E+00	1.80E+01	4.86E-01	pCi/L	U

SW-3(554504001) - Surface Water	31-Aug-21	Cesium-137	-9.04E-01	8.45E-01	1.83E+00	1.80E+01	8.71E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Cesium-137	-4.31E-01	5.68E-01	1.61E+00	1.80E+01	5.77E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Cesium-137	2.74E-01	5.10E-01	1.67E+00	1.80E+01	5.14E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Cesium-137	-4.62E-01	3.71E-01	1.03E+00	1.80E+01	3.86E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Cesium-137	1.50E-01	5.88E-01	1.89E+00	1.80E+01	5.89E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Chromium-51	2.15E+00	4.47E+00	1.47E+01		4.50E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Chromium-51	2.46E+00	4.91E+00	1.61E+01		4.94E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Chromium-51	-2.76E+00	4.88E+00	1.61E+01		4.92E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Chromium-51	1.45E+01	6.19E+00	1.56E+01		6.21E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Chromium-51	6.12E-03	4.23E+00	1.45E+01		4.23E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Chromium-51	5.98E+00	4.76E+00	1.61E+01		4.96E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Chromium-51	-6.20E+00	4.64E+00	1.51E+01		4.86E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Chromium-51	-2.95E+00	7.89E+00	1.78E+01		7.92E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Chromium-51	2.41E+00	5.05E+00	1.67E+01		5.08E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Chromium-51	1.89E+00	4.77E+00	1.63E+01		4.79E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Chromium-51	7.36E+00	4.00E+00	1.32E+01		4.35E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Chromium-51	-1.22E-01	5.99E+00	1.97E+01		5.99E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Cobalt-57	-1.42E-01	4.67E-01	1.45E+00		4.68E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Cobalt-57	-1.93E-01	4.82E-01	1.59E+00		4.84E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Cobalt-57	-5.15E-01	4.37E-01	1.36E+00		4.54E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Cobalt-57	-2.27E-01	4.42E-01	1.37E+00		4.45E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Cobalt-57	-1.12E-02	3.29E-01	1.07E+00		3.29E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Cobalt-57	-2.75E-01	3.97E-01	1.33E+00		4.02E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Cobalt-57	1.91E-01	4.62E-01	1.47E+00		4.65E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Cobalt-57	6.04E-01	5.07E-01	1.75E+00		5.26E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Cobalt-57	6.64E-01	4.45E-01	1.56E+00		4.71E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Cobalt-57	-3.57E-01	4.13E-01	1.31E+00		4.21E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Cobalt-57	3.10E-01	3.04E-01	1.02E+00		3.13E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Cobalt-57	3.14E-01	5.44E-01	1.86E+00		5.49E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Cobalt-58	-3.31E-01	5.18E-01	1.63E+00	1.50E+01	5.24E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Cobalt-58	1.56E-01	4.86E-01	1.66E+00	1.50E+01	4.88E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Cobalt-58	-3.16E-01	5.05E-01	1.65E+00	1.50E+01	5.11E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Cobalt-58	2.00E-01	4.93E-01	1.60E+00	1.50E+01	4.96E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Cobalt-58	-1.70E-01	4.03E-01	1.28E+00	1.50E+01	4.05E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Cobalt-58	-6.57E-01	4.64E-01	1.49E+00	1.50E+01	4.89E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Cobalt-58	-1.86E-01	4.57E-01	1.42E+00	1.50E+01	4.59E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Cobalt-58	-1.71E+00	8.65E-01	1.62E+00	1.50E+01	9.53E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Cobalt-58	-2.73E-01	5.06E-01	1.63E+00	1.50E+01	5.10E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Cobalt-58	1.28E+00	4.94E-01	1.84E+00	1.50E+01	5.78E-01	pCi/L	U

SW-3(563685001) - Surface Water	30-Nov-21	Cobalt-58	1.30E-01	3.91E-01	1.30E+00	1.50E+01	3.92E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Cobalt-58	-5.56E-01	5.80E-01	1.87E+00	1.50E+01	5.94E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Cobalt-60	-8.92E-01	6.54E-01	1.63E+00	1.50E+01	6.87E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Cobalt-60	4.09E-01	5.43E-01	1.85E+00	1.50E+01	5.51E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Cobalt-60	-6.46E-02	5.05E-01	1.69E+00	1.50E+01	5.05E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Cobalt-60	1.83E+00	7.72E-01	2.01E+00	1.50E+01	8.84E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Cobalt-60	3.12E-01	4.05E-01	1.41E+00	1.50E+01	4.11E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Cobalt-60	-4.63E-01	4.79E-01	1.50E+00	1.50E+01	4.91E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Cobalt-60	-4.00E-01	4.44E-01	1.39E+00	1.50E+01	4.54E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Cobalt-60	1.35E+00	6.29E-01	2.31E+00	1.50E+01	7.05E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Cobalt-60	6.11E-01	4.64E-01	1.66E+00	1.50E+01	4.86E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Cobalt-60	-8.64E-02	4.88E-01	1.57E+00	1.50E+01	4.89E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Cobalt-60	6.20E-01	3.25E-01	1.21E+00	1.50E+01	3.56E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Cobalt-60	-5.50E-01	6.68E-01	2.09E+00	1.50E+01	6.81E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Iodine-131	-8.38E-01	7.11E-01	2.21E+00		7.37E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Iodine-131	8.26E-02	1.14E+00	3.69E+00		1.14E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Iodine-131	1.18E+00	8.88E-01	3.04E+00		9.30E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Iodine-131	5.15E-01	1.05E+00	3.55E+00		1.06E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Iodine-131	-3.44E-01	1.23E+00	4.16E+00		1.23E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Iodine-131	-5.63E-01	1.39E+00	4.49E+00		1.39E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Iodine-131	-1.04E+00	1.03E+00	3.32E+00		1.06E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Iodine-131	-3.58E+00	2.16E+00	3.85E+00		2.31E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Iodine-131	2.81E-01	1.11E+00	3.61E+00		1.11E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Iodine-131	-1.29E-01	1.13E+00	3.79E+00		1.14E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Iodine-131	1.33E+00	1.26E+00	4.05E+00		1.30E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Iodine-131	-3.25E-01	1.26E+00	4.08E+00		1.26E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Iron-59	1.47E+00	1.11E+00	3.91E+00	3.00E+01	1.16E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Iron-59	4.92E-01	1.05E+00	3.57E+00	3.00E+01	1.06E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Iron-59	-1.42E+00	1.07E+00	3.26E+00	3.00E+01	1.13E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Iron-59	-7.80E-01	9.48E-01	3.01E+00	3.00E+01	9.66E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Iron-59	-1.57E-01	9.69E-01	3.05E+00	3.00E+01	9.70E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Iron-59	3.58E-02	1.05E+00	3.49E+00	3.00E+01	1.05E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Iron-59	4.69E-01	8.69E-01	2.98E+00	3.00E+01	8.76E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Iron-59	-4.33E-02	1.14E+00	3.87E+00	3.00E+01	1.14E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Iron-59	-3.60E-01	1.24E+00	3.94E+00	3.00E+01	1.24E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Iron-59	-1.24E-02	1.14E+00	3.78E+00	3.00E+01	1.14E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Iron-59	-1.89E+00	9.82E-01	2.43E+00	3.00E+01	1.08E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Iron-59	-1.28E+00	1.16E+00	3.60E+00	3.00E+01	1.20E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Lanthanum-140	1.24E+00	8.66E-01	3.02E+00	1.50E+01	9.14E-01	pCi/L	U

SW-3(535691005) - Surface Water	23-Feb-21	Lanthanum-140	6.25E-01	9.89E-01	3.33E+00	1.50E+01	9.99E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Lanthanum-140	3.06E-01	7.71E-01	2.63E+00	1.50E+01	7.75E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Lanthanum-140	1.08E+00	1.03E+00	3.57E+00	1.50E+01	1.06E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Lanthanum-140	-4.74E-01	9.63E-01	3.09E+00	1.50E+01	9.69E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Lanthanum-140	-1.40E-01	1.16E+00	3.75E+00	1.50E+01	1.16E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Lanthanum-140	-1.64E+00	8.96E-01	2.56E+00	1.50E+01	9.75E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Lanthanum-140	-2.18E+00	1.12E+00	3.31E+00	1.50E+01	1.23E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Lanthanum-140	-1.18E+00	9.98E-01	3.08E+00	1.50E+01	1.04E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Lanthanum-140	-9.90E-01	1.19E+00	3.60E+00	1.50E+01	1.21E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Lanthanum-140	-1.21E+00	8.49E-01	2.61E+00	1.50E+01	8.95E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Lanthanum-140	-1.94E+00	1.21E+00	3.52E+00	1.50E+01	1.29E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Manganese-54	1.59E-01	5.85E-01	1.68E+00	1.50E+01	5.86E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Manganese-54	-3.20E-01	4.45E-01	1.45E+00	1.50E+01	4.51E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Manganese-54	-1.21E-01	6.11E-01	1.77E+00	1.50E+01	6.11E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Manganese-54	9.55E-02	4.47E-01	1.54E+00	1.50E+01	4.48E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Manganese-54	2.59E-01	3.70E-01	1.23E+00	1.50E+01	3.75E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Manganese-54	-2.57E-01	4.40E-01	1.45E+00	1.50E+01	4.44E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Manganese-54	-4.22E-01	4.74E-01	1.44E+00	1.50E+01	4.84E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Manganese-54	-1.72E+00	7.63E-01	1.52E+00	1.50E+01	8.64E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Manganese-54	-5.53E-01	5.09E-01	1.60E+00	1.50E+01	5.25E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Manganese-54	1.58E-01	5.43E-01	1.86E+00	1.50E+01	5.44E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Manganese-54	2.26E-01	3.70E-01	1.24E+00	1.50E+01	3.74E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Manganese-54	-3.05E-01	6.05E-01	2.00E+00	1.50E+01	6.09E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Niobium-95	4.71E-01	5.19E-01	1.75E+00	1.50E+01	5.30E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Niobium-95	8.08E-01	5.15E-01	1.83E+00	1.50E+01	5.49E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Niobium-95	-4.88E-01	5.24E-01	1.70E+00	1.50E+01	5.37E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Niobium-95	2.24E-01	5.25E-01	1.70E+00	1.50E+01	5.27E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Niobium-95	-5.52E-01	4.43E-01	1.37E+00	1.50E+01	4.61E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Niobium-95	7.70E-01	4.92E-01	1.75E+00	1.50E+01	5.24E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Niobium-95	1.83E-01	5.53E-01	1.60E+00	1.50E+01	5.55E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Niobium-95	3.82E-01	8.59E-01	1.68E+00	1.50E+01	8.59E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Niobium-95	1.42E+00	1.31E+00	1.57E+00	1.50E+01	1.31E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Niobium-95	1.11E+00	8.63E-01	1.66E+00	1.50E+01	8.64E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Niobium-95	4.41E-02	4.05E-01	1.34E+00	1.50E+01	4.05E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Niobium-95	1.07E-01	6.04E-01	2.06E+00	1.50E+01	6.05E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Potassium-40	-1.84E+01	1.14E+01	2.41E+01		1.22E+01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Potassium-40	4.30E+01	1.21E+01	1.68E+01		1.22E+01	pCi/L	
SW-3(539721005) - Surface Water	30-Mar-21	Potassium-40	8.77E+00	1.54E+01	1.61E+01		1.54E+01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Potassium-40	-1.27E+01	9.58E+00	2.35E+01		1.00E+01	pCi/L	U

SW-3(545938005) - Surface Water	25-May-21	Potassium-40	4.69E+00	9.26E+00	1.29E+01		9.27E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Potassium-40	-1.86E+01	1.00E+01	2.08E+01		1.09E+01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Potassium-40	1.46E+01	1.37E+01	1.46E+01		1.38E+01	pCi/L	UI
SW-3(554504001) - Surface Water	31-Aug-21	Potassium-40	-1.07E+01	1.49E+01	2.43E+01		1.51E+01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Potassium-40	-6.52E+00	1.05E+01	2.34E+01		1.06E+01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Potassium-40	1.16E+01	1.20E+01	1.99E+01		1.20E+01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Potassium-40	-1.00E+01	7.84E+00	1.91E+01		8.18E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Potassium-40	-8.50E+00	9.74E+00	2.54E+01		9.94E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Ruthenium-103	-4.72E-01	7.85E-01	1.62E+00		7.93E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Ruthenium-103	-2.35E-01	5.56E-01	1.75E+00		5.59E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Ruthenium-103	6.62E-01	6.00E-01	1.81E+00		6.20E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Ruthenium-103	-7.71E-01	6.23E-01	1.70E+00		6.49E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Ruthenium-103	-5.42E-01	4.40E-01	1.41E+00		4.58E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Ruthenium-103	2.80E-01	5.84E-01	1.71E+00		5.88E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Ruthenium-103	1.08E+00	5.44E-01	1.73E+00		6.00E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Ruthenium-103	-1.11E+00	6.13E-01	1.89E+00		6.66E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Ruthenium-103	-1.45E+00	5.85E-01	1.70E+00		6.76E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Ruthenium-103	-5.96E-01	5.23E-01	1.65E+00		5.42E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Ruthenium-103	-4.86E-01	4.13E-01	1.35E+00		4.29E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Ruthenium-103	-1.81E+00	6.86E-01	1.98E+00		8.06E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Ruthenium-106	6.55E+00	5.01E+00	1.56E+01		5.25E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Ruthenium-106	4.46E+00	4.90E+00	1.71E+01		5.01E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Ruthenium-106	5.98E-01	4.79E+00	1.52E+01		4.79E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Ruthenium-106	8.18E-02	4.62E+00	1.49E+01		4.62E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Ruthenium-106	3.05E-01	3.34E+00	1.10E+01		3.34E+00	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Ruthenium-106	1.06E+00	4.12E+00	1.33E+01		4.13E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Ruthenium-106	2.16E+00	3.99E+00	1.32E+01		4.03E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Ruthenium-106	-9.83E+00	4.84E+00	1.44E+01		5.36E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Ruthenium-106	2.38E+00	4.62E+00	1.58E+01		4.66E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Ruthenium-106	6.95E-01	4.71E+00	1.53E+01		4.71E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Ruthenium-106	1.06E+00	3.19E+00	1.08E+01		3.20E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Ruthenium-106	-5.76E+00	5.40E+00	1.63E+01		5.57E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Selenium-75	9.07E-02	6.66E-01	2.20E+00		6.66E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Selenium-75	4.20E-02	6.62E-01	2.16E+00		6.62E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Selenium-75	-7.22E-01	6.56E-01	2.16E+00		6.78E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Selenium-75	-8.37E-01	6.32E-01	2.05E+00		6.61E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Selenium-75	4.34E-01	5.51E-01	1.76E+00		5.61E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Selenium-75	2.02E-01	6.06E-01	2.02E+00		6.08E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Selenium-75	8.41E-02	6.06E-01	2.06E+00		6.06E-01	pCi/L	U

SW-3(554504001) - Surface Water	31-Aug-21	Selenium-75	5.59E-01	7.62E-01	2.58E+00		7.73E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Selenium-75	5.76E-01	7.55E-01	2.28E+00		7.67E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Selenium-75	3.41E-01	6.18E-01	2.14E+00		6.23E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Selenium-75	-3.88E-01	4.93E-01	1.53E+00		5.01E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Selenium-75	-4.57E-01	8.64E-01	2.51E+00		8.70E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Silver-108m	-1.18E+00	6.46E-01	1.59E+00		7.02E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Silver-108m	-9.76E-01	4.50E-01	1.34E+00		5.05E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Silver-108m	-5.37E-01	4.73E-01	1.49E+00		4.89E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Silver-108m	9.23E-01	4.05E-01	1.44E+00		4.59E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Silver-108m	-9.57E-01	3.09E-01	9.39E-01		3.82E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Silver-108m	-1.17E+00	7.32E-01	1.23E+00		7.82E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Silver-108m	-1.79E-01	6.35E-01	1.36E+00		6.36E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Silver-108m	-6.88E-01	4.75E-01	1.49E+00		5.01E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Silver-108m	4.57E-02	4.67E-01	1.50E+00		4.67E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Silver-108m	-1.44E-01	4.17E-01	1.37E+00		4.18E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Silver-108m	1.15E-01	2.97E-01	1.02E+00		2.98E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Silver-108m	-5.59E-01	5.57E-01	1.74E+00		5.72E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Silver-110m	-2.54E-01	6.87E-01	2.17E+00		6.89E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Silver-110m	4.79E-01	6.62E-01	2.28E+00		6.72E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Silver-110m	-1.33E+00	7.43E-01	2.29E+00		8.05E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Silver-110m	8.00E-01	6.54E-01	2.34E+00		6.81E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Silver-110m	3.38E-01	5.24E-01	1.74E+00		5.29E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Silver-110m	-3.92E-01	6.04E-01	1.98E+00		6.11E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Silver-110m	-3.02E-01	5.91E-01	1.97E+00		5.95E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Silver-110m	2.14E-01	7.25E-01	2.34E+00		7.27E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Silver-110m	1.14E+00	6.82E-01	2.38E+00		7.32E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Silver-110m	5.26E-01	7.01E-01	2.43E+00		7.12E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Silver-110m	-4.77E-01	4.91E-01	1.53E+00		5.04E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Silver-110m	-1.07E+00	8.10E-01	2.56E+00		8.47E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Strontium-89	-1.39E+00	6.65E-01	2.46E+00	1.00E+01	7.18E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Strontium-89	-7.00E-01	3.13E-01	1.31E+00	1.00E+01	4.42E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Strontium-89	-1.12E-01	5.36E-01	1.79E+00	1.00E+01	8.65E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Strontium-89	2.58E-01	3.24E-01	9.95E-01	1.00E+01	5.26E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Strontium-89	-1.65E+00	4.52E-01	1.88E+00	1.00E+01	6.12E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Strontium-89	7.37E-01	5.83E-01	1.74E+00	1.00E+01	6.45E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Strontium-89	-2.85E-01	6.44E-01	2.17E+00	1.00E+01	7.81E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Strontium-89	1.20E+00	6.86E-01	1.97E+00	1.00E+01	8.29E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Strontium-89	-2.79E-02	3.89E-01	1.29E+00	1.00E+01	6.47E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Strontium-89	-1.93E+00	6.58E-01	2.60E+00	1.00E+01	8.40E-01	pCi/L	U

SW-3(563685001) - Surface Water	30-Nov-21	Strontium-89	-3.28E-01	4.69E-01	1.62E+00	1.00E+01	7.92E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Strontium-89	-6.45E-01	4.31E-01	1.60E+00	1.00E+01	6.11E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Strontium-90	-7.40E-01	2.01E-01	1.01E+00	2.00E+00	2.93E-01	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Strontium-90	6.63E-01	2.77E-01	1.66E+00	2.00E+00	5.21E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Strontium-90	1.09E+00	4.43E-01	1.60E+00	2.00E+00	5.59E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Strontium-90	-1.89E-01	4.03E-01	1.77E+00	2.00E+00	5.28E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Strontium-90	-5.83E-01	3.60E-01	1.70E+00	2.00E+00	4.66E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Strontium-90	8.47E-01	3.06E-01	1.77E+00	2.00E+00	5.60E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Strontium-90	3.17E-01	3.93E-01	1.70E+00	2.00E+00	5.39E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Strontium-90	-4.96E-01	3.44E-01	1.58E+00	2.00E+00	4.49E-01	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Strontium-90	4.39E-01	3.63E-01	1.24E+00	2.00E+00	4.10E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Strontium-90	9.25E-01	4.20E-01	1.52E+00	2.00E+00	5.41E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Strontium-90	-6.53E-01	4.43E-01	1.68E+00	2.00E+00	4.76E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Strontium-90	4.71E-01	5.04E-01	1.79E+00	2.00E+00	5.73E-01	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Thorium-228	2.72E+00	1.81E+00	3.81E+00		1.92E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Thorium-228	3.38E+00	2.53E+00	3.60E+00		2.65E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Thorium-228	-7.07E-01	1.39E+00	3.72E+00		1.40E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Thorium-228	-2.52E-01	1.30E+00	3.54E+00		1.30E+00	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Thorium-228	4.27E+00	1.55E+00	2.04E+00		1.56E+00	pCi/L	
SW-3(548724005) - Surface Water	30-Jun-21	Thorium-228	1.79E+00	1.54E+00	3.21E+00		1.60E+00	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Thorium-228	-3.41E+00	1.51E+00	3.57E+00		1.70E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Thorium-228	-7.00E-01	1.79E+00	3.99E+00		1.79E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Thorium-228	2.39E+00	2.45E+00	4.07E+00		2.51E+00	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Thorium-228	-1.04E+00	1.57E+00	3.47E+00		1.59E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Thorium-228	-2.29E-01	1.22E+00	3.52E+00		1.22E+00	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Thorium-228	2.34E+00	2.93E+00	4.31E+00		2.98E+00	pCi/L	U
SW-3(543406005) - Surface Water	30-Mar-21	Tritium	7.68E+00	1.25E+02	4.09E+02	5.00E+02	1.25E+02	pCi/L	U
SW-3(552151005) - Surface Water	30-Jun-21	Tritium	3.47E+02	1.39E+02	4.16E+02	5.00E+02	1.44E+02	pCi/L	U
SW-3(560834001) - Surface Water	28-Sep-21	Tritium	1.94E+02	1.25E+02	3.88E+02	5.00E+02	1.26E+02	pCi/L	U
SW-3(568418001) - Surface Water	28-Dec-21	Tritium	5.75E+01	1.22E+02	3.97E+02	5.00E+02	1.23E+02	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Zinc-65	-7.77E-01	1.21E+00	3.93E+00	3.00E+01	1.23E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Zinc-65	9.77E-01	1.16E+00	3.54E+00	3.00E+01	1.18E+00	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Zinc-65	3.16E-01	1.07E+00	3.12E+00	3.00E+01	1.08E+00	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Zinc-65	-1.19E-01	9.64E-01	3.20E+00	3.00E+01	9.65E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Zinc-65	4.73E-01	8.08E-01	2.82E+00	3.00E+01	8.15E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Zinc-65	-4.01E-01	9.12E-01	2.97E+00	3.00E+01	9.17E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Zinc-65	8.36E-02	9.38E-01	3.15E+00	3.00E+01	9.38E-01	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Zinc-65	1.86E+00	1.22E+00	4.00E+00	3.00E+01	1.30E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Zinc-65	1.09E+00	1.02E+00	3.44E+00	3.00E+01	1.05E+00	pCi/L	U

SW-3(560208001) - Surface Water	26-Oct-21	Zinc-65	-1.99E+00	1.29E+00	3.35E+00	3.00E+01	1.37E+00	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Zinc-65	3.14E-01	7.60E-01	2.49E+00	3.00E+01	7.63E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Zinc-65	1.28E+00	1.13E+00	3.99E+00	3.00E+01	1.17E+00	pCi/L	U
SW-3(533330005) - Surface Water	26-Jan-21	Zirconium-95	-1.08E+00	1.00E+00	3.12E+00	1.50E+01	1.03E+00	pCi/L	U
SW-3(535691005) - Surface Water	23-Feb-21	Zirconium-95	2.74E-01	9.14E-01	3.11E+00	1.50E+01	9.16E-01	pCi/L	U
SW-3(539721005) - Surface Water	30-Mar-21	Zirconium-95	5.35E-01	9.05E-01	3.10E+00	1.50E+01	9.13E-01	pCi/L	U
SW-3(542322005) - Surface Water	27-Apr-21	Zirconium-95	1.14E+00	8.51E-01	2.91E+00	1.50E+01	8.92E-01	pCi/L	U
SW-3(545938005) - Surface Water	25-May-21	Zirconium-95	-3.36E-01	7.20E-01	2.30E+00	1.50E+01	7.25E-01	pCi/L	U
SW-3(548724005) - Surface Water	30-Jun-21	Zirconium-95	-3.63E-01	8.49E-01	2.84E+00	1.50E+01	8.54E-01	pCi/L	U
SW-3(550834005) - Surface Water	27-Jul-21	Zirconium-95	1.81E+00	1.40E+00	2.68E+00	1.50E+01	1.46E+00	pCi/L	U
SW-3(554504001) - Surface Water	31-Aug-21	Zirconium-95	-3.27E-01	1.02E+00	3.23E+00	1.50E+01	1.02E+00	pCi/L	U
SW-3(557418001) - Surface Water	28-Sep-21	Zirconium-95	1.88E-01	9.55E-01	3.08E+00	1.50E+01	9.56E-01	pCi/L	U
SW-3(560208001) - Surface Water	26-Oct-21	Zirconium-95	-4.40E-01	9.04E-01	2.80E+00	1.50E+01	9.10E-01	pCi/L	U
SW-3(563685001) - Surface Water	30-Nov-21	Zirconium-95	-1.42E+00	6.37E-01	1.89E+00	1.50E+01	7.19E-01	pCi/L	U
SW-3(566004001) - Surface Water	28-Dec-21	Zirconium-95	-1.28E-01	1.05E+00	3.55E+00	1.50E+01	1.05E+00	pCi/L	U

SW-3QC

Surface Water

Sample Name	Date Collected	Nuclide	Result	1 Sigma Uncert	MDC	LLD	1 Sigma TPU	Units	Qual
SW-3QC(533330006) - Surface Water	26-Jan-21	Actinium-228	7.92E+00	3.42E+00	7.92E+00		4.56E+00	pCi/L	UI
SW-3QC(535691006) - Surface Water	23-Feb-21	Actinium-228	-4.02E+00	3.73E+00	6.79E+00		3.85E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Actinium-228	7.44E+00	4.37E+00	7.44E+00		4.91E+00	pCi/L	UI
SW-3QC(542322006) - Surface Water	27-Apr-21	Actinium-228	2.31E-01	4.30E+00	9.70E+00		4.30E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Actinium-228	5.24E-01	4.35E+00	6.90E+00		4.35E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Actinium-228	-3.10E-01	2.97E+00	6.10E+00		2.97E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Actinium-228	1.82E+00	4.24E+00	7.32E+00		4.26E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Actinium-228	-2.83E+00	3.75E+00	8.32E+00		3.81E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Actinium-228	7.01E+00	6.12E+00	7.87E+00		6.12E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Actinium-228	-6.12E+00	3.54E+00	6.95E+00		3.82E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Actinium-228	-1.19E+00	3.95E+00	6.58E+00		3.96E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Actinium-228	4.84E+00	4.32E+00	8.58E+00		4.47E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Antimony-124	-1.90E-01	1.32E+00	4.40E+00		1.32E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Antimony-124	9.32E-01	1.06E+00	3.65E+00		1.08E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Antimony-124	-1.05E+00	1.22E+00	3.70E+00		1.24E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Antimony-124	2.58E-01	1.29E+00	4.30E+00		1.29E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Antimony-124	-4.29E-02	1.15E+00	3.73E+00		1.15E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Antimony-124	1.49E-01	1.05E+00	3.51E+00		1.05E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Antimony-124	-1.24E+00	1.30E+00	4.03E+00		1.33E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Antimony-124	-8.33E-01	1.17E+00	3.63E+00		1.19E+00	pCi/L	U

SW-3QC(557418002) - Surface Water	28-Sep-21	Antimony-124	-2.58E-02	1.87E+00	6.01E+00		1.87E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Antimony-124	-1.03E+00	1.29E+00	3.97E+00		1.32E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Antimony-124	1.37E+00	1.18E+00	4.08E+00		1.22E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Antimony-124	-1.34E+00	1.28E+00	3.87E+00		1.32E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Antimony-125	2.34E+00	1.38E+00	4.42E+00		1.48E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Antimony-125	-2.82E-01	1.16E+00	3.83E+00		1.16E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Antimony-125	-3.16E-01	1.20E+00	3.99E+00		1.20E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Antimony-125	-3.89E-01	1.71E+00	5.72E+00		1.71E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Antimony-125	-1.37E+00	1.15E+00	3.61E+00		1.19E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Antimony-125	-2.51E-01	9.74E-01	3.31E+00		9.76E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Antimony-125	-2.98E+00	1.38E+00	4.38E+00		1.54E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Antimony-125	1.16E+00	1.47E+00	5.05E+00		1.49E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Antimony-125	-1.05E+00	1.62E+00	5.23E+00		1.64E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Antimony-125	-6.07E-01	1.39E+00	4.23E+00		1.40E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Antimony-125	-1.72E+00	1.21E+00	3.77E+00		1.28E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Antimony-125	1.55E+00	1.31E+00	4.65E+00		1.36E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Barium-140	4.97E+00	2.21E+00	7.79E+00	1.50E+01	2.50E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Barium-140	-5.82E-01	2.41E+00	7.85E+00	1.50E+01	2.41E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Barium-140	6.69E-01	2.45E+00	7.37E+00	1.50E+01	2.45E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Barium-140	6.16E+00	4.04E+00	1.30E+01	1.50E+01	4.29E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Barium-140	-2.97E+00	3.43E+00	1.06E+01	1.50E+01	3.50E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Barium-140	-8.30E+00	4.16E+00	8.96E+00	1.50E+01	4.59E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Barium-140	1.16E+00	2.86E+00	9.70E+00	1.50E+01	2.87E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Barium-140	3.67E+00	2.91E+00	1.01E+01	1.50E+01	3.03E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Barium-140	2.19E+00	3.46E+00	1.15E+01	1.50E+01	3.50E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Barium-140	1.46E+00	3.11E+00	1.02E+01	1.50E+01	3.13E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Barium-140	1.02E+01	8.12E+00	1.10E+01	1.50E+01	8.47E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Barium-140	-1.20E+00	2.75E+00	9.07E+00	1.50E+01	2.77E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Beryllium-7	-3.45E+00	4.38E+00	1.41E+01		4.45E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Beryllium-7	-5.30E-01	3.83E+00	1.26E+01		3.84E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Beryllium-7	-1.57E+00	3.98E+00	1.31E+01		4.00E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Beryllium-7	6.59E+00	5.80E+00	2.02E+01		6.00E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Beryllium-7	-6.89E+00	4.09E+00	1.25E+01		4.40E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Beryllium-7	-1.14E-01	3.42E+00	1.16E+01		3.42E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Beryllium-7	-8.01E-01	4.41E+00	1.48E+01		4.41E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Beryllium-7	-5.25E+00	4.46E+00	1.44E+01		4.63E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Beryllium-7	8.14E-01	5.24E+00	1.72E+01		5.24E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Beryllium-7	1.77E-01	4.53E+00	1.47E+01		4.53E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Beryllium-7	3.81E+00	4.28E+00	1.42E+01		4.37E+00	pCi/L	U

SW-3QC(566004002) - Surface Water	28-Dec-21	Beryllium-7	6.12E+00	4.29E+00	1.53E+01		4.52E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Cerium-141	1.33E+00	1.33E+00	2.59E+00		1.33E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Cerium-141	1.72E+00	1.34E+00	2.64E+00		1.34E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Cerium-141	-1.72E+00	8.79E-01	2.70E+00		9.67E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Cerium-141	-5.96E+00	1.66E+00	4.02E+00		2.17E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Cerium-141	9.55E-01	9.04E-01	2.71E+00		9.31E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Cerium-141	-1.90E+00	7.56E-01	2.36E+00		8.77E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Cerium-141	-2.74E-01	1.03E+00	3.33E+00		1.03E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Cerium-141	1.91E-01	1.12E+00	3.36E+00		1.12E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Cerium-141	-2.09E-01	9.42E-01	2.93E+00		9.43E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Cerium-141	-1.75E+00	1.27E+00	3.06E+00		1.34E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Cerium-141	5.30E-01	1.73E+00	3.10E+00		1.73E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Cerium-141	2.98E+00	1.93E+00	2.98E+00		1.94E+00	pCi/L	UI
SW-3QC(533330006) - Surface Water	26-Jan-21	Cerium-144	-1.62E+00	3.24E+00	1.04E+01		3.26E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Cerium-144	7.57E+00	3.21E+00	1.07E+01		3.66E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Cerium-144	5.36E-02	3.21E+00	1.04E+01		3.21E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Cerium-144	3.85E+00	4.56E+00	1.51E+01		4.65E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Cerium-144	-3.05E+00	2.68E+00	8.39E+00		2.78E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Cerium-144	-3.15E+00	2.46E+00	7.94E+00		2.57E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Cerium-144	3.43E+00	3.51E+00	1.17E+01		3.60E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Cerium-144	-2.26E+00	3.90E+00	1.25E+01		3.94E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Cerium-144	3.77E+00	3.15E+00	1.01E+01		3.27E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Cerium-144	2.72E+00	3.33E+00	1.14E+01		3.39E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Cerium-144	1.70E+00	3.07E+00	1.05E+01		3.10E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Cerium-144	-3.54E+00	3.46E+00	1.11E+01		3.56E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Cesium-134	-1.46E+00	6.02E-01	1.68E+00	1.50E+01	6.92E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Cesium-134	8.43E-01	4.68E-01	1.62E+00	1.50E+01	5.08E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Cesium-134	7.93E-01	5.00E-01	1.74E+00	1.50E+01	5.33E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Cesium-134	-2.98E-01	6.59E-01	2.07E+00	1.50E+01	6.63E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Cesium-134	6.71E-01	4.69E-01	1.62E+00	1.50E+01	4.95E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Cesium-134	8.58E-01	6.05E-01	1.43E+00	1.50E+01	6.37E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Cesium-134	-1.88E-01	5.75E-01	1.84E+00	1.50E+01	5.76E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Cesium-134	-7.45E-01	5.62E-01	1.70E+00	1.50E+01	5.88E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Cesium-134	1.67E+00	1.09E+00	2.57E+00	1.50E+01	1.16E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Cesium-134	-8.40E-01	6.37E-01	1.78E+00	1.50E+01	6.67E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Cesium-134	4.99E-01	4.66E-01	1.63E+00	1.50E+01	4.81E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Cesium-134	-3.28E-01	5.49E-01	1.73E+00	1.50E+01	5.55E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Cesium-137	4.74E-01	5.46E-01	1.82E+00	1.80E+01	5.57E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Cesium-137	-5.88E-02	5.12E-01	1.58E+00	1.80E+01	5.13E-01	pCi/L	U

SW-3QC(539721006) - Surface Water	30-Mar-21	Cesium-137	1.65E+00	9.62E-01	1.65E+00	1.80E+01	9.66E-01	pCi/L	UI
SW-3QC(542322006) - Surface Water	27-Apr-21	Cesium-137	1.66E-01	6.46E-01	2.14E+00	1.80E+01	6.47E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Cesium-137	-1.37E+00	7.44E-01	1.52E+00	1.80E+01	8.09E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Cesium-137	-5.69E-02	3.95E-01	1.31E+00	1.80E+01	3.95E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Cesium-137	1.94E-01	5.00E-01	1.67E+00	1.80E+01	5.02E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Cesium-137	-5.33E-01	5.36E-01	1.68E+00	1.80E+01	5.51E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Cesium-137	4.27E-02	1.28E+00	2.34E+00	1.80E+01	1.28E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Cesium-137	-1.46E+00	7.84E-01	1.61E+00	1.80E+01	8.55E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Cesium-137	-2.65E-01	4.79E-01	1.49E+00	1.80E+01	4.83E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Cesium-137	-1.02E-01	4.94E-01	1.62E+00	1.80E+01	4.94E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Chromium-51	4.47E+00	4.21E+00	1.47E+01		4.34E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Chromium-51	1.22E-01	4.56E+00	1.54E+01		4.56E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Chromium-51	-3.64E+00	4.19E+00	1.40E+01		4.28E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Chromium-51	6.62E+00	7.38E+00	2.35E+01		7.54E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Chromium-51	1.45E+01	4.73E+00	1.67E+01		5.82E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Chromium-51	-3.17E+00	4.17E+00	1.28E+01		4.24E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Chromium-51	-6.95E+00	5.79E+00	1.74E+01		6.02E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Chromium-51	9.41E-01	5.20E+00	1.79E+01		5.21E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Chromium-51	-6.62E+00	5.55E+00	1.80E+01		5.77E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Chromium-51	1.06E+00	5.01E+00	1.66E+01		5.02E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Chromium-51	-4.10E+00	5.32E+00	1.72E+01		5.41E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Chromium-51	5.10E+00	5.47E+00	1.64E+01		5.60E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Cobalt-57	5.27E-01	4.26E-01	1.43E+00		4.44E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Cobalt-57	-4.51E-01	4.21E-01	1.31E+00		4.34E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Cobalt-57	-2.93E-01	4.22E-01	1.35E+00		4.28E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Cobalt-57	-4.86E-01	6.23E-01	1.99E+00		6.33E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Cobalt-57	5.00E-01	3.55E-01	1.17E+00		3.73E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Cobalt-57	4.93E-01	3.28E-01	1.12E+00		3.48E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Cobalt-57	1.56E-01	4.73E-01	1.56E+00		4.75E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Cobalt-57	4.33E-01	5.07E-01	1.68E+00		5.17E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Cobalt-57	4.96E-01	4.20E-01	1.36E+00		4.36E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Cobalt-57	-2.11E-01	4.59E-01	1.55E+00		4.62E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Cobalt-57	-6.23E-02	4.16E-01	1.41E+00		4.17E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Cobalt-57	-3.73E-01	5.95E-01	1.46E+00		6.01E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Cobalt-58	4.75E-02	5.30E-01	1.69E+00	1.50E+01	5.30E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Cobalt-58	6.75E-01	4.33E-01	1.49E+00	1.50E+01	4.61E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Cobalt-58	-4.99E-01	4.76E-01	1.44E+00	1.50E+01	4.90E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Cobalt-58	4.39E-01	6.96E-01	2.22E+00	1.50E+01	7.04E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Cobalt-58	2.22E-01	4.59E-01	1.54E+00	1.50E+01	4.62E-01	pCi/L	U

SW-3QC(548724006) - Surface Water	30-Jun-21	Cobalt-58	2.37E-01	3.99E-01	1.34E+00	1.50E+01	4.03E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Cobalt-58	-6.38E-02	4.89E-01	1.58E+00	1.50E+01	4.89E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Cobalt-58	-2.12E-01	5.82E-01	1.85E+00	1.50E+01	5.84E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Cobalt-58	2.01E+00	7.40E-01	2.40E+00	1.50E+01	8.75E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Cobalt-58	2.06E-01	4.98E-01	1.71E+00	1.50E+01	5.00E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Cobalt-58	2.60E-01	4.71E-01	1.62E+00	1.50E+01	4.74E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Cobalt-58	-5.80E-01	5.67E-01	1.75E+00	1.50E+01	5.83E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Cobalt-60	6.05E-01	5.17E-01	1.81E+00	1.50E+01	5.37E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Cobalt-60	-4.53E-01	4.79E-01	1.51E+00	1.50E+01	4.91E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Cobalt-60	2.78E-02	5.96E-01	1.75E+00	1.50E+01	5.96E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Cobalt-60	-4.89E-01	6.49E-01	2.06E+00	1.50E+01	6.59E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Cobalt-60	3.47E-01	4.74E-01	1.63E+00	1.50E+01	4.81E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Cobalt-60	6.17E-01	4.24E-01	1.53E+00	1.50E+01	4.48E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Cobalt-60	2.68E-01	5.10E-01	1.76E+00	1.50E+01	5.14E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Cobalt-60	-9.61E-02	5.27E-01	1.74E+00	1.50E+01	5.28E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Cobalt-60	9.65E-03	6.93E-01	2.27E+00	1.50E+01	6.93E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Cobalt-60	-5.95E-02	5.39E-01	1.76E+00	1.50E+01	5.39E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Cobalt-60	-9.82E-01	5.69E-01	1.45E+00	1.50E+01	6.14E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Cobalt-60	1.01E+00	5.98E-01	2.21E+00	1.50E+01	6.43E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Iodine-131	-4.51E-01	6.30E-01	2.08E+00		6.38E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Iodine-131	-3.81E-01	9.62E-01	3.20E+00		9.66E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Iodine-131	-2.65E-01	9.39E-01	2.84E+00		9.41E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Iodine-131	-1.83E+00	1.42E+00	4.62E+00		1.48E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Iodine-131	-4.86E-01	1.58E+00	5.17E+00		1.59E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Iodine-131	-1.37E+00	1.32E+00	3.63E+00		1.36E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Iodine-131	4.07E-01	1.16E+00	4.02E+00		1.17E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Iodine-131	-2.11E-01	1.14E+00	3.85E+00		1.14E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Iodine-131	-2.66E-01	1.19E+00	3.92E+00		1.19E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Iodine-131	-1.36E+00	1.26E+00	4.01E+00		1.30E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Iodine-131	-1.10E+00	1.55E+00	4.97E+00		1.57E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Iodine-131	9.89E-01	1.02E+00	3.61E+00		1.05E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Iron-59	1.63E+00	1.17E+00	3.73E+00	3.00E+01	1.24E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Iron-59	-8.19E-01	8.75E-01	2.82E+00	3.00E+01	8.97E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Iron-59	5.70E-01	1.03E+00	3.56E+00	3.00E+01	1.04E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Iron-59	4.20E+00	4.67E+00	4.20E+00	3.00E+01	5.63E+00	pCi/L	UI
SW-3QC(545938006) - Surface Water	25-May-21	Iron-59	7.94E-01	1.09E+00	3.60E+00	3.00E+01	1.11E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Iron-59	4.06E-01	1.06E+00	3.09E+00	3.00E+01	1.06E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Iron-59	-1.33E+00	1.07E+00	3.14E+00	3.00E+01	1.11E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Iron-59	6.80E-01	1.08E+00	3.75E+00	3.00E+01	1.09E+00	pCi/L	U

SW-3QC(557418002) - Surface Water	28-Sep-21	Iron-59	-1.07E+00	1.60E+00	5.17E+00	3.00E+01	1.62E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Iron-59	2.04E+00	1.13E+00	4.01E+00	3.00E+01	1.22E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Iron-59	9.82E-01	1.06E+00	3.64E+00	3.00E+01	1.08E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Iron-59	-1.43E+00	1.13E+00	3.27E+00	3.00E+01	1.18E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Lanthanum-140	-1.73E+00	8.13E-01	2.23E+00	1.50E+01	9.10E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Lanthanum-140	-1.81E+00	8.01E-01	2.21E+00	1.50E+01	9.07E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Lanthanum-140	-7.92E-01	8.34E-01	2.55E+00	1.50E+01	8.55E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Lanthanum-140	3.09E-01	1.36E+00	4.53E+00	1.50E+01	1.36E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Lanthanum-140	5.59E-01	1.24E+00	3.62E+00	1.50E+01	1.25E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Lanthanum-140	-1.23E+00	8.89E-01	2.70E+00	1.50E+01	9.35E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Lanthanum-140	-1.11E+00	1.09E+00	3.39E+00	1.50E+01	1.12E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Lanthanum-140	7.16E-01	1.11E+00	3.78E+00	1.50E+01	1.12E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Lanthanum-140	1.96E+00	1.36E+00	4.76E+00	1.50E+01	1.44E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Lanthanum-140	-6.07E-01	1.07E+00	3.35E+00	1.50E+01	1.07E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Lanthanum-140	2.12E+00	1.48E+00	4.58E+00	1.50E+01	1.56E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Lanthanum-140	-9.61E-01	9.28E-01	2.83E+00	1.50E+01	9.55E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Manganese-54	-3.59E-02	5.11E-01	1.73E+00	1.50E+01	5.12E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Manganese-54	-1.85E-01	4.51E-01	1.42E+00	1.50E+01	4.53E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Manganese-54	-7.26E-01	4.97E-01	1.47E+00	1.50E+01	5.25E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Manganese-54	-7.71E-01	6.19E-01	1.85E+00	1.50E+01	6.44E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Manganese-54	1.71E-01	3.84E-01	1.29E+00	1.50E+01	3.86E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Manganese-54	6.86E-01	5.20E-01	1.14E+00	1.50E+01	5.20E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Manganese-54	-6.70E-02	5.09E-01	1.64E+00	1.50E+01	5.09E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Manganese-54	1.98E-03	5.10E-01	1.64E+00	1.50E+01	5.10E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Manganese-54	-2.18E-01	5.80E-01	1.93E+00	1.50E+01	5.82E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Manganese-54	9.00E-01	7.92E-01	1.66E+00	1.50E+01	7.93E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Manganese-54	1.03E-01	4.55E-01	1.55E+00	1.50E+01	4.55E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Manganese-54	4.24E-01	5.01E-01	1.71E+00	1.50E+01	5.11E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Niobium-95	-8.58E-01	8.08E-01	1.66E+00	1.50E+01	8.32E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Niobium-95	8.28E-01	4.76E-01	1.64E+00	1.50E+01	5.14E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Niobium-95	-2.54E-01	4.88E-01	1.35E+00	1.50E+01	4.92E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Niobium-95	-3.52E-01	6.79E-01	2.14E+00	1.50E+01	6.84E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Niobium-95	1.16E-01	4.90E-01	1.64E+00	1.50E+01	4.90E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Niobium-95	1.28E+00	8.21E-01	1.28E+00	1.50E+01	8.23E-01	pCi/L	UI
SW-3QC(550834006) - Surface Water	27-Jul-21	Niobium-95	5.62E-01	5.26E-01	1.63E+00	1.50E+01	5.42E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Niobium-95	-2.62E-01	5.14E-01	1.62E+00	1.50E+01	5.17E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Niobium-95	1.10E+00	6.86E-01	2.45E+00	1.50E+01	7.33E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Niobium-95	3.39E-01	5.41E-01	1.87E+00	1.50E+01	5.47E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Niobium-95	4.06E-01	4.75E-01	1.65E+00	1.50E+01	4.84E-01	pCi/L	U

SW-3QC(566004002) - Surface Water	28-Dec-21	Niobium-95	-1.04E+00	5.06E-01	1.46E+00	1.50E+01	5.61E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Potassium-40	-2.15E+01	1.37E+01	2.59E+01		1.46E+01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Potassium-40	4.23E+00	1.22E+01	1.46E+01		1.22E+01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Potassium-40	-1.21E+01	1.01E+01	2.53E+01		1.05E+01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Potassium-40	6.17E+00	1.25E+01	1.86E+01		1.25E+01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Potassium-40	8.22E+00	1.53E+01	1.38E+01		1.53E+01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Potassium-40	-4.18E+00	1.07E+01	2.29E+01		1.07E+01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Potassium-40	-1.09E+01	1.15E+01	2.92E+01		1.18E+01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Potassium-40	-1.91E+01	1.18E+01	3.09E+01		1.26E+01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Potassium-40	-5.64E+00	1.62E+01	3.30E+01		1.62E+01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Potassium-40	-4.32E+01	1.25E+01	2.18E+01		1.61E+01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Potassium-40	-1.16E+01	8.85E+00	1.78E+01		9.26E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Potassium-40	1.34E+01	1.45E+01	1.70E+01		1.45E+01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Ruthenium-103	-3.81E-01	4.99E-01	1.60E+00		5.07E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Ruthenium-103	-3.95E-01	5.05E-01	1.44E+00		5.14E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Ruthenium-103	4.72E-01	5.36E-01	1.67E+00		5.48E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Ruthenium-103	-6.40E-01	6.90E-01	2.22E+00		7.06E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Ruthenium-103	-2.16E-02	5.54E-01	1.58E+00		5.54E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Ruthenium-103	-3.27E-01	4.29E-01	1.26E+00		4.36E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Ruthenium-103	3.24E-01	5.15E-01	1.77E+00		5.21E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Ruthenium-103	4.39E-01	5.84E-01	1.81E+00		5.93E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Ruthenium-103	2.23E-01	7.26E-01	2.14E+00		7.28E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Ruthenium-103	-2.17E-02	6.16E-01	1.77E+00		6.16E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Ruthenium-103	-5.26E-01	6.27E-01	1.74E+00		6.39E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Ruthenium-103	-6.70E-01	5.36E-01	1.72E+00		5.58E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Ruthenium-106	1.49E+00	4.76E+00	1.56E+01		4.77E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Ruthenium-106	-3.05E+00	3.75E+00	1.18E+01		3.82E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Ruthenium-106	2.00E+00	4.24E+00	1.42E+01		4.27E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Ruthenium-106	-2.81E+00	5.56E+00	1.78E+01		5.59E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Ruthenium-106	2.58E+00	3.86E+00	1.33E+01		3.90E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Ruthenium-106	-1.89E+00	3.37E+00	1.10E+01		3.40E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Ruthenium-106	3.27E+00	4.11E+00	1.40E+01		4.18E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Ruthenium-106	-6.87E+00	4.98E+00	1.56E+01		5.24E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Ruthenium-106	-1.62E+00	5.76E+00	1.83E+01		5.77E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Ruthenium-106	-6.73E+00	4.81E+00	1.46E+01		5.07E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Ruthenium-106	1.46E+00	4.66E+00	1.34E+01		4.67E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Ruthenium-106	4.45E-01	4.73E+00	1.58E+01		4.73E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Selenium-75	5.34E-01	7.05E-01	2.24E+00		7.16E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Selenium-75	1.93E-01	5.99E-01	2.06E+00		6.01E-01	pCi/L	U

SW-3QC(539721006) - Surface Water	30-Mar-21	Selenium-75	2.32E-01	7.00E-01	2.21E+00		7.03E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Selenium-75	4.27E-01	9.43E-01	2.99E+00		9.48E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Selenium-75	4.52E-01	5.78E-01	1.98E+00		5.88E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Selenium-75	-1.65E-01	5.34E-01	1.69E+00		5.35E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Selenium-75	-4.95E-01	7.31E-01	2.26E+00		7.41E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Selenium-75	2.06E-01	7.57E-01	2.38E+00		7.59E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Selenium-75	-2.73E-01	6.76E-01	2.26E+00		6.79E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Selenium-75	-4.09E-01	6.82E-01	2.23E+00		6.88E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Selenium-75	1.02E+00	6.04E-01	2.07E+00		6.49E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Selenium-75	1.21E+00	1.23E+00	2.49E+00		1.26E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Silver-108m	-7.32E-01	5.00E-01	1.40E+00		5.28E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Silver-108m	1.91E-02	3.76E-01	1.25E+00		3.76E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Silver-108m	-5.79E-01	4.15E-01	1.33E+00		4.36E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Silver-108m	-6.54E-01	5.83E-01	1.89E+00		6.03E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Silver-108m	-4.33E-03	3.68E-01	1.19E+00		3.68E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Silver-108m	1.62E-01	3.30E-01	1.14E+00		3.32E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Silver-108m	1.11E-01	4.18E-01	1.43E+00		4.19E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Silver-108m	1.90E-01	4.66E-01	1.59E+00		4.68E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Silver-108m	2.68E-02	5.27E-01	1.73E+00		5.27E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Silver-108m	1.94E-01	4.40E-01	1.45E+00		4.43E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Silver-108m	-9.67E-02	4.11E-01	1.32E+00		4.12E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Silver-108m	7.06E-01	4.44E-01	1.59E+00		4.74E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Silver-110m	5.97E-01	7.15E-01	2.24E+00		7.29E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Silver-110m	5.94E-01	6.57E-01	2.17E+00		6.72E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Silver-110m	5.26E-01	6.65E-01	2.21E+00		6.77E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Silver-110m	7.00E-01	8.23E-01	2.77E+00		8.39E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Silver-110m	1.50E-01	5.92E-01	1.89E+00		5.93E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Silver-110m	5.50E-01	5.05E-01	1.73E+00		5.21E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Silver-110m	-4.65E-01	7.60E-01	2.10E+00		7.67E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Silver-110m	4.53E-01	6.61E-01	2.20E+00		6.70E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Silver-110m	-1.24E+00	8.91E-01	2.84E+00		9.38E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Silver-110m	2.08E-01	6.47E-01	2.20E+00		6.49E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Silver-110m	5.34E-02	5.78E-01	1.95E+00		5.78E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Silver-110m	-7.45E-01	7.00E-01	2.12E+00		7.22E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Strontium-89	1.75E+00	7.88E-01	2.25E+00	1.00E+01	8.36E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Strontium-89	-3.10E-01	4.99E-01	1.73E+00	1.00E+01	5.67E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Strontium-89	-9.02E-01	3.51E-01	1.45E+00	1.00E+01	6.53E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Strontium-89	-1.11E-01	2.44E-01	8.39E-01	1.00E+01	5.42E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Strontium-89	4.37E-01	6.03E-01	1.89E+00	1.00E+01	7.81E-01	pCi/L	U

SW-3QC(548724006) - Surface Water	30-Jun-21	Strontium-89	-3.19E-01	5.98E-01	2.02E+00	1.00E+01	6.40E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Strontium-89	-3.83E-01	7.15E-01	2.43E+00	1.00E+01	8.35E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Strontium-89	-1.52E+00	5.58E-01	2.15E+00	1.00E+01	7.44E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Strontium-89	4.59E-01	6.37E-01	1.99E+00	1.00E+01	7.34E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Strontium-89	-2.23E-01	5.54E-01	1.86E+00	1.00E+01	6.51E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Strontium-89	9.42E-01	5.07E-01	1.44E+00	1.00E+01	7.22E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Strontium-89	-7.29E-01	2.82E-01	1.17E+00	1.00E+01	5.42E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Strontium-90	-2.64E-01	1.90E-01	9.30E-01	2.00E+00	2.77E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Strontium-90	4.77E-01	2.71E-01	1.63E+00	2.00E+00	5.07E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Strontium-90	5.44E-01	4.43E-01	1.70E+00	2.00E+00	5.53E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Strontium-90	2.73E-01	4.15E-01	1.74E+00	2.00E+00	5.44E-01	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Strontium-90	7.68E-01	4.20E-01	1.65E+00	2.00E+00	5.51E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Strontium-90	1.06E+00	2.17E-01	1.23E+00	2.00E+00	4.05E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Strontium-90	6.17E-01	4.05E-01	1.65E+00	2.00E+00	5.56E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Strontium-90	1.33E+00	4.52E-01	1.71E+00	2.00E+00	6.03E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Strontium-90	-2.55E-02	4.15E-01	1.55E+00	2.00E+00	4.69E-01	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Strontium-90	-1.84E+00	2.81E-01	1.54E+00	2.00E+00	3.57E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Strontium-90	-4.19E-01	4.57E-01	1.70E+00	2.00E+00	4.90E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Strontium-90	7.24E-01	4.74E-01	1.53E+00	2.00E+00	5.22E-01	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Thorium-228	1.67E+00	1.86E+00	3.69E+00		1.90E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Thorium-228	1.36E+00	2.08E+00	3.66E+00		2.10E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Thorium-228	-3.24E-01	1.44E+00	3.61E+00		1.44E+00	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Thorium-228	1.61E+00	2.63E+00	4.73E+00		2.66E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Thorium-228	3.41E+00	1.76E+00	3.41E+00		2.22E+00	pCi/L	UI
SW-3QC(548724006) - Surface Water	30-Jun-21	Thorium-228	1.95E+00	1.54E+00	2.89E+00		1.61E+00	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Thorium-228	3.78E-02	1.91E+00	4.96E+00		1.91E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Thorium-228	6.69E-01	1.72E+00	3.85E+00		1.73E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Thorium-228	2.04E-01	1.99E+00	3.94E+00		1.99E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Thorium-228	6.45E-01	1.79E+00	3.32E+00		1.80E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Thorium-228	-2.02E+00	1.61E+00	3.27E+00		1.68E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Thorium-228	-5.88E-01	1.61E+00	3.86E+00		1.62E+00	pCi/L	U
SW-3QC(543406006) - Surface Water	30-Mar-21	Tritium	-1.71E+02	1.18E+02	4.08E+02	5.00E+02	1.18E+02	pCi/L	U
SW-3QC(552151006) - Surface Water	30-Jun-21	Tritium	4.73E+01	1.23E+02	3.98E+02	5.00E+02	1.23E+02	pCi/L	U
SW-3QC(560834002) - Surface Water	28-Sep-21	Tritium	-7.35E+00	1.20E+02	3.97E+02	5.00E+02	1.20E+02	pCi/L	U
SW-3QC(568418002) - Surface Water	28-Dec-21	Tritium	-7.12E+01	1.14E+02	3.83E+02	5.00E+02	1.14E+02	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Zinc-65	2.75E-01	1.06E+00	3.56E+00	3.00E+01	1.06E+00	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Zinc-65	-2.30E+00	1.37E+00	3.06E+00	3.00E+01	1.47E+00	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Zinc-65	-2.59E-02	8.69E-01	2.92E+00	3.00E+01	8.69E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Zinc-65	-8.98E-01	1.51E+00	4.30E+00	3.00E+01	1.52E+00	pCi/L	U

SW-3QC(545938006) - Surface Water	25-May-21	Zinc-65	2.05E-01	1.12E+00	3.16E+00	3.00E+01	1.12E+00	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Zinc-65	-3.88E-01	8.08E-01	2.51E+00	3.00E+01	8.13E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Zinc-65	-6.63E-01	9.97E-01	3.03E+00	3.00E+01	1.01E+00	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Zinc-65	-2.22E+00	1.09E+00	3.16E+00	3.00E+01	1.21E+00	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Zinc-65	1.15E+00	1.42E+00	4.38E+00	3.00E+01	1.45E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Zinc-65	-4.35E-01	1.11E+00	3.64E+00	3.00E+01	1.12E+00	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Zinc-65	1.06E+00	1.00E+00	3.46E+00	3.00E+01	1.03E+00	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Zinc-65	6.90E-01	1.15E+00	3.44E+00	3.00E+01	1.16E+00	pCi/L	U
SW-3QC(533330006) - Surface Water	26-Jan-21	Zirconium-95	4.36E-01	9.11E-01	2.97E+00	1.50E+01	9.17E-01	pCi/L	U
SW-3QC(535691006) - Surface Water	23-Feb-21	Zirconium-95	-1.16E-01	8.94E-01	2.86E+00	1.50E+01	8.94E-01	pCi/L	U
SW-3QC(539721006) - Surface Water	30-Mar-21	Zirconium-95	1.16E+00	7.74E-01	2.70E+00	1.50E+01	8.20E-01	pCi/L	U
SW-3QC(542322006) - Surface Water	27-Apr-21	Zirconium-95	2.35E-02	1.10E+00	3.56E+00	1.50E+01	1.10E+00	pCi/L	U
SW-3QC(545938006) - Surface Water	25-May-21	Zirconium-95	-2.36E+00	8.12E-01	2.43E+00	1.50E+01	9.82E-01	pCi/L	U
SW-3QC(548724006) - Surface Water	30-Jun-21	Zirconium-95	-3.96E-01	7.33E-01	2.36E+00	1.50E+01	7.39E-01	pCi/L	U
SW-3QC(550834006) - Surface Water	27-Jul-21	Zirconium-95	2.88E-01	9.65E-01	3.19E+00	1.50E+01	9.67E-01	pCi/L	U
SW-3QC(554504002) - Surface Water	31-Aug-21	Zirconium-95	-2.33E-01	9.11E-01	2.92E+00	1.50E+01	9.13E-01	pCi/L	U
SW-3QC(557418002) - Surface Water	28-Sep-21	Zirconium-95	2.09E-01	1.23E+00	3.91E+00	1.50E+01	1.23E+00	pCi/L	U
SW-3QC(560208002) - Surface Water	26-Oct-21	Zirconium-95	8.04E-02	8.82E-01	3.00E+00	1.50E+01	8.82E-01	pCi/L	U
SW-3QC(563685002) - Surface Water	30-Nov-21	Zirconium-95	8.69E-01	8.40E-01	2.94E+00	1.50E+01	8.64E-01	pCi/L	U
SW-3QC(566004002) - Surface Water	28-Dec-21	Zirconium-95	-8.23E-01	9.91E-01	3.11E+00	1.50E+01	1.01E+00	pCi/L	U

2021 Environmental Monitoring TLDs: Indicator (site boundary to 8 miles); Control (greater than 9 miles); and Onsite (up to 0.4 miles from plant)

ID	TYPE	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed
T1	Indicator	1	11.04	0.74	14-Jan-21	2	13.75	0.93	26-Apr-21	3	13.21	0.77	14-Jul-21	4	11.19	0.46	05-Oct-21
T2	Indicator	1	10.88	0.70	14-Jan-21	2	13.35	0.74	26-Apr-21	3	13.01	0.64	14-Jul-21	4	12.03	0.63	05-Oct-21
T3	Indicator	1	10.61	0.74	14-Jan-21	2	11.97	0.93	26-Apr-21	3	12.78	0.72	14-Jul-21	4	11.54	0.46	05-Oct-21
T4	Indicator	1	12.34	0.68	14-Jan-21	2	14.15	0.70	26-Apr-21	3	14.70	0.67	14-Jul-21	4	12.59	0.52	05-Oct-21
T5	Indicator	1	13.44	0.87	14-Jan-21	2	15.91	0.79	26-Apr-21	3	16.82	1.28	14-Jul-21	4	14.42	0.61	05-Oct-21
T6	Indicator	1	12.11	0.78	14-Jan-21	2	13.40	0.66	26-Apr-21	3	12.95	0.77	14-Jul-21	4	10.76	0.62	05-Oct-21
T7	Control	1	14.41	0.72	14-Jan-21	2	16.55	0.89	26-Apr-21	3	15.74	0.82	14-Jul-21	4	14.63	0.62	05-Oct-21
T8	Indicator	1	14.75	0.74	14-Jan-21	2	16.17	0.70	26-Apr-21	3	16.68	0.98	14-Jul-21	4	15.02	0.85	05-Oct-21
T9	Indicator	1	14.19	0.69	14-Jan-21	2	16.78	0.85	26-Apr-21	3	16.67	0.76	14-Jul-21	4	14.42	0.68	05-Oct-21
T10	Indicator	1	12.84	0.81	14-Jan-21	2	16.08	0.70	26-Apr-21	3	16.57	0.72	14-Jul-21	4	13.82	0.55	05-Oct-21
T11	Indicator	1	11.61	0.60	14-Jan-21	2	13.49	0.98	26-Apr-21	3	13.94	0.88	14-Jul-21	4	11.98	0.68	05-Oct-21
T12	Indicator	1	11.21	0.62	14-Jan-21	2	13.66	0.75	26-Apr-21	3	14.04	0.79	14-Jul-21	4	11.55	0.53	05-Oct-21
T13	Indicator	1	14.18	0.90	14-Jan-21	2	15.71	1.04	26-Apr-21	3	16.05	0.86	14-Jul-21	4	13.76	0.73	05-Oct-21
T14	Indicator	1	14.17	0.70	14-Jan-21	2	16.38	0.93	26-Apr-21	3	16.70	0.70	14-Jul-21	4	13.45	0.71	05-Oct-21
T15	Indicator	1	12.38	0.74	14-Jan-21	2	13.66	0.63	26-Apr-21	3	14.44	0.60	14-Jul-21	4	12.62	0.49	05-Oct-21
T16	Indicator	1	16.46	0.82	14-Jan-21	2	18.94	0.98	26-Apr-21	3	18.40	1.03	14-Jul-21	4	16.32	0.69	05-Oct-21
T17	Indicator	1	11.01	0.70	14-Jan-21	2	13.80	1.07	26-Apr-21	3	13.40	1.04	14-Jul-21	4	11.90	0.46	05-Oct-21
T18	Indicator	1	11.86	0.87	14-Jan-21	2	14.11	0.98	26-Apr-21	3	14.27	0.89	14-Jul-21	4	12.59	0.58	05-Oct-21
T19	Indicator	1	13.20	0.96	14-Jan-21	2	14.61	0.75	26-Apr-21	3	16.49	0.83	14-Jul-21	4	14.46	0.54	05-Oct-21
T20	Indicator	1	13.77	1.03	14-Jan-21	2	16.60	0.88	26-Apr-21	3	17.39	0.95	14-Jul-21	4	14.40	0.55	05-Oct-21
T21	Indicator	1	11.57	0.92	14-Jan-21	2	13.32	0.66	26-Apr-21	3	14.06	0.88	14-Jul-21	4	11.80	0.75	05-Oct-21
T22	Indicator	1	12.81	0.62	14-Jan-21	2	15.34	0.76	26-Apr-21	3	15.73	0.70	14-Jul-21	4	13.58	0.54	05-Oct-21
T23	Indicator	1	11.83	0.71	14-Jan-21	2	14.17	0.67	26-Apr-21	3	missing		14-Jul-21	4	12.70	0.51	05-Oct-21
T24	Indicator	1	11.89	0.60	14-Jan-21	2	13.68	0.84	26-Apr-21	3	14.22	0.84	14-Jul-21	4	12.41	0.82	05-Oct-21
T25	Indicator	1	15.65	0.86	14-Jan-21	2	17.65	0.69	26-Apr-21	3	18.70	0.72	14-Jul-21	4	15.80	0.61	05-Oct-21
T26	Indicator	1	14.74	0.70	14-Jan-21	2	16.28	0.82	26-Apr-21	3	17.33	0.88	14-Jul-21	4	15.28	0.67	05-Oct-21
T27	Indicator	1	10.66	0.74	14-Jan-21	2	13.52	0.68	26-Apr-21	3	13.21	0.67	14-Jul-21	4	11.39	0.60	05-Oct-21
T28	Control	1	12.22	0.85	14-Jan-21	2	13.62	0.59	26-Apr-21	3	14.02	0.66	14-Jul-21	4	11.92	0.50	05-Oct-21
T29	Control	1	11.90	0.60	14-Jan-21	2	14.31	0.68	26-Apr-21	3	14.41	1.21	14-Jul-21	4	11.90	0.77	05-Oct-21
T30	Indicator	1	12.28	1.03	14-Jan-21	2	12.76	0.78	26-Apr-21	3	13.31	1.02	14-Jul-21	4	11.84	0.47	05-Oct-21
T31	Control	1	12.36	0.69	14-Jan-21	2	15.39	0.79	26-Apr-21	3	14.95	0.66	14-Jul-21	4	13.47	1.28	05-Oct-21
T32	Control	1	13.77	0.69	14-Jan-21	2	15.98	0.85	26-Apr-21	3	15.83	0.70	14-Jul-21	4	13.22	0.67	05-Oct-21
T33	Control	1	11.92	0.59	14-Jan-21	2	14.08	0.74	26-Apr-21	3	14.06	0.69	14-Jul-21	4	11.88	0.67	05-Oct-21
T34	Control	1	11.38	0.67	14-Jan-21	2	13.78	1.01	26-Apr-21	3	13.78	1.00	14-Jul-21	4	11.96	0.71	05-Oct-21
T35	Indicator	1	12.34	0.69	14-Jan-21	2	14.13	0.84	26-Apr-21	3	14.60	0.68	14-Jul-21	4	12.67	0.69	05-Oct-21

2021 Environmental Monitoring TLDs: Indicator (site boundary to 8 miles); Control (greater than 9 miles); and Onsite (up to 0.4 miles from plant)

ID	TYPE	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed
T36	Control	1	12.62	0.63	14-Jan-21	2	14.40	0.67	26-Apr-21	3	15.27	1.04	14-Jul-21	4	13.09	0.68	05-Oct-21
T37	Control	1	11.56	0.58	14-Jan-21	2	12.71	0.85	26-Apr-21	3	14.26	1.04	14-Jul-21	4	11.92	0.69	05-Oct-21
T38	Indicator	1	13.85	0.74	14-Jan-21	2	16.37	0.78	26-Apr-21	3	17.22	0.86	14-Jul-21	4	15.11	0.56	05-Oct-21
T39	Onsite	1	18.07	1.36	14-Jan-21	2	18.44	1.34	26-Apr-21	3	19.82	1.05	14-Jul-21	4	15.82	1.16	05-Oct-21
T40	Onsite	1	15.97	0.83	14-Jan-21	2	16.24	0.69	26-Apr-21	3	17.45	0.70	14-Jul-21	4	15.44	0.68	05-Oct-21
T41	Onsite	1	26.28	1.07	14-Jan-21	2	26.32	2.00	26-Apr-21	3	28.66	1.12	14-Jul-21	4	23.79	1.36	05-Oct-21
T42	Onsite	1	27.74	1.61	14-Jan-21	2	24.56	1.90	26-Apr-21	3	28.14	1.77	14-Jul-21	4	23.93	1.73	05-Oct-21
T43	Onsite	1	30.63	1.50	14-Jan-21	2	27.69	1.21	26-Apr-21	3	32.27	1.91	14-Jul-21	4	27.17	1.63	05-Oct-21
T44	Onsite	1	28.29	1.61	14-Jan-21	2	26.11	1.11	26-Apr-21	3	29.88	1.05	14-Jul-21	4	27.47	1.14	05-Oct-21
T45	Onsite	1	20.25	0.99	14-Jan-21	2	20.02	1.17	26-Apr-21	3	22.04	1.25	14-Jul-21	4	19.70	0.85	05-Oct-21
T46	Onsite	1	17.15	0.83	14-Jan-21	2	16.45	1.08	26-Apr-21	3	18.53	1.32	14-Jul-21	4	15.59	0.71	05-Oct-21
T47	Onsite	1	30.41	1.99	14-Jan-21	2	27.43	1.50	26-Apr-21	3	30.06	1.06	14-Jul-21	4	26.48	1.44	05-Oct-21
T48	Onsite	1	22.72	0.96	14-Jan-21	2	21.60	1.03	26-Apr-21	3	23.48	1.09	14-Jul-21	4	19.80	0.81	05-Oct-21
T49	Indicator	1	16.86	1.16	14-Jan-21	2	17.99	0.76	26-Apr-21	3	18.74	0.81	14-Jul-21	4	15.35	1.01	05-Oct-21
T50	Indicator	1	14.02	0.65	14-Jan-21	2	15.76	0.68	26-Apr-21	3	15.65	0.73	14-Jul-21	4	14.78	0.64	05-Oct-21
T51	Onsite	1	9.65	0.61	14-Jan-21	2	11.07	0.52	26-Apr-21	3	11.48	0.67	14-Jul-21	4	9.90	0.63	05-Oct-21
T52	Onsite	1	11.81	0.64	14-Jan-21	2	13.44	0.92	26-Apr-21	3	13.29	0.61	14-Jul-21	4	11.80	0.60	05-Oct-21
T53	Onsite	1	15.05	0.91	14-Jan-21	2	15.84	0.86	26-Apr-21	3	17.18	0.78	14-Jul-21	4	14.62	0.58	05-Oct-21
T54	Onsite	1	11.63	0.61	14-Jan-21	2	13.49	0.79	26-Apr-21	3	13.56	1.00	14-Jul-21	4	11.72	0.46	05-Oct-21
T55	Indicator	1	13.68	0.80	14-Jan-21	2	16.61	1.03	26-Apr-21	3	16.65	0.77	14-Jul-21	4	13.71	0.84	05-Oct-21
T56	Indicator	1	13.27	0.87	14-Jan-21	2	15.30	0.92	26-Apr-21	3	14.86	0.90	14-Jul-21	4	13.66	0.75	05-Oct-21
T57	Indicator	1	14.68	1.28	14-Jan-21	2	17.41	0.73	26-Apr-21	3	17.70	1.12	14-Jul-21	4	15.06	0.65	05-Oct-21
T58	Indicator	1	12.12	1.00	14-Jan-21	2	14.43	0.70	26-Apr-21	3	14.72	0.71	14-Jul-21	4	12.40	0.52	05-Oct-21
T59	Indicator	1	11.57	0.69	14-Jan-21	2	14.49	0.75	26-Apr-21	3	13.97	0.77	14-Jul-21	4	12.34	0.76	05-Oct-21
T60	Indicator	1	14.15	0.83	14-Jan-21	2	16.55	1.05	26-Apr-21	3	15.39	0.64	14-Jul-21	4	14.02	0.62	05-Oct-21
T61	Control	1	14.65	0.69	14-Jan-21	2	16.51	0.88	26-Apr-21	3	16.99	0.69	14-Jul-21	4	13.99	0.99	05-Oct-21
T62	Control	1	14.46	0.69	14-Jan-21	2	17.37	1.01	26-Apr-21	3	16.63	0.77	14-Jul-21	4	14.69	0.87	05-Oct-21
T63	Control	1	12.20	0.73	14-Jan-21	2	14.54	0.76	26-Apr-21	3	16.24	0.94	14-Jul-21	4	12.79	0.63	05-Oct-21
T64	Onsite	1	19.75	0.90	14-Jan-21	2	20.78	1.05	26-Apr-21	3	22.37	1.02	14-Jul-21	4	18.40	0.85	05-Oct-21
T65	Onsite	1	33.79	1.37	14-Jan-21	2	31.03	1.62	26-Apr-21	3	32.79	2.28	14-Jul-21	4	25.55	0.88	05-Oct-21
T66	Onsite	1	38.62	2.42	14-Jan-21	2	31.72	1.57	26-Apr-21	3	38.09	2.08	14-Jul-21	4	31.34	1.34	05-Oct-21
T67	Onsite	1	12.04	0.76	14-Jan-21	2	12.79	0.85	26-Apr-21	3	13.88	0.98	14-Jul-21	4	11.20	0.47	05-Oct-21
T68	Indicator	1	15.76	0.73	14-Jan-21	2	17.15	0.86	26-Apr-21	3	17.96	1.35	14-Jul-21	4	15.47	0.64	05-Oct-21
T69	Indicator	1	14.39	0.84	14-Jan-21	2	15.84	0.66	26-Apr-21	3	18.23	1.22	14-Jul-21	4	14.23	0.66	05-Oct-21
T70	Indicator	1	13.50	0.64	14-Jan-21	2	14.93	0.69	26-Apr-21	3	15.24	0.66	14-Jul-21	4	13.43	0.63	05-Oct-21

2021 Environmental Monitoring TLDs: Indicator (site boundary to 8 miles); Control (greater than 9 miles); and Onsite (up to 0.4 miles from plant)

ID	TYPE	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed	Q	DOSE (mR/qtr)	+/- 1 S.D.	Date Placed
T71	Indicator	1	14.79	0.83	14-Jan-21	2	16.96	1.11	26-Apr-21	3	17.41	0.92	14-Jul-21	4	14.89	0.54	05-Oct-21
ISFSI-1	Onsite	1	89.64	3.95	14-Jan-21	2	88.48	3.62	26-Apr-21	3	81.72	3.15	14-Jul-21	4	69.25	3.60	05-Oct-21
ISFSI-2	Onsite	1	30.97	1.70	14-Jan-21	2	32.56	1.53	26-Apr-21	3	32.21	1.30	14-Jul-21	4	27.10	1.32	05-Oct-21
ISFSI-3	Onsite	1	42.61	1.77	14-Jan-21	2	44.28	1.61	26-Apr-21	3	43.68	1.91	14-Jul-21	4	37.60	1.29	05-Oct-21
ISFSI-4	Onsite	1	32.63	2.57	14-Jan-21	2	38.92	1.66	26-Apr-21	3	36.66	1.61	14-Jul-21	4	29.87	1.02	05-Oct-21
ISFSI-5	Onsite	1	114.48	4.24	14-Jan-21	2	111.10	3.52	26-Apr-21	3	90.31	3.17	14-Jul-21	4	68.23	2.38	05-Oct-21
ISFSI-6	Onsite	1	47.63	2.69	14-Jan-21	2	49.46	1.80	26-Apr-21	3	46.41	1.62	14-Jul-21	4	40.05	1.36	05-Oct-21
ISFSI-7	Onsite	1	120.41	5.28	14-Jan-21	2	116.49	3.80	26-Apr-21	3	115.73	3.75	14-Jul-21	4	108.16	3.26	05-Oct-21
ISFSI-8	Onsite	1	44.26	1.97	14-Jan-21	2	44.39	2.08	26-Apr-21	3	40.05	1.86	14-Jul-21	4	34.98	1.17	05-Oct-21

Appendix D

Environmental Program Exceptions

Environmental Program Exceptions

On occasions, samples cannot be collected. This can be due to a variety of events, such as equipment malfunction, loss of electrical power, severe weather, or vandalism. In 2021, missed samples were a result of missing field TLDs. The following sections list all missed samples, changes and corrective actions taken during 2021. These missed samples did not have a significant impact on the execution of the REMP.

Direct Radiation Monitoring

All TLDs are placed in the field in inconspicuous locations to minimize the loss of TLDs due to vandalism. During 2021, 212 offsite TLDs were placed in the field for the REMP program and all but one (1) TLD was collected and processed.

During the third quarter collection, TLD T-23, was missing.

No TLDs were missing for first, second, and fourth quarters.

Atmospheric Monitoring

3/16/2021 – Approximate 4 hour power outage for API-2,3,5,6 for Tag Line Outage – used timer reading for volumes (9,740 ft3, 9,734 ft3, 9,728 ft3, 9,734 ft3, respectively) – power restored.
6/22/2021 – Low volume on API-1 power outage – used timer reading for volume (7,246 ft3) – power restored.
6/29/2021 – Low volume on API-6 no power – used timer reading for volume (5,621 ft3) – repaired by facilities.
7/6/2021 – Low volume on API-6 – Power restored – used timer reading for volume (7,064 ft3).
7/20/2021 – Low volume on API-6 no power – used timer reading for volume (5,553 ft3) – notified RPS and power was restored.
8/17/2021 – Low volume on API-1 no power – used timer reading for volume (1,796 ft3) – repaired by electrician.
9/28/2021 – Low volume on API-4 blown fuse – used timer reading for volume (1,506 ft3) – replaced fuse.
11/23/2021 – API-4 exchanged – LED timer not working – calculated time to be 168 hours and 41 minutes.

Both API-1 and API-4 had one gross beta analysis with a "DL" flag, meaning that the MDC for these samples was higher than the specified LLD. The DL qualifier in both cases was due to a lower volume of air flowing through the filter due to mechanical issue. This did not result in non-detection of gross beta activity since all the gross beta air sample analyses in 2021 were positive.

Terrestrial Monitoring:

Milk Sampling - None

Vegetation Sampling

Samples were unavailable January – June and October -December.

Groundwater Sampling - None

Aquatic Monitoring:

Drinking Water Sampling

8/31/2021 – DW-1 Valve shut. Opened valve and primed pump.

9/7/2021 – DW-1 Valve shut due to break in line. Repaired line and opened valve. No grab sample needed.

12/29/2021 – DW-2 Sample arrived at GEL with cap removed and significant volume was lost. Only enough sample left to run Gross Beta analysis.

One control drinking water sample was reported positive at a level equal to the LLD. Due to the low concentration detected, the usual non-detection of Sr-90 in plant effluent samples, and the large dilution between the plant and this control fish location (18.5 miles from the reactor), this result is not attributed to plant effects.

Surface Water Sampling

1/20/2021 – SW-2 line plugged. Cleared line. No grab sample needed.

2/2/2021 - SW-2 line frozen. Thawed line and took grab sample.

2/9/2021 - SW-2 line frozen. Thawed line and took grab sample.

2/17/2021 – SW-3 line frozen. Thawed line and took grab sample.

6/30/2021 – SW-3 No power. Took grab sample.

8/31/2021 – SW-3 Low water level in pit. No grab sample needed.

9/7/2021 – SW-3 Low water in pit. Break in Tygon tubing. Fixed tubing and primed pump. Took grab sample.

11/18/2021 – SW-3 – No power. Reset breaker. No grab sample needed.

Sediment Sampling

One sediment sample from the S-1 indicator location was reported positive with an "M" flag, meaning that the result was greater than the MDC, but less than the LLD. Cs-137 is primarily attributable to atmospheric nuclear weapons testing.

Fish Sampling

Results for Sr-89 on May 4 in fish sample F-1 (control) was reported positive with an "M" flag, meaning that the result was greater than the MDC but less than the LLD. Due to the low concentration detected, the usual non-detection of Sr-89 in plant effluent samples, and the large dilution between the plant and this control fish location (9.5 miles from the reactor), this result is not attributed to plant effects.

Program Changes - None

Appendix E

Interlaboratory Comparison Data
GEL Laboratories'
Quality Assurance Programs
and the
Annual Quality Assurance Status Report
Environmental Dosimetry Company

Interlaboratory Comparison Program for 2021

In an interlaboratory comparison program, participant laboratories receive from a commerce source, environmental samples of known activity concentration for analysis. After the samples have been analyzed by the laboratory, the manufacturer of the sample reports the known activity concentration of the samples to the laboratory. The laboratory compares its results to the reported concentrations to determine any significant deviations, investigates such deviations if found, and initiates corrective action if necessary. Participation in this program provides assurance that the contract laboratory is capable of meeting accepted criteria for radioactivity analysis. The following is GEL Laboratories' participation in an interlaboratory comparison program and the Annual Quality Assurance Status Report for the Environmental Dosimetry Company.

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2021 ANNUAL QUALITY ASSURANCE REPORT

FOR THE

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)

2021 ANNUAL QUALITY ASSURANCE REPORT

FOR THE

RADIOLOGICAL ENVIRONMENTAL

MONITORING PROGRAM (REMP)

Approved By Robert L. Pullano March 1, 2022

Robert L. Pullano Date

Director, Quality Systems

TABLE OF CONTENTS

TABLES

TABLE OF CONTENTS (CONTINUED)

FIGURES

2021 ANNUAL QUALITY ASSURANCE REPORT FOR THE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)

1. Introduction

GEL Laboratories, LLC (GEL) is a privately owned environmental laboratory dedicated to providing personalized client services of the highest quality. GEL was established as an analytical testing laboratory in 1981. Now a full service lab, our analytical divisions use state of the art equipment and methods to provide a comprehensive array of organic, inorganic, and radiochemical analyses to meet the needs of our clients.

At GEL, quality is emphasized at every level of personnel throughout the company. Management's ongoing commitment to good professional practice and to the quality of our testing services to our customers is demonstrated by their dedication of personnel and resources to develop, implement, assess, and improve our technical and management operations.

The purpose of GEL's quality assurance program is to establish policies, procedures, and processes to meet or exceed the expectations of our clients. To achieve this, all personnel that support these services to our clients are introduced to the program and policies during their initial orientation, and annually thereafter during company-wide training sessions.

GEL's primary goals are to ensure that all measurement data generated are scientifically and legally defensible, of known and acceptable quality per the data quality objectives (DQOs), and thoroughly documented to provide sound support for environmental decisions. In addition, GEL continues to ensure compliance with all contractual requirements, environmental standards, and regulations established by local, state and federal authorities.

GEL administers the QA program in accordance with the Quality Assurance Plan, GL-QS-B-001. Our Quality Systems include all quality assurance (QA) policies and quality control (QC) procedures necessary to plan, implement, and assess the work we perform. GEL's QA Program establishes a quality management system (QMS) that governs all of the activities of our organization.

This report entails the quality assurance program for the proficiency testing and environmental monitoring aspects of GEL for 2021 GEL's QA Program is designed to monitor the quality of analytical processing associated with environmental, radiobioassay, effluent (10 CFR Part 50), and waste (10 CFR Part 61) sample analysis.

This report covers the category of Radiological Environmental Monitoring Program (REMP) and includes:

- Intra-laboratory QC results analyzed during 2021.
- Inter-laboratory QC results analyzed during 2021 where known values are available.

2. Quality Assurance Programs for Inter-laboratory, Intra-laboratory and Third Party Cross-Check

In addition to internal and client audits, our laboratory participates in annual performance evaluation studies conducted by independent providers. We routinely participate in the following types of performance audits:

- Proficiency testing and other inter-laboratory comparisons

- Performance requirements necessary to retain certifications
- Evaluation of recoveries of certified reference and in-house secondary reference materials using statistical process control data.
- Evaluation of relative percent difference between measurements through SPC data.

We also participate in a number of proficiency testing programs for federal and state agencies and as required by contracts. It is our policy that no proficiency evaluation samples be analyzed in any special manner. Our annual performance evaluation participation generally includes a combination of studies that support the following:

- US Environmental Protection Agency Discharge Monitoring Report, Quality Assurance Program (DMR-QA). Annual national program sponsored by EPA for laboratories engaged in the analysis of samples associated with the NPDES monitoring program. Participation is mandatory for all holders of NPDES permits. The permit holder must analyze for all of the parameters listed on the discharge permit. Parameters include general chemistry, metals, BOD/COD, oil and grease, ammonia, nitrates, etc.

- Department of Energy Mixed Analyte Performance Evaluation Program (MAPEP). A semiannual program developed by DOE in support of DOE contractors performing waste analyses. Participation is required for all laboratories that perform environmental analytical measurements in support of environmental management activities. This program includes radioactive isotopes in water, soil, vegetation and air filters.

- ERA's MRAD-Multimedia Radiochemistry Proficiency test program. This program is for labs seeking certification for radionuclides in wastewater and solid waste. The program is conducted in strict compliance with USEPA National Standards for Water Proficiency study.

- ERA's InterLaB RadCheM Proficiency Testing Program for radiological analyses. This program completes the process of replacing the USEPA EMSL-LV Nuclear Radiation Assessment Division program discontinued in 1998. Laboratories seeking certification for radionuclide analysis in drinking water also use the study. This program is conducted in strict compliance with the USEPA National Standards for Water Proficiency Testing Studies. This program encompasses Uranium by EPA method 200.8 (for drinking water certification in Utah/Primary NELAP), gamma emitters, Gross Alpha/Beta, Iodine-131, naturally occurring radioactive isotopes, Strontium-89/90, and Tritium.

- ERA's Water Pollution (WP) biannual program for waste methodologies includes parameters for both organic and inorganic analytes.

- ERA's Water Supply (WS) biannual program for drinking water methodologies includes parameters for organic and inorganic analytes.

- Environmental Cross-Check Program administered by Eckert & Ziegler Analytics, Inc. This program encompasses radionuclides in water, soil, milk, naturally occurring radioactive isotopes in soil and air filters.

GEL procures single-blind performance evaluation samples from Eckert & Ziegler Analytics to verify the analysis of sample matrices processed at GEL. Samples are received on a quarterly basis. GEL's Third-Party Cross-Check Program provides environmental matrices encountered in a typical nuclear utility REMP. The Third-Party Cross-Check Program is intended to meet or exceed the inter-laboratory comparison program requirements discussed in NRC Regulatory Guide 4.15. Once performance evaluation samples have been prepared in accordance with the instructions provided by the PT provider, samples are managed and analyzed in the same manner as environmental samples from GEL's clients.

3. Quality Assurance Program for Internal and External Audits

During each annual reporting period, at least one internal assessment of each area of the laboratory is conducted in accordance with the pre-established schedule from Standard Operating Procedure for the Conduct of Quality Audits, GL-QS-E-001. The annual internal audit plan is reviewed for adequacy and includes the scheduled frequency and scope of quality control actions necessary to GEL's QA program. Internal audits are conducted at least annually in accordance with a schedule approved by the Quality Systems Director. Supplier audits are contingent upon the categorization of the supplies and may or may not be conducted prior to the use of a supplier or subcontractor. Type I suppliers and subcontractors, regardless of how they were initially qualified, are re-evaluated at least once every three years.

In addition, prospective customers audit GEL during pre-contract audits. GEL hosts several external audits each year for both our clients and other programs. These programs include environmental monitoring, waste characterization, and radiobioassay. The following list of programs may audit GEL at least annually or up to every three years depending on the program.

- TNI, The NELAC Institute, National Environmental Laboratory Accreditation Program
- DOECAP, U.S. Department of Energy Consolidated Audit Program
- DOELAP, U.S. Department of Energy Laboratory Accreditation Program
- DOE QSAS, U.S. Department of Energy, Quality Systems for Analytical Services
- ISO/IEC 17025:2017
- A2LA, American Association for Laboratory Accreditation
- DoD ELAP, US Department of Defense Environmental Accreditation Program
- NUPIC, Nuclear Procurement Issues Committee
- South Carolina Department of Health and Environmental Control (SC DHEC)

The annual radiochemistry laboratory internal audit (21-RAD-001) was conducted in June, 2021. There were no findings or observations and four recommendations for improvements from this assessment.

4. Performance Evaluation Acceptance Criteria for Environmental Sample Analysis

GEL utilized an acceptance protocol based upon two performance models. For those inter-laboratory programs that already have established performance criteria for bias (i.e., MAPEP, and ERA/ELAP), GEL will utilize the criteria for the specific program. For intra-laboratory or third party quality control programs that do not have a specific acceptance criteria (i.e. the Eckert-Ziegler Analytics Environmental Cross-check Program), results will be evaluated in accordance with GEL's internal acceptance criteria.

5. Performance Evaluation Samples

Performance Evaluation (PE) results and internal quality control sample results are evaluated in accordance with GEL acceptance criteria. The first criterion concerns bias, which is defined as the deviation of any one result from the known value. The second criterion concerns precision, which deals with the ability of the measurement to be replicated by comparison of an individual result with the mean of all results for a given sample set.

At GEL, we also evaluate our analytical performance on a regular basis through statistical process control (SPC) acceptance criteria. Where feasible, this criterion is applied to both measures of precision and accuracy and is specific to sample matrix. We establish environmental process control limits at least annually.

For Radiochemistry analysis, quality control evaluation is based on static limits rather than those that are statistically derived. Our current process control limits are maintained in GEL's AlphaLIMS. We also measure precision with matrix duplicates and/or matrix spike duplicates. The upper and lower control limits (UCL and LCL respectively) for precision are plus or minus three times the standard deviation from the mean of a series of relative percent differences. The static precision criteria for radiochemical analyses are 0 - 20%, for activity levels exceeding the contract required detection limit (CRDL).

6. Quality Control Program for Environmental Sample Analysis

GEL's internal QA Program is designed to include QC functions such as instrumentation calibration checks (to insure proper instrument response), blank samples, instrumentation backgrounds, duplicates, as well as overall staff qualification analyses and statistical process controls. Both quality control and qualification analyses samples are used to be as similar as the matrix type of those samples submitted for analysis by the various laboratory clients. These performance test samples (or performance evaluation samples) are either actual sample submitted in duplicate in order to evaluate the precision of laboratory measurements, or fortified blank samples, which have been given a known quantity of a radioisotope that is in the interest to GEL's clients.

Accuracy (or Bias) is measured through laboratory control samples and/or matrix spikes, as well as surrogates and internal standards. The UCLs and LCLs for accuracy are plus or minus three times the standard deviation from the mean of a series of recoveries. The static limit for most radiochemical analyses is 75 - 125%. Specific instructions for out-of-control situations are provided in the applicable analytical SOP.

GEL's Laboratory Control Standard (LCS) is an aliquot of reagent water or other blank matrix to which known quantities of the method analytes are added in the laboratory. The LCS is analyzed exactly like a sample, and its purpose is to determine whether the methodology is in control, and whether the laboratory is capable of making accurate and precise measurements. Some methods may refer to these samples as Laboratory Fortified Blanks (LFB). The requirement for recovery is between 75% and 125% for radiological analyses excluding drinking water matrix.

$$\text{Bias (\%)} = \frac{\text{(observed concentration)}}{\text{(known concentration)}} * 100\ \%$$

Precision is a data quality indicator of the agreement between measurements of the same property, obtained under similar conditions, and how well they conform to themselves. Precision is usually expressed as standard deviation, variance or range in either absolute or relative (percentage) terms.

GEL's laboratory duplicate (DUP or LCSD) is an aliquot of a sample taken from the same container and processed in the same manner under identical laboratory conditions. The aliquot is analyzed independently from the parent sample and the results are compared to measure precision and accuracy.

If a sample duplicate is analyzed, it will be reported as Relative Percent Difference (RPD). The RPD must be 20 percent or less, if both samples are greater than 5 times the MDC. If both results are less than 5 times MDC, then the RPD must be equal to or less than 100%. If one result is above the MDC and the other is below the MDC, then the RPD can be calculated using the MDC for the result of the one below the MDC. The RPD must be 100% or less. In the situation where both results are above the MDC but one result is greater than 5 times the MDC and the other is less than 5 times the MDC, the RPD must be less than or equal to 20%. If both results are below MDC, then the limits on % RPD are not applicable.

$$\text{Difference (\%)} = \frac{\text{(high duplicate result – low duplicate result)}}{\text{(average of results)}} * 100\ \%$$

7. Summary of Data Results

During 2021, forty-five (45) radioisotopes associated with seven (7) matrix types were analyzed under GEL's Performance Evaluation program in participation with ERA, MAPEP, and Eckert & Ziegler Analytics. Matrix types were representative of client analyses performed during 2021. Of the four hundred thirty three (433) total results, 96.5%% (418 of 433) were found to be acceptable within the PT providers three sigma or other statistical criteria. The list below contains the type of matrix evaluated by GEL.

- Air Filter
- Cartridge
- Water
- Milk
- Soil
- Liquid
- Vegetation

Graphs are provided in Figures 1-9 of this report to allow for the evaluation of trends or biases. These graphs include radioisotopes Cobalt-60, Cesium-137, Tritium, Strontium-90, Gross Alpha, Gross Beta, Iodine-131, Americium-241, and Plutonium-238.

8. Summary of Participation in the Eckert & Ziegler Analytics Environmental Cross-Check Program

Eckert & Ziegler Analytics provided samples for one hundred thirty (130) individual environmental analyses. The accuracy of each result reported to Eckert & Ziegler Analytics, Inc. is measured by the ratio of GEL's result to the known value. All results fell within GEL's acceptance criteria (100% within acceptance).

9. Summary of Participation in the MAPEP Monitoring Program

MAPEP Series 44 and 45 were analyzed by the laboratory. Of the one hundred thirty (130) analyses, 96.1% (125 out of 130) fell within the PT provider's acceptance criteria.

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10. Summary of Participation in the ERA MRaD PT Program

The ERA MRad program provided samples (MRAD-34 and MRAD-35) for one hundred seventy-one (171) individual environmental analyses. Of the 171 analyses, 96.5% (165 out of 171) fell within the PT provider's acceptance criteria.

11. Summary of Participation in the ERA PT Program

The ERA program provided samples (RAD-124, RAD 125) for forty-three (43) individual environmental analyses. Of the 43 analyses, 88.4% (38 out of 43) fell within the PT provider's acceptance criteria.

All corrective actions are summarized in Table 8.

12. Corrective Action Request and Report (CARR)

There are two categories of corrective action at GEL. One is corrective action implemented at the analytical and data review level in accordance with the analytical SOP. The other is formal corrective action documented by the Quality Systems Team in accordance with GL-QS-E-002. A formal corrective action is initiated when a nonconformance reoccurs or is so significant that permanent elimination or prevention of the problem is required. Formal corrective action investigations include root cause analysis.

GEL includes quality requirements in most analytical standard operating procedures to ensure that data are reported only if the quality control criteria are met or the quality control measures that did not meet the acceptance criteria are documented. A formal corrective action is implemented according to GL-QS-E-002 for Conducting Corrective/Preventive Action and Identifying Opportunities for Improvement. Recording and documentation is performed following guidelines stated in GL-QS-E-012 for Client NCR Database Operation.

Any employee at GEL can identify and report a nonconformance and request that corrective action be taken. Any GEL employee can participate on a corrective action team as requested by the QS team or Group Leaders. The steps for conducting corrective action are detailed in GL-QS-E-002. In the event that correctness or validity of the laboratory's test results in doubt, the laboratory will take corrective action. If investigations show that the results have been impacted, affected clients will be informed of the issue in writing within five (5) calendar days of the discovery.

Table 8 provides the status of CARRs for radiological performance testing during 2021. **It has been determined that causes of the unacceptable results did not impact any data reported to our clients.**

- CARR 210311-1305 for PT Failures in RAD Study 124
- CARR 210524-1327 for PT Failures in RAD Study125
- CARR 210723-1339 for PT Failures in MAPEP Study 44
- CARR 210603-1329 for PT Failures in MRAD Study 34
- CARR 211216-1360 for PT Failures in MAPEP Study 45
- CARR 211215-1358 for PT Failures in MRAD Study 35

13. References

1. GEL Quality Assurance Plan, GL-QS-B-001
2. GEL Standard Operating Procedure for the Conduct of Quality Audits, GL-QS-E-001
3. GEL Standard Operating Procedure for Conducting Corrective/Preventive Action and Identifying Opportunities for Improvement, GL-QS-E-002
4. GEL Standard Operating Procedure for AlphaLIMS Documentation of Nonconformance Reporting and Dispositioning and Control of Nonconforming Items, GL-QS-E-004
5. GEL Standard Operating Procedure for Handling Proficiency Evaluation Samples, GL-QS-E-013
6. GEL Standard Operating Procedure for Quality Assurance Measurement Calculations and Processes, GL-QS-E-014
7. 40 CFR Part 136 Guidelines Establishing Test Procedures for the Analysis of Pollutants
8. ISO/IEC 17025-2017, General Requirements for the Competence of Testing and Calibration Laboratories
9. ANSI/ASQC E4-1994, Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs, American National Standard
10. 2009 TNI Standard, The NELAC Institute, National Environmental Accreditation Program
11. MARLAP, Multi-Agency Radiological Laboratory Analytical Protocols
12. 10 CFR Part 21, Reporting of Defects and Noncompliance
13. 10 CFR Part 50 Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants
14. 10 CFR Part 61, Licensing Requirements for Land Disposal and Radioactive Waste
15. NRC REG Guide 4.15 and NRC REG Guide 4.8

TABLE 1

2021 RADIOLOGICAL PROFICIENCY TESTING RESULTS AND ACCEPTANCE CRITERIA

PT Provider	Quarter / Year	Report Closing / Received Date	Sample Number	Sample Media	Units	Analyte	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Barium-133	22.3	23.8	18.4 - 27.4	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cesium-134	46.8	42.8	34.2 - 47.1	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cesium-137	148	148	133 - 165	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cesium-137	148	148	133 - 165	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cobalt-60	36.7	34.6	30.8 - 40.8	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Zinc-65	68.2	61.6	54.6 - 75.0	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Gross Alpha	69.6	63.3	33.2 - 78.5	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Gross Beta	38.8	39.8	26.4 - 47.3	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Radium-226	8.42*	15.5	11.5 - 17.8	**Not Acceptable**
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Radium-228	19.5*	12.9	8.54 - 15.8	**Not Acceptable**
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Radium-228	14.6	12.9	8.54 - 15.8	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Uranium (Nat)	29.4	30.1	24.4 - 33.4	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Uranium (Nat) mass	44.6	43.9	35.5 - 48.7	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Tritium	2000	2120	1750 - 2350	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Tritium	2020	2120	1750 - 2350	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-89	74.6	61.3	49.4 - 69.2	**Not Acceptable**
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-89	65.7	61.3	49.4 - 69.2	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-90	32.5	40.6	29.9 - 46.7	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-90	38.2	40.6	29.9 - 46.7	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Iodine-131	30.2	27.9	23.2 - 32.8	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Iodine-131	31.7	27.9	23.2 - 32.8	Acceptable
EZA	1st/2021	03/11/21	E13356	Cartridge	pCi	Iodine-131	9.34E+01	8.80E+01	1.06	Acceptable
EZA	1st/2021	03/11/21	E13357	Milk	pCi/L	Strontium-89	9.55E+01	8.71E+01	1.1	Acceptable
EZA	1st/2021	03/11/21	E13357	Milk	pCi/L	Strontium-90	1.14E+01	1.26E+01	0.9	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cerium-141	1.32E+02	1.25E+02	1.05	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cobalt-58	1.33E+02	1.28E+02	1.04	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cobalt-60	1.57E+02	1.54E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Chromium-51	2.33E+02	2.42E+02	0.96	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cesium-134	1.37E+02	1.51E+02	0.9	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cesium-137	1.12E+02	1.10E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Manganese-54	1.15E+02	1.12E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Iron-59	1.21E+02	1.09E+02	1.11	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Iodine-131	8.39E+01	8.69E+01	0.97	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Zinc-65	2.38E+02	2.11E+02	1.13	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cerium-141	1.26E+02	1.24E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cobalt-58	1.34E+02	1.26E+02	1.06	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cobalt-60	1.54E+02	1.52E+02	1.01	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cesium-134	1.35E+02	1.50E+02	0.9	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cesium-137	1.15E+02	1.09E+02	1.06	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Iodine-131	9.64E+01	8.79E+01	1.1	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Iron-59	1.12E+02	1.08E+02	1.04	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Manganese-54	1.17E+02	1.11E+02	1.05	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Zinc-65	2.24E+02	2.08E+02	1.08	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Actinium-228	3260	3170	2090 - 3990	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Americium-241	1580	1620	875 - 2290	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Bismuth-212	3300	3280	939 - 4890	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Bismuth-214	1370	1380	662 - 2050	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Cesium-134	5380	5920	4050 - 7080	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Cesium-137	7580	7570	5720 - 9570	Acceptable

ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Cobalt-60	4660	5060	3980 - 6250	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Lead-212	3830	3350	2340 - 4240	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Lead-212	3830	3350	2340 - 4240	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Lead-214	1760	1440	605 - 2260	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Manganese-54	<28.3	<1000	<1000	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Plutonium-238	1810	1930	963 - 2930	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Plutonium-239	1610	1720	937 - 2480	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Potassium-40	24400	24700	17000 - 29500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Strontium-90	10200	9190	2860 - 14300	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Thorium-234	4870	4020	1520 - 6880	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-234	3650	4060	1900 - 5320	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-234	3740	4060	1900 - 5320	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-238	3480	4020	2210 - 5400	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-238	3320	4020	2210 - 5400	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-Total	7300	8260	4580 - 10700	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-Total	7060	8260	4580 - 10700	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	µg/kg	Uranium-Total (mass)	10400	12000	5420 - 16200	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	µg/kg	Uranium-Total (mass)	9950	12000	5420 - 16200	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Zinc-65	7090	7040	5620 - 9600	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Americium-241	2210	2460	1520 - 3470	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Cesium-134	1920	2350	1560 - 3130	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Cesium-137	2590	2720	2090 - 3660	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Cobalt-60	1640	1610	1260 - 2100	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Curium-244	3260	3750	2110 - 4660	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Manganese-54	<26.8	<300	<300	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Plutonium-238	3450	3610	2500 - 4660	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Plutonium-239	1750	1820	1260 - 2300	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Potassium-40	36700	33300	25000 - 42200	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Strontium-90	986	1260	710 - 1640	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Strontium-90	986	1260	710 - 1640	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Uranium-234	1370	1420	998 - 1810	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Uranium-238	1380	1410	996 - 1760	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Uranium-Total	2830	2900	1850 - 3910	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	µg/kg	Uranium-Total (mass)	4150	4230	3250 - 5240	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Zinc-65	797	766	572 - 1140	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/Filter	Americium-241	61.8	60.2	43.0 - 80.3	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-134	958	1030	668 - 1260	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-134	958	1030	668 - 1260	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-137	159	163	134 - 214	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-137	159	163	134 - 214	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cobalt-60	1280	1220	1040 - 1550	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Iron-55	103	121	44.2 - 193	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Manganese-54	<6.46	<50.0	<50.0	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Plutonium-238	35.9	35.4	26.7 - 43.5	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Plutonium-239	20.1	20.5	15.3 - 24.7	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Strontium-90	181	189	120 - 257	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-234	24.1	25.5	18.9 - 29.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-234	26.4	25.5	18.9 - 29.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-238	24.6	25.3	19.1 - 30.2	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-238	23.5	25.3	19.1 - 30.2	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-Total	50	52	38.0 - 61.7	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-Total	49.9	52	38.0 - 61.7	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	µg/Filter	Uranium-Total (mass)	73.8	75.9	60.9 - 88.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	µg/Filter	Uranium-Total (mass)	70.5	75.9	60.9 - 88.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Zinc-65	840	771	632 - 1180	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Gross Alpha	391*	96.1	50.2 - 158	**Not Acceptable**

ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Gross Beta	71.5	62.6	38.0 - 94.6	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Americium-241	160	157	108 - 201	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cesium-134	1550	1610	1220 - 1770	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cesium-137	595	578	495 - 657	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cobalt-60	2310	2180	1880 - 2500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cobalt-60	2310	2180	1880 - 2500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cobalt-60	2310	2180	1880 - 2500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Iron-55	494	275	162 - 400	**Not Acceptable**
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Manganese-54	<6.01	<100	<100	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Plutonium-238	115	171	103 - 222	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Plutonium-239	95.2	142	87.9 - 175	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Strontium-90	736	671	483 - 829	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-234	140	160	122 - 183	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-234	162	160	122 - 183	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-234	152	160	122 - 183	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-238	146	158	122 - 186	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-238	158	158	122 - 186	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-238	145	158	122 - 186	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-Total	292	325	254 - 370	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-Total	297	325	254 - 370	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	µg/L	Uranium-Total (mass)	436	474	384 - 538	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	µg/L	Uranium-Total (mass)	433	474	384 - 538	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Zinc-65	1900	1720	1530 - 2170	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Gross Alpha	87.8	62.2	22.7 - 85.8	**Not Acceptable**
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Gross Beta	73.7	103	51.5 - 142	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Tritium	24900	22800	17200 - 27800	Acceptable
ERA	2nd/2021	5/25/2021	RAD 125	Water	pCi/L	Radium-226	14.2	19.3	14.3 - 22.0	**Not Acceptable**
ERA	2nd/2021	5/25/2021	RAD 125	Water	pCi/L	Radium-228	9.98	10.3	6.71 - 12.8	Acceptable
ERA	2nd/2021	5/25/2021	RAD 125	Water	pCi/L	Strontium-89	59.3	63.5	51.4 - 71.5	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Filter	Bq/smpl	Gross Alpha	0.864	1.77	0.53-3.01	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Filter	Bq/smpl	Gross Beta	0.639	0.649	0.325-0.974	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Water	Bq/L	Gross Alpha	0.782	0.87	0.26-1.48	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Water	Bq/L	Gross Beta	2.40	2.50	1.25-3.75	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Americium-241	89.6	88	62-114	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cesium-134	2.92		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cesium-137	1590	1550	1085-2015	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cobalt-57	1010	920	644-1196	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cobalt-60	1320	1370	959-1781	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Iron-55	1150	910	637-1183	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Manganese-54	1.84		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Nickel-63	597	689	482-896	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Plutonium-238	51.2	49.1	34.4-63.8	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Plutonium-239/240	-0.819		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Potassium-40	618	618	433-803	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Strontium-90	313	272	190-354	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Technetium-99	576	638	447-829	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	U-234/233	57.1	59	41-77	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Uranium-238	194	208	146-270	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Zinc-65	627	604	423-785	Acceptable

MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Americium-241	0.0145		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cesium-134	10.6	11.5	8.1-15.0	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cesium-137	8.54	7.9	5.5-10.3	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cobalt-57	12.2	11.4	8.0-14.8	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cobalt-60	0.146		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Hydrogen-3	2.27		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Iron-55	27.1	26.9	18.8-35.0	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Manganese-54	16.7	15.5	10.9-20.2	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Nickel-63	10.4	8.2	5.7-10.7	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Plutonium-238	0.515	0.577	0.404-0.750	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Plutonium-239/240	0.564	0.649	0.454-0.844	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Potassium-40	-0.886		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Radium-226	0.538	0.632	0.442-0.822	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Strontium-90	4.95	4.47	3.13-5.81	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Technetium-99	3.69	4.01	2.81-5.21	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Uranium-234/233	0.884	0.85	0.60-1.11	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Uranium-238	0.913	0.86	0.60-1.12	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Zinc-65	11.6	10.5	7.4-13.7	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	ug/smpl	Uranium-235	0.0366	0.0353	0.0247-0.0459	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	ug/smpl	Uranium-238	5.19	5.03	3.52-6.54	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	ug/smpl	Uranium-Total	5.22	5.07	3.55-6.59	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Americium-241	0.0385	0.037	0.026-0.048	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cesium-134	2.12	2.14	1.50-2.78	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cesium-137	-0.0168		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cobalt-57	0.74	0.686	0.480-0.892	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cobalt-60	0.0325		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Manganese-54	0.368	0.312	0.218-0.406	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Plutonium-238	0.0207	0.0228	0.0160-0.0296	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Plutonium-239/240	0.0417	0.0453	0.0317-0.0589	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Strontium-90	0.89	0.749	0.524-0.974	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Uranium-234/233	0.063	0.06	0.04-0.08	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Uranium-238	0.0617	0.063	0.044-0.082	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Zinc-65	0.457	0.352	0.246-0.458	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Americium-241	0.0605	0.0586	0.0410-0.0762	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cesium-134	2.51	3.6	2.52-4.68	**Not Acceptable**
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cesium-137	3.75	4.69	3.28-6.10	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cobalt-57	3.73	5.05	3.54-6.57	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cobalt-60	2.36	2.99	2.09-3.89	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Manganese-54	4.13	5.25	3.68-6.83	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Plutonium-238	0.0467	0.0446	0.0312-0.058	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Plutonium-239/240	0.0912	0.0912	0.0645-0.1197	Acceptable

MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Strontium-90	0.444	0.673	0.471-0.875	**Not Acceptable**
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Uranium-234/233	0.136	0.138	0.097-0.179	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Uranium-238	0.143	0.143	0.100-0.186	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Zinc-65	-0.0042		False pos. test	Acceptable
EZA	2nd/2021	08/06/21	E13360	Cartridge	pCi	Iodine-131	9.99E+01	9.08E+01	1.10	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cerium-141	2.12E+02	2.17E+02	0.98	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cobalt-58	2.09E+02	2.16E+02	0.97	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cobalt-60	2.62E+02	2.60E+02	1.01	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Chromium-51	2.66E+02	6.42E+02	1.02	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cesium-134	2.34E+02	2.57E+02	0.91	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cesium-137	2.32E+02	2.26E+02	1.03	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Iron-59	2.50E+02	2.21E+02	1.13	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Iodine-131	8.04E+01	8.38E+01	0.96	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Manganese-54	3.05E+02	3.00E+02	1.02	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Zinc-65	3.93E+02	3.62E+02	1.09	Acceptable
EZA	2nd/2021	08/06/21	E13363	Water	pCi/L	Cerium-141	1.96E+02	1.80E+02	1.09	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cobalt-58	1.84E+02	1.79E+02	1.03	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cobalt-60	2.20E+02	2.15E+02	1.02	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Chromium-51	5.65E+02	5.33E+02	1.06	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cesium-134	2.02E+02	2.13E+02	0.95	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cesium-137	2.00E+02	1.88E+02	1.07	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Iron-59	2.12E+02	1.83E+02	1.16	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Iodine-131	9.21E+01	9.20E+01	1.00	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Manganese-54	2.75E+02	2.49E+02	1.10	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Zinc-65	3.35E+02	3.00E+02	1.12	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Barium-133	48.9	45.5	37.2 - 50.6	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Cesium-134	84.4	87.5	71.8 - 96.2	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Cesium-137	211	208	187 - 230	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Cobalt-60	93	87.1	78.4 - 98.1	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Zinc-65	108	102	91.8 - 122	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Gross Alpha	39.1	49.1	25.6 - 61.7	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Gross Alpha	40.3	49.1	25.6 - 61.7	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Gross Beta	30.4	31.5	20.3 - 39.2	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Radium-226	11.2	13.4	9.99 - 15.4	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Radium-228	6.8	7.59	4.81 - 9.68	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Radium-228	6.69	7.59	4.81 - 9.68	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Uranium (Nat)	59.6	62.3	50.9 - 68.5	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	µg/L	Uranium (Nat) mass	94	90.9	74.2 - 100	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Tritium	9820	10400	9050 - 11400	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Tritium	10300	10400	9050 - 11400	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Strontium-89	50.3	55.9	44.6 - 63.6	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Strontium-90	46.2	40.1	29.5 - 46.1	**Not Acceptable**
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Iodine-131	17.6	20.8	17.2 - 25.0	Acceptable
EZA	3rd/2021	11/08/21	E13364	Cartridge	pCi	Iodine-131	1.02E+02	9.08E+01	112	Acceptable
EZA	3rd/2021	11/08/21	E13365	Milk	pCi/L	Strontium-89	8.92E+01	8.54E+01	1.04	Acceptable
EZA	3rd/2021	11/08/21	E13365	Milk	pCi/L	Strontium-90	1.01E+01	1.40E+01	0.72	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cerium-141	1.17E+02	1.14E+02	1.02	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cobalt-58	1.25E+02	1.18E+02	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cobalt-60	1.46E+02	1.45E+02	1.01	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Chromium-51	2.69E+02	2.36E+02	1.14	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cesium-134	9.00E+01	9.31E+01	0.97	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cesium-137	1.14E+02	1.12E+02	1.02	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Iron-59	1.23E+02	1.02E+02	1.21	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Iodine-131	9.08E+01	8.56E+01	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Manganese-54	1.31E+02	1.28E+02	1.02	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Zinc-65	1.65E+02	1.53E+02	1.08	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cerium-141	1.54E+02	1.51E+02	1.02	Acceptable

EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cobalt-58	1.62E+02	1.56E+02	1.04	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cobalt-60	2.07E+02	1.91E+02	1.08	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Chromium-51	3.30E+02	3.12E+02	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cesium-134	1.13E+02	1.23E+02	0.92	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cesium-137	1.57E+02	1.48E+02	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Iron-59	1.52E+02	1.35E+02	1.13	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Iodine-131	2.71E+02	2.47E+02	1.10	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Manganese-54	1.83E+02	1.70E+02	1.08	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Zinc-65	2.33E+02	2.02E+02	1.15	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-GrF45	Filter	Bq/sample	Gross Alpha	1.73	0.98	0.288-1.632	**Not Acceptable**
MAPEP	4th/2021	12/16/21	MAPEP-21-GrF45	Filter	Bq/sample	Gross Beta	0.642	0.553	0.277-0.830	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-GrW45	Water	Bq/L	Gross Alpha	0.226	0.232	0.070-0.394	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-GrW45	Water	Bq/L	Gross Beta	2.73	2.8707	1.404-4.211	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Americium-241	106.0	98.0	69-127	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cesium-134	993	1170	819-1521	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cesium-137	579.00	572	400-744	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cobalt-57	0.375		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cobalt-60	692	722	505-939	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Iron-55	994	1020	714-1326	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Manganese-54	412	410	287-533	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Nickel-63	1170	1280	896-1664	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Plutonium-238	55.9	59.8	41.9-77.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Plutonium-239/240	66.3	71.3	49.9-92.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Potassium-40	612	607	425-789	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Strontium-90	0.161		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Technetium-99	747	777	544-1010	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	U-234/233	80	51	36.0-66.8	**Not Acceptable**
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Uranium-238	177	168	118-218	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Zinc-65	945	907	635-1179	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Americium-241	0.407	0.426	0.298-0.554	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cesium-134	9.5	10.4	7.3-13.5	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cesium-137	-0.04		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cobalt-57	14	13.9	9.7-18.1	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cobalt-60	14.5	14.0	9.8-18.2	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Hydrogen-3	231	250	175-325	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Iron-55	47.9	49.8	34.9-64.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Manganese-54	9.47	9.0	6.3-11.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Nickel-63	41.4	39.5	27.7-51.4	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Plutonium-238	-0.00169	0.0096	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Plutonium-239/240	0.470	0.528	0.370-0.689	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Potassium-40	0.005		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Radium-226	0.310	0.226	0.158-0.294	**Not Acceptable**
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Strontium-90	3.50	3.86	2.70-5.02	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Technetium-99	3.79	3.71	2.60-4.82	Acceptable

MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Uranium-234/233	0.0203	0.0215	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Uranium-238	0.00975	0.0123	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Zinc-65	0.122		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	ug/sample	Uranium-235	0.0594	0.0588	0.0412-0.0764	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	ug/sample	Uranium-238	8.5	8.3	5.8-10.8	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	ug/sample	Uranium-Total	8.579	8.4	5.9-10.9	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Americium-241	0.109	0.119	0.083-0.155	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cesium-134	1.23	1.32	0.92-1.72	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cesium-137	1.31	1.280	0.90-1.66	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cobalt-57	0.82800	0.83	0.58-1.08	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cobalt-60	2.37	2.28	1.60-2.96	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Manganese-54	1.60	1.46	1.02-1.90	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Plutonium-238	0.0023	0.0030	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Plutonium-239/240	0.0574	0.0609	0.0426-0.0792	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Strontium-90	0.195	0.273	0.191-0.355	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Uranium-234/233	0.101	0.100	0.070-0.130	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Uranium-238	0.107	0.104	0.073-0.135	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Zinc-65	0.0579		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Americium-241	0.0724	0.0747	0.0523-0.0971	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cesium-134	4.02	4.34	3.04-5.64	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cesium-137	2.28	2.21	1.55-2.87	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cobalt-57	4.56	4.66	3.26-6.06	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cobalt-60	3.44	3.51	2.46-4.56	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Manganese-54	-0.0404		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Plutonium-238	0.0603	0.0655	0.0459-0.0852	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Plutonium-239/240	0.00140		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Strontium-90	1.10	1.32	0.92-1.72	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Uranium-234/233	0.1740	0.1830	0.128-0.238	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Uranium-238	0.1770	0.1760	1.123-0.229	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Zinc-65	2.57	2.43	1.70-3.16	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Actinium-228	3370	3240	2140 - 4080	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Americium-241	922	891	481 - 1260	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Bismuth-212	3320	3350	959 - 4990	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Bismuth-214	1140	1370	658 - 2040	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cesium-134	2410	2650	1810 - 3170	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cesium-134	2410	2650	1810 - 3170	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cesium-137	3720	3660	2770 - 4630	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cobalt-60	4680	4730	3720 - 5840	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Lead-212	3840	3420	2390 - 4320	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Lead-214	1480	1490	626 - 2340	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Manganese-54	<27.4	<1000	<1000	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Plutonium-238	1230	1250	623 - 1900	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Plutonium-239	1440	1450	790 - 2090	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Potassium-40	25600	24700	17000 - 29500	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Strontium-90	8770	6090	1900 - 9490	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Thorium-234	3350	2720	1030 - 4660	Acceptable

ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-234	2620	2740	1280 - 3590	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-234	3260	2740	1280 - 3590	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-238	2870	2720	1490 - 3650	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-238	3400	2720	1490 - 3650	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-Total	5670	5580	3100 - 7210	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-Total	5670	5580	3100 - 7210	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-Total	6817	5580	3100 - 7210	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	µg/kg	Uranium (mass)	8630	8140	3670 - 11000	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	µg/kg	Uranium (mass)	10200	8140	3670 - 11000	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Zinc-65	5540	4860	3880 - 6630	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Americium-241	4040	4040	2500 - 5710	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cesium-134	918	923	613 - 1230	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cesium-137	2180	2210	1700 - 2980	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cobalt-60	1670	1590	1250 - 2080	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cobalt-60	1670	1590	1250 - 2080	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Curium-244	2830	2840	1600 - 3530	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Manganese-54	<47.1	<300	<300	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Plutonium-238	1730	1620	1120 - 2090	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Plutonium-239	1620	1440	995 - 1820	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Potassium-40	30200	33300	25000 - 42200	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Strontium-90	5760	5720	3220 - 7450	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Uranium-234	1410	1350	948 - 1720	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Uranium-238	1420	1340	946 - 1680	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Uranium-Total	2900	2750	1760 - 3710	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	µg/kg	Uranium (mass)	4250	4010	3080 - 4970	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Zinc-65	1340	1200	896 - 1780	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Americium-241	28.1	27.7	19.8 - 36.9	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cesium-134	217	241	156 - 296	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cesium-137	187	187	154 - 245	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cobalt-60	324	310	264 - 394	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cobalt-60	324	310	264 - 394	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Iron-55	508	548	200 - 874	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Manganese-54	<3.06	<50.0	<50.0	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Plutonium-238	27.8	28.5	21.5 - 35.0	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Plutonium-239	22.6	21.6	16.1 - 26.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Strontium-90	23.4*	19.2	12.1 - 26.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-234	7.96	7.76	5.75 - 9.09	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-234	9.62*	7.76	5.75 - 9.09	**Not Acceptable**
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-238	7.35	7.69	5.81 - 9.17	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-238	7.38	7.69	5.81 - 9.17	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-Total	15.8	15.8	11.5 - 18.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-Total	17	15.8	11.5 - 18.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	µg/Filter	Uranium (mass)	22.1	23.1	18.5 - 27.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	µg/Filter	Uranium (mass)	22.1	23.1	18.5 - 27.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Zinc-65	414	366	300 - 559	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Gross Alpha	95.4	77.6	40.5 - 128	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Gross Beta	87	80.6	48.9 - 122	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Americium-241	70.5	63.7	43.7 - 81.5	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Cesium-134	626	649	490 - 714	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Cesium-137	2210	2170	1860 - 2470	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Cobalt-60	1040	964	831 - 1110	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Iron-55	339*	246	145 - 358	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Plutonium-238	74.1	114	68.5 - 148	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Plutonium-239	21.3	34.3	21.2 - 42.3	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Strontium-90	915	936	674 - 1160	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-234	39.9	40.8	31.1 - 46.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-234	49.8*	40.8	31.1 - 46.7	**Not Acceptable**
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-238	40.3	40.5	31.4 - 47.7	Acceptable

ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-238	41.2	40.5	31.4 - 47.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-Total	83.1	83.2	64.9 - 94.8	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-Total	92.9*	83.2	64.9 - 94.8	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	µg/L	Uranium (mass)	121	121	98.0 - 137	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	µg/L	Uranium (mass)	123	121	98.0 - 137	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Zinc-65	449	394	351 - 497	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Gross Alpha	74.7	93.9	34.3 - 129	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Gross Beta	96.1	97	48.5 - 133	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Tritium	12600	12800	9650 - 15600	Acceptable
ERA	4th/2021	11/27/21	RAD-127	Water	pCi/L	Strontium-90	28.5	29.3	21.3 - 34.0	Acceptable
EZA	4th/2021	02/02/22	E13368	Cartridge	pCi	Iodine-131	9.78E+01	9.35E+01	1.05	Acceptable
EZA	4th/2021	02/02/22	E13370	Milk	pCi/L	Strontium-89	7.54E+01	9.08E+01	0.83	Acceptable
EZA	4th/2021	02/02/22	E13370	Milk	pCi/L	Strontium-90	1.10E+01	1.30E+01	0.85	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cerium-141	1.32E+02	1.32E+02	1.00	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cobalt-58	1.14E+02	1.14E+02	1.00	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cobalt-60	2.27E+02	2.23E+02	1.02	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Chromium-51	2.84E+02	2.93E+02	0.97	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cesium-134	1.51E+02	1.66E+02	0.91	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cesium-137	1.15E+02	1.17E+02	0.98	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Iron-59	1.27E+02	1.13E+02	1.13	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Iodine-131	9.28E+01	9.03E+01	1.03	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Manganese-54	1.60E+02	1.52E+02	1.06	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Zinc-65	2.87E+02	2.57E+02	1.12	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cerium-141	1.53E+02	1.54E+02	0.99	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cobalt-58	1.42E+02	1.34E+02	1.06	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cobalt-60	2.82E+02	2.61E+02	1.08	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Chromium-51	3.75E+02	3.42E+02	1.1	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cesium-134	1.82E+02	1.94E+02	0.94	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cesium-137	1.41E+02	1.37E+02	1.03	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Iron-59	1.44E+02	1.32E+02	1.09	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Iodine-131	9.66E+01	9.13E+01	1.06	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Manganese-54	1.88E+02	1.77E+02	1.06	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Zinc-65	3.45E+02	3.01E+02	1.15	Acceptable

TABLE 2
2021 ECKERT & ZIEGLER ANALYTICS PERFORMANCE EVALUATION RESULTS

PT Provider	Quarter / Year	Report Closing / Received Date	Sample Number	Sample Media	Units	Analyte	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation
EZA	1st/2021	03/11/21	E13356	Cartridge	pCi	Iodine-131	9.34E+01	8.80E+01	1.06	Acceptable
EZA	1st/2021	03/11/21	E13357	Milk	pCi/L	Strontium-89	9.55E+01	8.71E+01	1.1	Acceptable
EZA	1st/2021	03/11/21	E13357	Milk	pCi/L	Strontium-90	1.14E+01	1.26E+01	0.9	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cerium-141	1.32E+02	1.25E+02	1.05	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cobalt-58	1.33E+02	1.28E+02	1.04	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cobalt-60	1.57E+02	1.54E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Chromium-51	2.33E+02	2.42E+02	0.96	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cesium-134	1.37E+02	1.51E+02	0.9	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Cesium-137	1.12E+02	1.10E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Manganese-54	1.15E+02	1.12E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Iron-59	1.21E+02	1.09E+02	1.11	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Iodine-131	8.39E+01	8.69E+01	0.97	Acceptable
EZA	1st/2021	03/11/21	E13358	Milk	pCi/L	Zinc-65	2.38E+02	2.11E+02	1.13	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cerium-141	1.26E+02	1.24E+02	1.02	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cobalt-58	1.34E+02	1.26E+02	1.06	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cobalt-60	1.54E+02	1.52E+02	1.01	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cesium-134	1.35E+02	1.50E+02	0.9	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Cesium-137	1.15E+02	1.09E+02	1.06	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Iodine-131	9.64E+01	8.79E+01	1.1	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Iron-59	1.12E+02	1.08E+02	1.04	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Manganese-54	1.17E+02	1.11E+02	1.05	Acceptable
EZA	1st/2021	03/11/21	E13359	Water	pCi/L	Zinc-65	2.24E+02	2.08E+02	1.08	Acceptable
EZA	2nd/2021	08/06/21	E13360	Cartridge	pCi	Iodine-131	9.99E+01	9.08E+01	1.10	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cerium-141	2.12E+02	2.17E+02	0.98	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cobalt-58	2.09E+02	2.16E+02	0.97	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cobalt-60	2.62E+02	2.60E+02	1.01	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Chromium-51	2.66E+02	6.42E+02	1.02	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cesium-134	2.34E+02	2.57E+02	0.91	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Cesium-137	2.32E+02	2.26E+02	1.03	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Iron-59	2.50E+02	2.21E+02	1.13	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Iodine-131	8.04E+01	8.38E+01	0.96	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Manganese-54	3.05E+02	3.00E+02	1.02	Acceptable
EZA	2nd/2021	08/06/21	E13362	Milk	pCi/L	Zinc-65	3.93E+02	3.62E+02	1.09	Acceptable
EZA	2nd/2021	08/06/21	E13363	Water	pCi/L	Cerium-141	1.96E+02	1.80E+02	1.09	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cobalt-58	1.84E+02	1.79E+02	1.03	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cobalt-60	2.20E+02	2.15E+02	1.02	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Chromium-51	5.65E+02	5.33E+02	1.06	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cesium-134	2.02E+02	2.13E+02	0.95	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Cesium-137	2.00E+02	1.88E+02	1.07	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Iron-59	2.12E+02	1.83E+02	1.16	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Iodine-131	9.21E+01	9.20E+01	1.00	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Manganese-54	2.75E+02	2.49E+02	1.10	Acceptable
EZA	2nd/2021	08/06/21	E13174	Water	pCi/L	Zinc-65	3.35E+02	3.00E+02	1.12	Acceptable
EZA	3rd/2021	11/08/21	E13364	Cartridge	pCi	Iodine-131	1.02E+02	9.08E+01	112	Acceptable
EZA	3rd/2021	11/08/21	E13365	Milk	pCi/L	Strontium-89	8.92E+01	8.54E+01	1.04	Acceptable
EZA	3rd/2021	11/08/21	E13365	Milk	pCi/L	Strontium-90	1.01E+01	1.40E+01	0.72	Acceptable

EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cerium-141	1.17E+02	1.14E+02	1.02	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cobalt-58	1.25E+02	1.18E+02	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cobalt-60	1.46E+02	1.45E+02	1.01	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Chromium-51	2.69E+02	2.36E+02	1.14	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cesium-134	9.00E+01	9.31E+01	0.97	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Cesium-137	1.14E+02	1.12E+02	1.02	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Iron-59	1.23E+02	1.02E+02	1.21	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Iodine-131	9.08E+01	8.56E+01	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Manganese-54	1.31E+02	1.28E+02	1.02	Acceptable
EZA	3rd/2021	11/08/21	E13366	Milk	pCi/L	Zinc-65	1.65E+02	1.53E+02	1.08	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cerium-141	1.54E+02	1.51E+02	1.02	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cobalt-58	1.62E+02	1.56E+02	1.04	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cobalt-60	2.07E+02	1.91E+02	1.08	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Chromium-51	3.30E+02	3.12E+02	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cesium-134	1.13E+02	1.23E+02	0.92	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Cesium-137	1.57E+02	1.48E+02	1.06	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Iron-59	1.52E+02	1.35E+02	1.13	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Iodine-131	2.71E+02	2.47E+02	1.10	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Manganese-54	1.83E+02	1.70E+02	1.08	Acceptable
EZA	3rd/2021	11/08/21	E13367	Water	pCi/L	Zinc-65	2.33E+02	2.02E+02	1.15	Acceptable
EZA	4th/2021	02/02/22	E13368	Cartridge	pCi	Iodine-131	9.78E+01	9.35E+01	1.05	Acceptable
EZA	4th/2021	02/02/22	E13370	Milk	pCi/L	Strontium-89	7.54E+01	9.08E+01	0.83	Acceptable
EZA	4th/2021	02/02/22	E13370	Milk	pCi/L	Strontium-90	1.10E+01	1.30E+01	0.85	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cerium-141	1.32E+02	1.32E+02	1.00	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cobalt-58	1.14E+02	1.14E+02	1.00	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cobalt-60	2.27E+02	2.23E+02	1.02	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Chromium-51	2.84E+02	2.93E+02	0.97	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cesium-134	1.51E+02	1.66E+02	0.91	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Cesium-137	1.15E+02	1.17E+02	0.98	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Iron-59	1.27E+02	1.13E+02	1.13	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Iodine-131	9.28E+01	9.03E+01	1.03	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Manganese-54	1.60E+02	1.52E+02	1.06	Acceptable
EZA	4th/2021	02/02/22	E13366	Milk	pCi/L	Zinc-65	2.87E+02	2.57E+02	1.12	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cerium-141	1.53E+02	1.54E+02	0.99	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cobalt-58	1.42E+02	1.34E+02	1.06	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cobalt-60	2.82E+02	2.61E+02	1.08	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Chromium-51	3.75E+02	3.42E+02	1.1	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cesium-134	1.82E+02	1.94E+02	0.94	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Cesium-137	1.41E+02	1.37E+02	1.03	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Iron-59	1.44E+02	1.32E+02	1.09	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Iodine-131	9.66E+01	9.13E+01	1.06	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Manganese-54	1.88E+02	1.77E+02	1.06	Acceptable
EZA	4th/2021	02/02/22	E13367	Water	pCi/L	Zinc-65	3.45E+02	3.01E+02	1.15	Acceptable

TABLE 3

2021 DEPARTMENT OF ENERGY MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP) RESULTS

PT Provider	Quarter / Year	Report Received Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Filter	Bq/smpl	Gross Alpha	0.864	1.77	0.53-3.01	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Filter	Bq/smpl	Gross Beta	0.639	0.649	0.325-0.974	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Water	Bq/L	Gross Alpha	0.782	0.87	0.26-1.48	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-GrF44	Water	Bq/L	Gross Beta	2.40	2.50	1.25-3.75	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Americium-241	89.6	88	62-114	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cesium-134	2.92		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cesium-137	1590	1550	1085-2015	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cobalt-57	1010	920	644-1196	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Cobalt-60	1320	1370	959-1781	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Iron-55	1150	910	637-1183	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Manganese-54	1.84		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Nickel-63	597	689	482-896	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Plutonium-238	51.2	49.1	34.4-63.8	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Plutonium-239/240	-0.819		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Potassium-40	618	618	433-803	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Strontium-90	313	272	190-354	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Technetium-99	576	638	447-829	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	U-234/233	57.1	59	41-77	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Uranium-238	194	208	146-270	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaS44	Soil	Bq/Kg	Zinc-65	627	604	423-785	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Americium-241	0.0145		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cesium-134	10.6	11.5	8.1-15.0	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cesium-137	8.54	7.9	5.5-10.3	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cobalt-57	12.2	11.4	8.0-14.8	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Cobalt-60	0.146		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Hydrogen-3	2.27		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Iron-55	27.1	26.9	18.8-35.0	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Manganese-54	16.7	15.5	10.9-20.2	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Nickel-63	10.4	8.2	5.7-10.7	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Plutonium-238	0.515	0.577	0.404-0.750	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Plutonium-239/240	0.564	0.649	0.454-0.844	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Potassium-40	-0.886		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Radium-226	0.538	0.632	0.442-0.822	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Strontium-90	4.95	4.47	3.13-5.81	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Technetium-99	3.69	4.01	2.81-5.21	Acceptable

MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Uranium-234/233	0.884	0.85	0.60-1.11	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Uranium-238	0.913	0.86	0.60-1.12	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-MaW44	Water	Bq/L	Zinc-65	11.6	10.5	7.4-13.7	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	ug/smpl	Uranium-235	0.0366	0.0353	0.0247-0.0459	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	ug/smpl	Uranium-238	5.19	5.03	3.52-6.54	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	ug/smpl	Uranium-Total	5.22	5.07	3.55-6.59	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Americium-241	0.0385	0.037	0.026-0.048	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cesium-134	2.12	2.14	1.50-2.78	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cesium-137	-0.0168		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cobalt-57	0.74	0.686	0.480-0.892	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Cobalt-60	0.0325		False pos. test	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Manganese-54	0.368	0.312	0.218-0.406	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Plutonium-238	0.0207	0.0228	0.0160-0.0296	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Plutonium-239/240	0.0417	0.0453	0.0317-0.0589	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Strontium-90	0.89	0.749	0.524-0.974	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Uranium-234/233	0.063	0.06	0.04-0.08	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Uranium-238	0.0617	0.063	0.044-0.082	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdF44	Filter	Bq/smpl	Zinc-65	0.457	0.352	0.246-0.458	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Americium-241	0.0605	0.0586	0.0410-0.0762	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cesium-134	2.51	3.6	2.52-4.68	**Not Acceptable**
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cesium-137	3.75	4.69	3.28-6.10	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cobalt-57	3.73	5.05	3.54-6.57	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Cobalt-60	2.36	2.99	2.09-3.89	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Manganese-54	4.13	5.25	3.68-6.83	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Plutonium-238	0.0467	0.0446	0.0312-0.058	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Plutonium-239/240	0.0912	0.0912	0.0645-0.1197	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Strontium-90	0.444	0.673	0.471-0.875	**Not Acceptable**
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Uranium-234/233	0.136	0.138	0.097-0.179	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Uranium-238	0.143	0.143	0.100-0.186	Acceptable
MAPEP	2nd/2021	06/22/21	MAPEP-21-RdV44	veg	Bq/smpl	Zinc-65	-0.0042		False pos. test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-GrF45	Filter	Bq/sample	Gross Alpha	1.73	0.98	0.288-1.632	**Not Acceptable**
MAPEP	4th/2021	12/16/21	MAPEP-21-GrF45	Filter	Bq/sample	Gross Beta	0.642	0.553	0.277-0.830	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-GrW45	Water	Bq/L	Gross Alpha	0.226	0.232	0.070-0.394	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-GrW45	Water	Bq/L	Gross Beta	2.73	2.8707	1.404-4.211	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Americium-241	106.0	98.0	69-127	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cesium-134	993	1170	819-1521	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cesium-137	579.00	572	400-744	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cobalt-57	0.375		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Cobalt-60	692	722	505-939	Acceptable

MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Iron-55	994	1020	714-1326	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Manganese-54	412	410	287-533	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Nickel-63	1170	1280	896-1664	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Plutonium-238	55.9	59.8	41.9-77.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Plutonium-239/240	66.3	71.3	49.9-92.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Potassium-40	612	607	425-789	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Strontium-90	0.161		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Technetium-99	747	777	544-1010	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	U-234/233	80	51	36.0-66.8	**Not Acceptable**
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Uranium-238	177	168	118-218	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaS45	Soil	Bq/Kg	Zinc-65	945	907	635-1179	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Americium-241	0.407	0.426	0.298-0.554	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cesium-134	9.5	10.4	7.3-13.5	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cesium-137	-0.04		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cobalt-57	14	13.9	9.7-18.1	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Cobalt-60	14.5	14.0	9.8-18.2	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Hydrogen-3	231	250	175-325	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Iron-55	47.9	49.8	34.9-64.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Manganese-54	9.47	9.0	6.3-11.7	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Nickel-63	41.4	39.5	27.7-51.4	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Plutonium-238	-0.00169	0.0096	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Plutonium-239/240	0.470	0.528	0.370-0.689	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Potassium-40	0.005		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Radium-226	0.310	0.226	0.158-0.294	**Not Acceptable**
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Strontium-90	3.50	3.86	2.70-5.02	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Technetium-99	3.79	3.71	2.60-4.82	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Uranium-234/233	0.0203	0.0215	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Uranium-238	0.00975	0.0123	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-MaW45	Water	Bq/L	Zinc-65	0.122		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	ug/sample	Uranium-235	0.0594	0.0588	0.0412-0.0764	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	ug/sample	Uranium-238	8.5	8.3	5.8-10.8	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	ug/sample	Uranium-Total	8.579	8.4	5.9-10.9	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Americium-241	0.109	0.119	0.083-0.155	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cesium-134	1.23	1.32	0.92-1.72	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cesium-137	1.31	1.280	0.90-1.66	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cobalt-57	0.82800	0.83	0.58-1.08	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Cobalt-60	2.37	2.28	1.60-2.96	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Manganese-54	1.60	1.46	1.02-1.90	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Plutonium-238	0.0023	0.0030	Sens. Evaluation	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Plutonium-239/240	0.0574	0.0609	0.0426-0.0792	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Strontium-90	0.195	0.273	0.191-0.355	Acceptable

MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Uranium-234/233	0.101	0.100	0.070-0.130	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Uranium-238	0.107	0.104	0.073-0.135	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdF45	Filter	Bq/sample	Zinc-65	0.0579		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Americium-241	0.0724	0.0747	0.0523-0.0971	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cesium-134	4.02	4.34	3.04-5.64	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cesium-137	2.28	2.21	1.55-2.87	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cobalt-57	4.56	4.66	3.26-6.06	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Cobalt-60	3.44	3.51	2.46-4.56	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Manganese-54	-0.0404		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Plutonium-238	0.0603	0.0655	0.0459-0.0852	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Plutonium-239/240	0.00140		False Pos Test	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Strontium-90	1.10	1.32	0.92-1.72	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Uranium-234/233	0.1740	0.1830	0.128-0.238	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Uranium-238	0.1770	0.1760	1.123-0.229	Acceptable
MAPEP	4th/2021	12/16/21	MAPEP-21-RdV45	Vegetation	Bq/sample	Zinc-65	2.57	2.43	1.70-3.16	Acceptable

TABLE 4

2021 ERA PROGRAM PERFORMANCE EVALUATION RESULTS

PT Provider	Quarter / Year	Report Received Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range	Evaluation
ERA	2nd/2021	5/25/2021	RAD 125	Water	pCi/L	Radium-226	14.2	19.3	14.3 - 22.0	**Not Acceptable**
ERA	2nd/2021	5/25/2021	RAD 125	Water	pCi/L	Radium-228	9.98	10.3	6.71 - 12.8	Acceptable
ERA	2nd/2021	5/25/2021	RAD 125	Water	pCi/L	Strontium-89	59.3	63.5	51.4 - 71.5	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Barium-133	22.3	23.8	18.4 - 27.4	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cesium-134	46.8	42.8	34.2 - 47.1	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cesium-137	148	148	133 - 165	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cesium-137	148	148	133 - 165	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Cobalt-60	36.7	34.6	30.8 - 40.8	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Zinc-65	68.2	61.6	54.6 - 75.0	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Gross Alpha	69.6	63.3	33.2 - 78.5	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Gross Beta	38.8	39.8	26.4 - 47.3	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Radium-226	8.42*	15.5	11.5 - 17.8	**Not Acceptable**
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Radium-228	19.5*	12.9	8.54 - 15.8	**Not Acceptable**
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Radium-228	14.6	12.9	8.54 - 15.8	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Uranium (Nat)	29.4	30.1	24.4 - 33.4	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Uranium (Nat) mass	44.6	43.9	35.5 - 48.7	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Tritium	2000	2120	1750 - 2350	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Tritium	2020	2120	1750 - 2350	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-89	74.6	61.3	49.4 - 69.2	**Not Acceptable**
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-89	65.7	61.3	49.4 - 69.2	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-90	32.5	40.6	29.9 - 46.7	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Strontium-90	38.2	40.6	29.9 - 46.7	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Iodine-131	30.2	27.9	23.2 - 32.8	Acceptable
ERA	1st/2021	03/02/21	RAD-124	Water	pCi/L	Iodine-131	31.7	27.9	23.2 - 32.8	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Barium-133	48.9	45.5	37.2 - 50.6	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Cesium-134	84.4	87.5	71.8 - 96.2	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Cesium-137	211	208	187 - 230	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Cobalt-60	93	87.1	78.4 - 98.1	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Zinc-65	108	102	91.8 - 122	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Gross Alpha	39.1	49.1	25.6 - 61.7	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Gross Alpha	40.3	49.1	25.6 - 61.7	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Gross Beta	30.4	31.5	20.3 - 39.2	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Radium-226	11.2	13.4	9.99 - 15.4	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Radium-228	6.8	7.59	4.81 - 9.68	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Radium-228	6.69	7.59	4.81 - 9.68	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Uranium (Nat)	59.6	62.3	50.9 - 68.5	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	µg/L	Uranium (Nat) mass	94	90.9	74.2 - 100	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Tritium	9820	10400	9050 - 11400	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Tritium	10300	10400	9050 - 11400	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Strontium-89	50.3	55.9	44.6 - 63.6	Acceptable
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Strontium-90	46.2	40.1	29.5 - 46.1	**Not Acceptable**
ERA	3rd /2021	08/30/21	RAD-126	Water	pCi/L	Iodine-131	17.6	20.8	17.2 - 25.0	Acceptable

TABLE 5

2021 ERA PROGRAM (MRAD) PERFORMANCE EVALUATION RESULTS

PT Provider	Quarter / Year	Report Received Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Actinium-228	3260	3170	2090 - 3990	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Americium-241	1580	1620	875 - 2290	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Bismuth-212	3300	3280	939 - 4890	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Bismuth-214	1370	1380	662 - 2050	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Cesium-134	5380	5920	4050 - 7080	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Cesium-137	7580	7570	5720 - 9570	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Cobalt-60	4660	5060	3980 - 6250	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Lead-212	3830	3350	2340 - 4240	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Lead-212	3830	3350	2340 - 4240	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Lead-214	1760	1440	605 - 2260	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Manganese-54	<28.3	<1000	<1000	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Plutonium-238	1810	1930	963 - 2930	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Plutonium-239	1610	1720	937 - 2480	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Potassium-40	24400	24700	17000 - 29500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Strontium-90	10200	9190	2860 - 14300	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Thorium-234	4870	4020	1520 - 6880	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-234	3650	4060	1900 - 5320	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-234	3740	4060	1900 - 5320	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-238	3480	4020	2210 - 5400	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-238	3320	4020	2210 - 5400	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-Total	7300	8260	4580 - 10700	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Uranium-Total	7060	8260	4580 - 10700	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	µg/kg	Uranium-Total (mass)	10400	12000	5420 - 16200	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	µg/kg	Uranium-Total (mass)	9950	12000	5420 - 16200	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Soil	pCi/kg	Zinc-65	7090	7040	5620 - 9600	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Americium-241	2210	2460	1520 - 3470	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Cesium-134	1920	2350	1560 - 3130	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Cesium-137	2590	2720	2090 - 3660	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Cobalt-60	1640	1610	1260 - 2100	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Curium-244	3260	3750	2110 - 4660	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Manganese-54	<26.8	<300	<300	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Plutonium-238	3450	3610	2500 - 4660	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Plutonium-239	1750	1820	1260 - 2300	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Potassium-40	36700	33300	25000 - 42200	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Strontium-90	986	1260	710 - 1640	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Strontium-90	986	1260	710 - 1640	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Uranium-234	1370	1420	998 - 1810	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Uranium-238	1380	1410	996 - 1760	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Uranium-Total	2830	2900	1850 - 3910	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	µg/kg	Uranium-Total (mass)	4150	4230	3250 - 5240	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/kg	Zinc-65	797	766	572 - 1140	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	veg	pCi/Filter	Americium-241	61.8	60.2	43.0 - 80.3	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-134	958	1030	668 - 1260	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-134	958	1030	668 - 1260	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-137	159	163	134 - 214	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cesium-137	159	163	134 - 214	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Cobalt-60	1280	1220	1040 - 1550	Acceptable

ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Iron-55	103	121	44.2 - 193	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Manganese-54	<6.46	<50.0	<50.0	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Plutonium-238	35.9	35.4	26.7 - 43.5	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Plutonium-239	20.1	20.5	15.3 - 24.7	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Strontium-90	181	189	120 - 257	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-234	24.1	25.5	18.9 - 29.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-234	26.4	25.5	18.9 - 29.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-238	24.6	25.3	19.1 - 30.2	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-238	23.5	25.3	19.1 - 30.2	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-Total	50	52	38.0 - 61.7	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Uranium-Total	49.9	52	38.0 - 61.7	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	µg/Filter	Uranium-Total (mass)	73.8	75.9	60.9 - 88.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	µg/Filter	Uranium-Total (mass)	70.5	75.9	60.9 - 88.9	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Zinc-65	840	771	632 - 1180	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Gross Alpha	391*	96.1	50.2 - 158	**Not Acceptable**
ERA	2nd/2021	5/25/2021	MRAD 34	Filter	pCi/Filter	Gross Beta	71.5	62.6	38.0 - 94.6	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Americium-241	160	157	108 - 201	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cesium-134	1550	1610	1220 - 1770	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cesium-137	595	578	495 - 657	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cobalt-60	2310	2180	1880 - 2500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cobalt-60	2310	2180	1880 - 2500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Cobalt-60	2310	2180	1880 - 2500	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Iron-55	494	275	162 - 400	**Not Acceptable**
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Manganese-54	<6.01	<100	<100	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Plutonium-238	115	171	103 - 222	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Plutonium-239	95.2	142	87.9 - 175	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Strontium-90	736	671	483 - 829	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-234	140	160	122 - 183	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-234	162	160	122 - 183	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-234	152	160	122 - 183	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-238	146	158	122 - 186	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-238	158	158	122 - 186	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-238	145	158	122 - 186	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-Total	292	325	254 - 370	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Uranium-Total	297	325	254 - 370	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	µg/L	Uranium-Total (mass)	436	474	384 - 538	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	µg/L	Uranium-Total (mass)	433	474	384 - 538	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Zinc-65	1900	1720	1530 - 2170	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Gross Alpha	87.8	62.2	22.7 - 85.8	**Not Acceptable**
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Gross Beta	73.7	103	51.5 - 142	Acceptable
ERA	2nd/2021	5/25/2021	MRAD 34	Water	pCi/L	Tritium	24900	22800	17200 - 27800	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Actinium-228	3370	3240	2140 - 4080	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Americium-241	922	891	481 - 1260	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Bismuth-212	3320	3350	959 - 4990	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Bismuth-214	1140	1370	658 - 2040	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cesium-134	2410	2650	1810 - 3170	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cesium-134	2410	2650	1810 - 3170	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cesium-137	3720	3660	2770 - 4630	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Cobalt-60	4680	4730	3720 - 5840	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Lead-212	3840	3420	2390 - 4320	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Lead-214	1480	1490	626 - 2340	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Manganese-54	<27.4	<1000	<1000	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Plutonium-238	1230	1250	623 - 1900	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Plutonium-239	1440	1450	790 - 2090	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Potassium-40	25600	24700	17000 - 29500	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Strontium-90	8770	6090	1900 - 9490	Acceptable

ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Thorium-234	3350	2720	1030 - 4660	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-234	2620	2740	1280 - 3590	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-234	3260	2740	1280 - 3590	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-238	2870	2720	1490 - 3650	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-238	3400	2720	1490 - 3650	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-Total	5670	5580	3100 - 7210	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-Total	5670	5580	3100 - 7210	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Uranium-Total	6817	5580	3100 - 7210	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	µg/kg	Uranium (mass)	8630	8140	3670 - 11000	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	µg/kg	Uranium (mass)	10200	8140	3670 - 11000	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Soil	pCi/kg	Zinc-65	5540	4860	3880 - 6630	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Americium-241	4040	4040	2500 - 5710	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cesium-134	918	923	613 - 1230	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cesium-137	2180	2210	1700 - 2980	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cobalt-60	1670	1590	1250 - 2080	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Cobalt-60	1670	1590	1250 - 2080	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Curium-244	2830	2840	1600 - 3530	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Manganese-54	<47.1	<300	<300	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Plutonium-238	1730	1620	1120 - 2090	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Plutonium-239	1620	1440	995 - 1820	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Potassium-40	30200	33300	25000 - 42200	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Strontium-90	5760	5720	3220 - 7450	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Uranium-234	1410	1350	948 - 1720	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Uranium-238	1420	1340	946 - 1680	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Uranium-Total	2900	2750	1760 - 3710	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	µg/kg	Uranium (mass)	4250	4010	3080 - 4970	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Veg	pCi/kg	Zinc-65	1340	1200	896 - 1780	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Americium-241	28.1	27.7	19.8 - 36.9	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cesium-134	217	241	156 - 296	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cesium-137	187	187	154 - 245	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cobalt-60	324	310	264 - 394	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Cobalt-60	324	310	264 - 394	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Iron-55	508	548	200 - 874	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Manganese-54	<3.06	<50.0	<50.0	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Plutonium-238	27.8	28.5	21.5 - 35.0	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Plutonium-239	22.6	21.6	16.1 - 26.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Strontium-90	23.4*	19.2	12.1 - 26.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-234	7.96	7.76	5.75 - 9.09	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-234	9.62*	7.76	5.75 - 9.09	**Not Acceptable**
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-238	7.35	7.69	5.81 - 9.17	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-238	7.38	7.69	5.81 - 9.17	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-Total	15.8	15.8	11.5 - 18.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Uranium-Total	17	15.8	11.5 - 18.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	µg/Filter	Uranium (mass)	22.1	23.1	18.5 - 27.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	µg/Filter	Uranium (mass)	22.1	23.1	18.5 - 27.1	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Zinc-65	414	366	300 - 559	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Gross Alpha	95.4	77.6	40.5 - 128	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Filter	pCi/Filter	Gross Beta	87	80.6	48.9 - 122	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Americium-241	70.5	63.7	43.7 - 81.5	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Cesium-134	626	649	490 - 714	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Cesium-137	2210	2170	1860 - 2470	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Cobalt-60	1040	964	831 - 1110	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Iron-55	339*	246	145 - 358	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Plutonium-238	74.1	114	68.5 - 148	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Plutonium-239	21.3	34.3	21.2 - 42.3	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Strontium-90	915	936	674 - 1160	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-234	39.9	40.8	31.1 - 46.7	Acceptable

ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-234	49.8*	40.8	31.1 - 46.7	**Not Acceptable**
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-238	40.3	40.5	31.4 - 47.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-238	41.2	40.5	31.4 - 47.7	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-Total	83.1	83.2	64.9 - 94.8	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Uranium-Total	92.9*	83.2	64.9 - 94.8	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	µg/L	Uranium (mass)	121	121	98.0 - 137	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	µg/L	Uranium (mass)	123	121	98.0 - 137	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Zinc-65	449	394	351 - 497	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Gross Alpha	74.7	93.9	34.3 - 129	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Gross Beta	96.1	97	48.5 - 133	Acceptable
ERA	4th/2021	11/23/21	MRAD-35	Water	pCi/L	Tritium	12600	12800	9650 - 15600	Acceptable

FIGURE 1

COBALT-60 PERFORMANCE EVALUATION RESULTS AND % BIAS

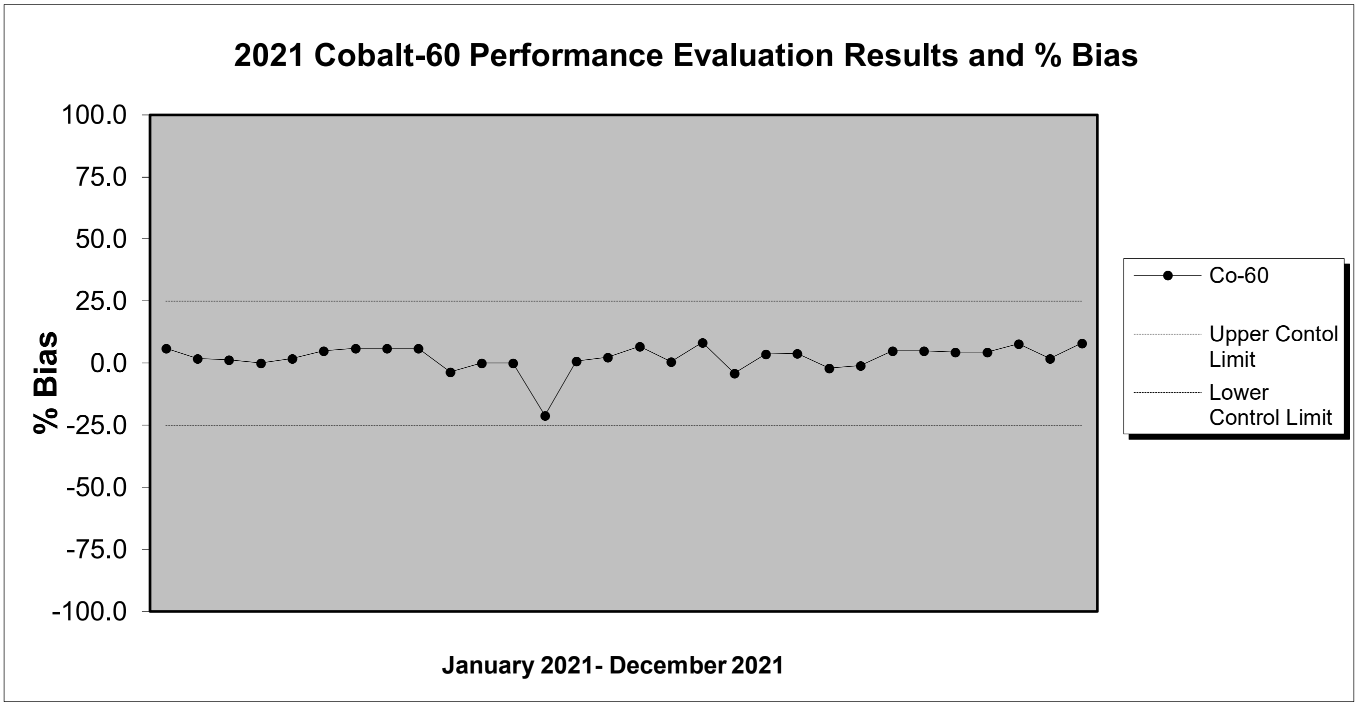


FIGURE 2

CESIUM-137 PERFORMANCE EVALUATION RESULTS AND % BIAS

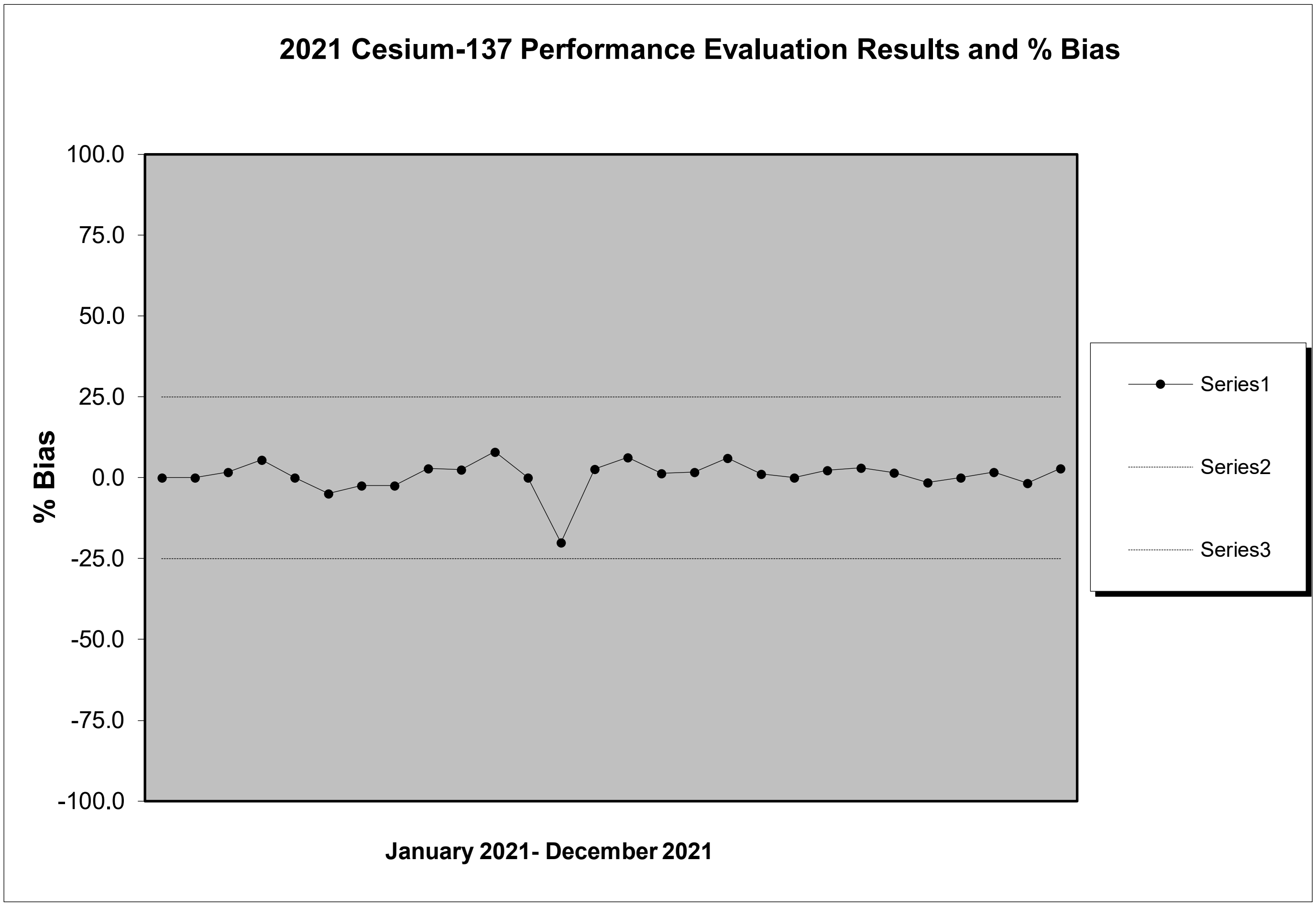


FIGURE 3

TRITIUM PERFORMANCE EVALUATION RESULTS AND % BIAS

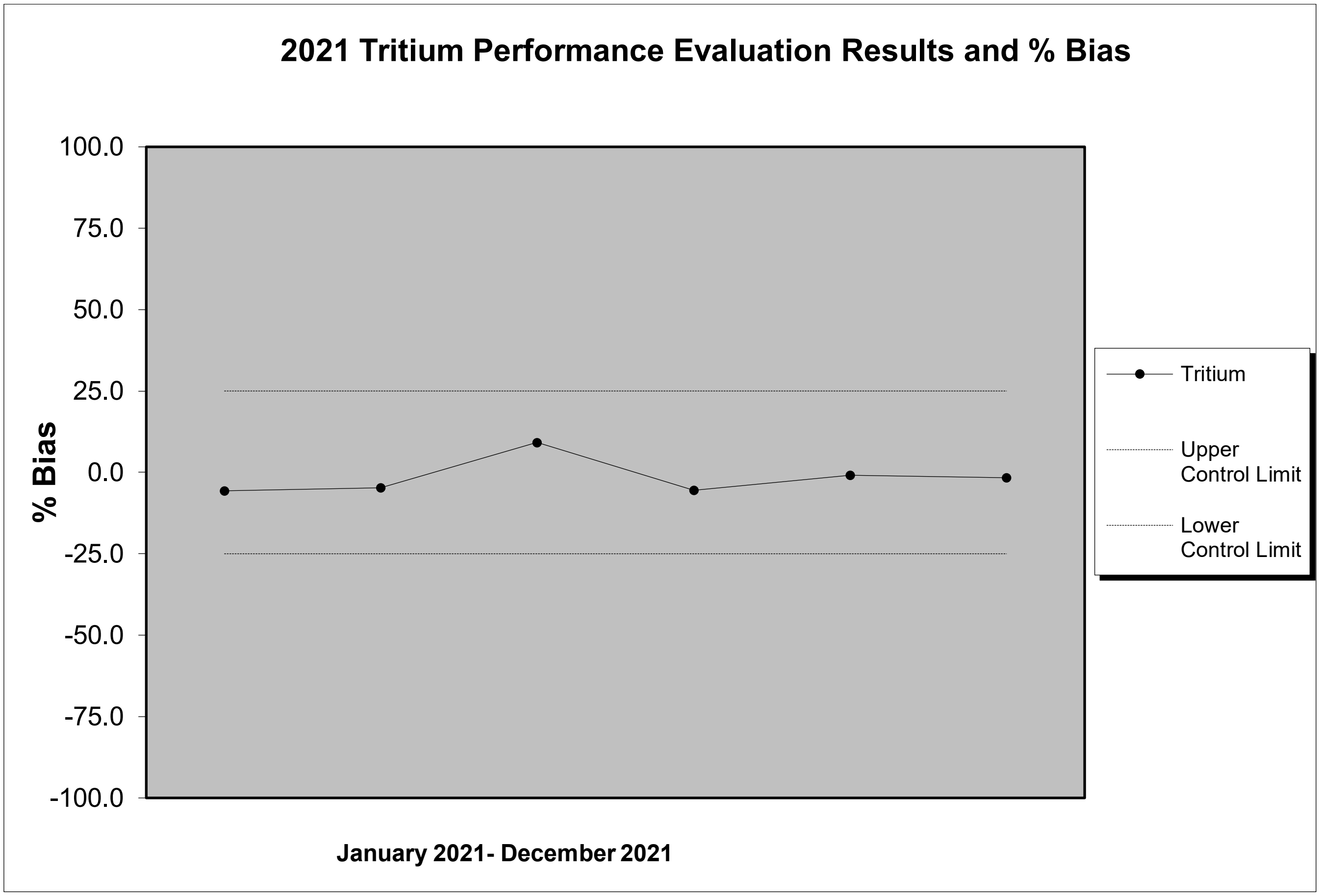


FIGURE 4

STRONTIUM-90 PERFORMANCE EVALUATION RESULTS AND % BIAS

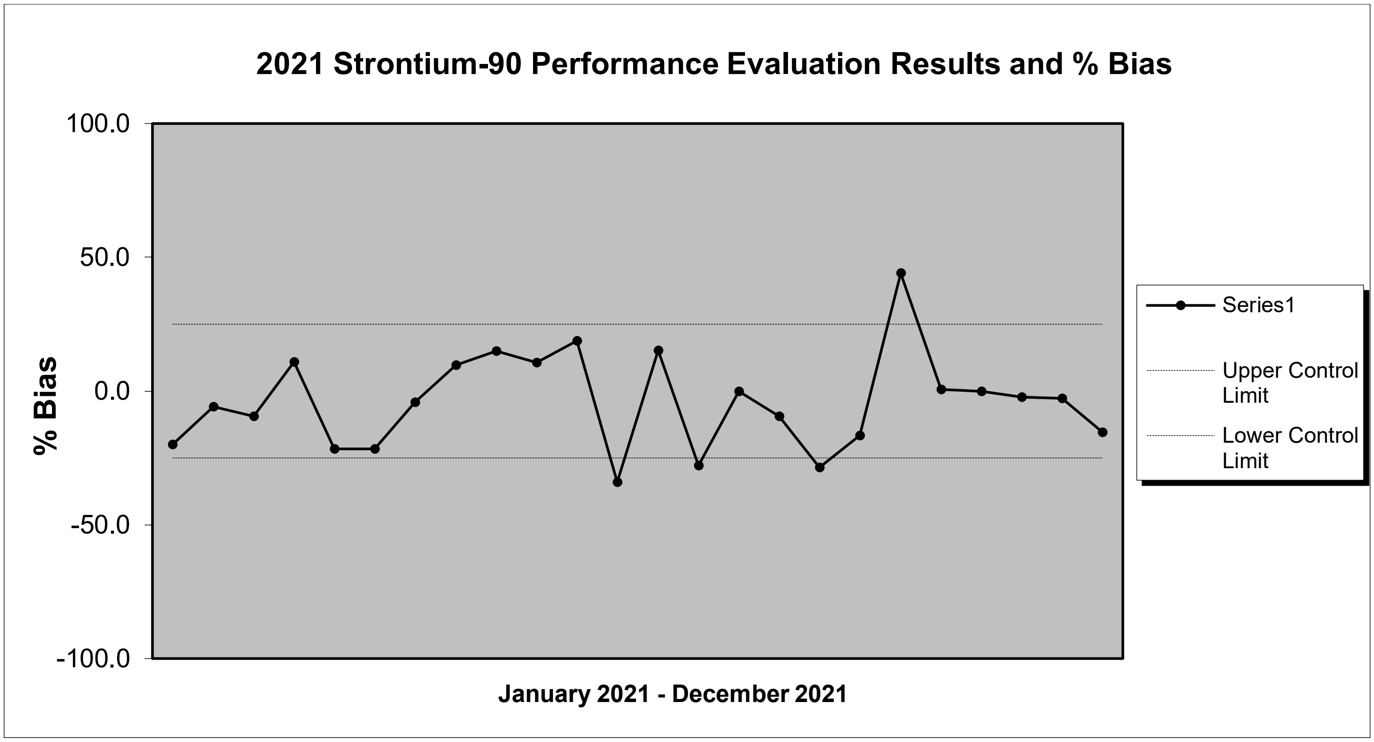


FIGURE 5

GROSS ALPHA PERFORMANCE EVALUATION RESULTS AND % BIAS

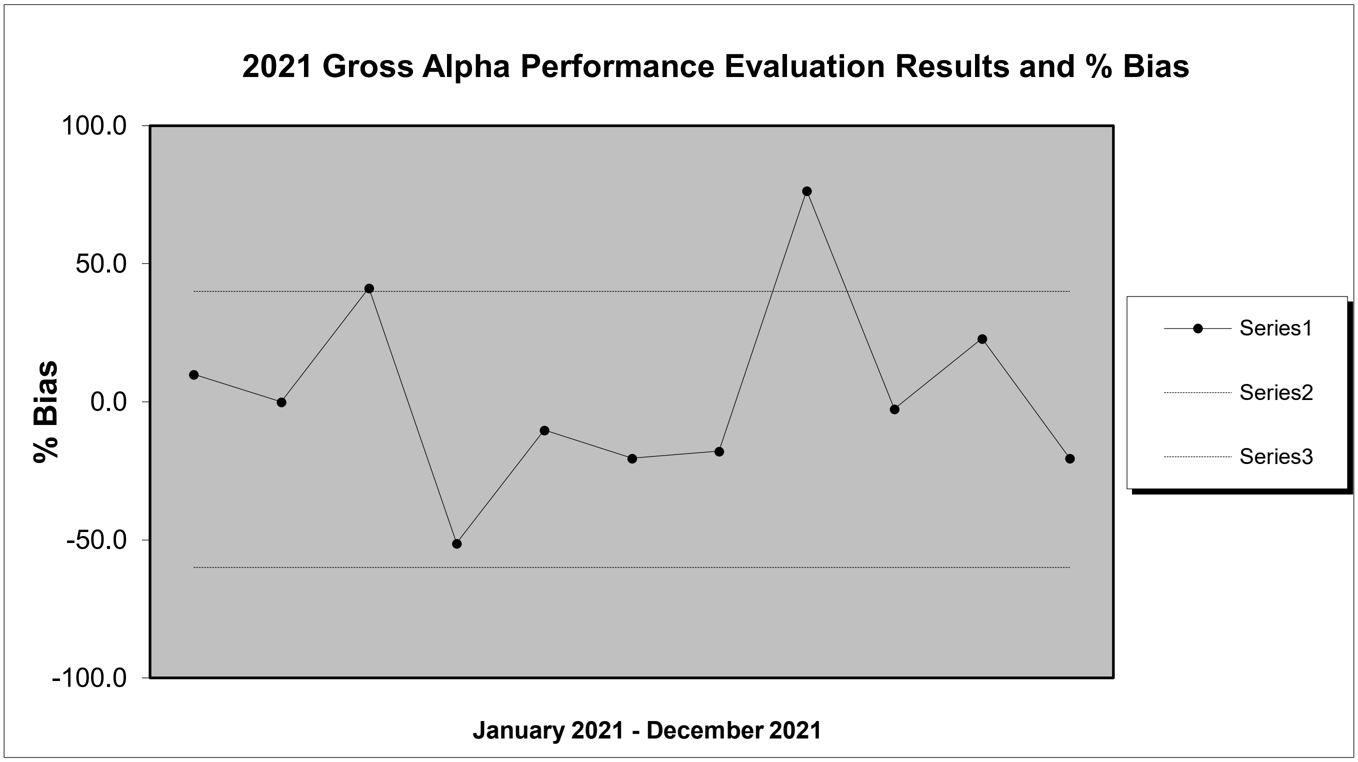


FIGURE 6

GROSS BETA PERFORMANCE EVALUATION RESULTS AND % BIAS

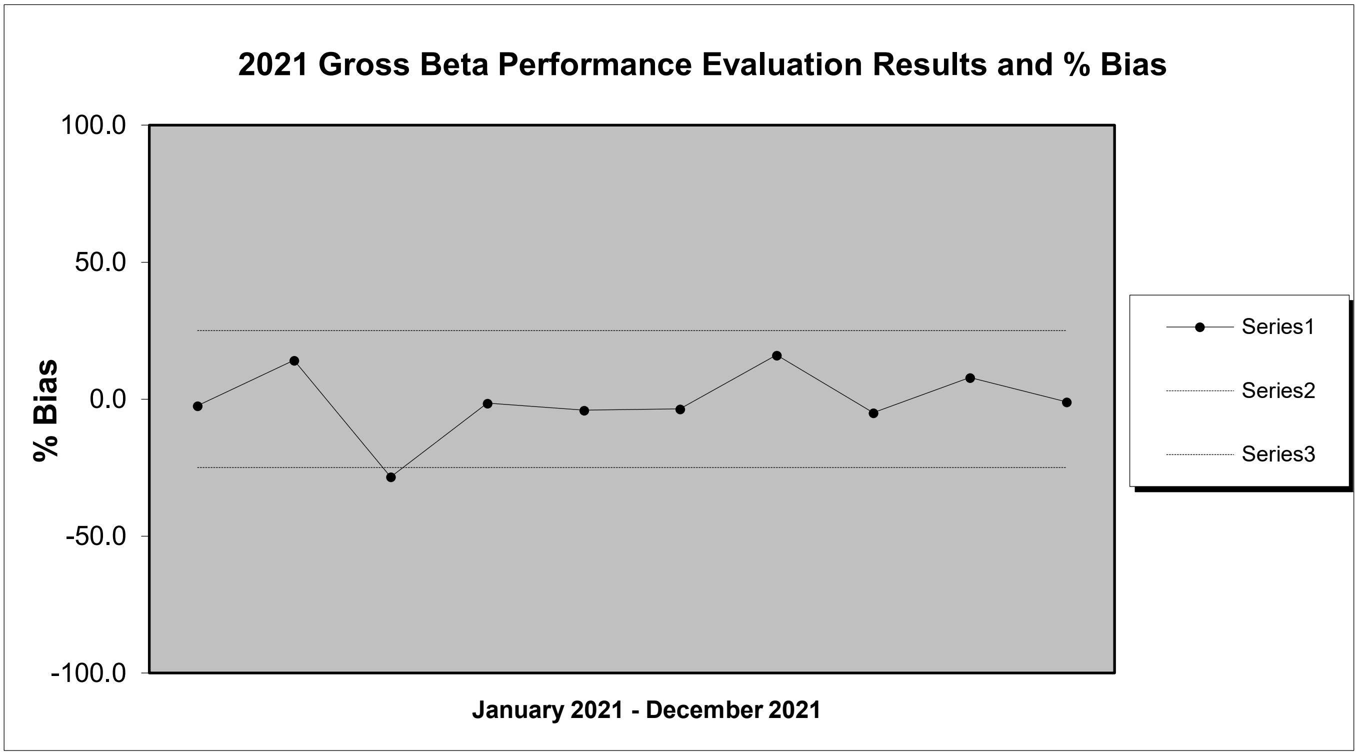


FIGURE 7

IODINE-131 PERFORMANCE EVALUATION RESULTS AND % BIAS

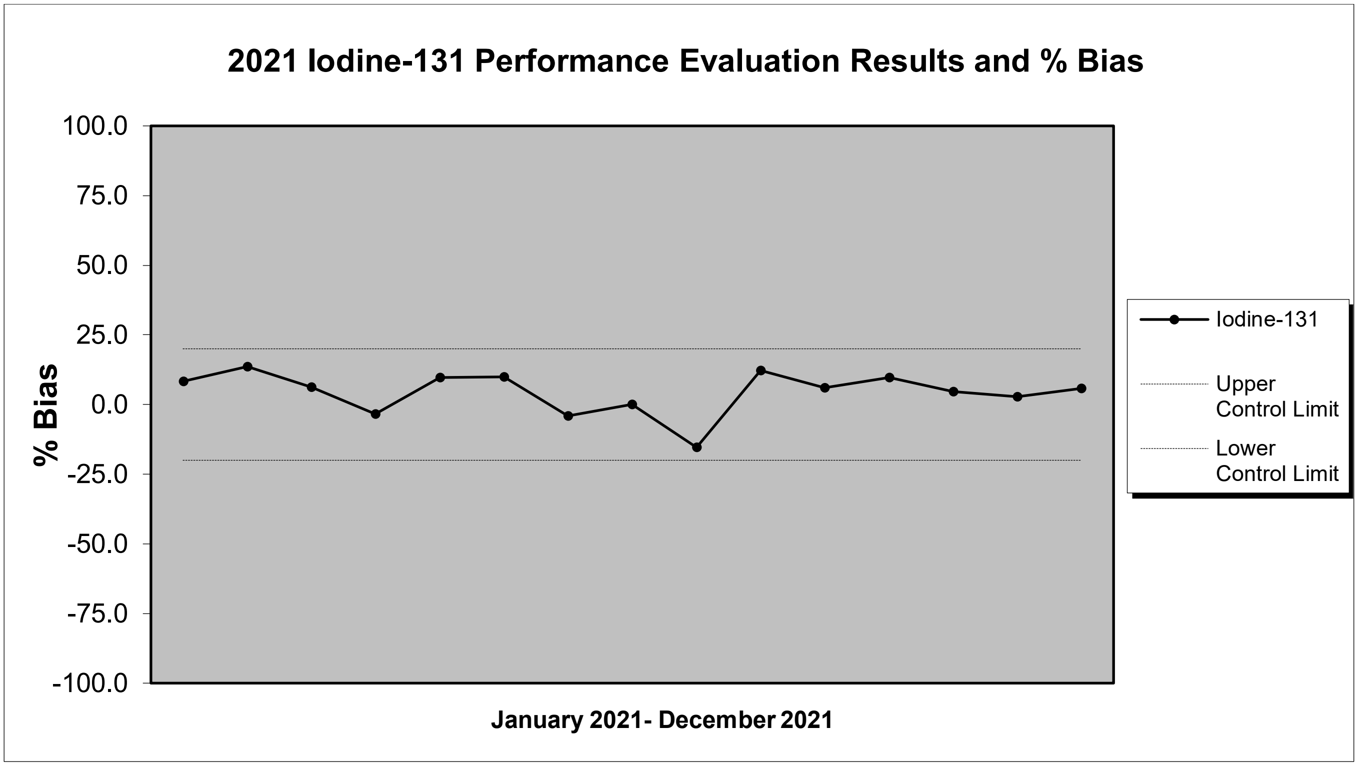


FIGURE 8

AMERICIUM-241 PERFORMANCE EVALUATION RESULTS AND % BIAS

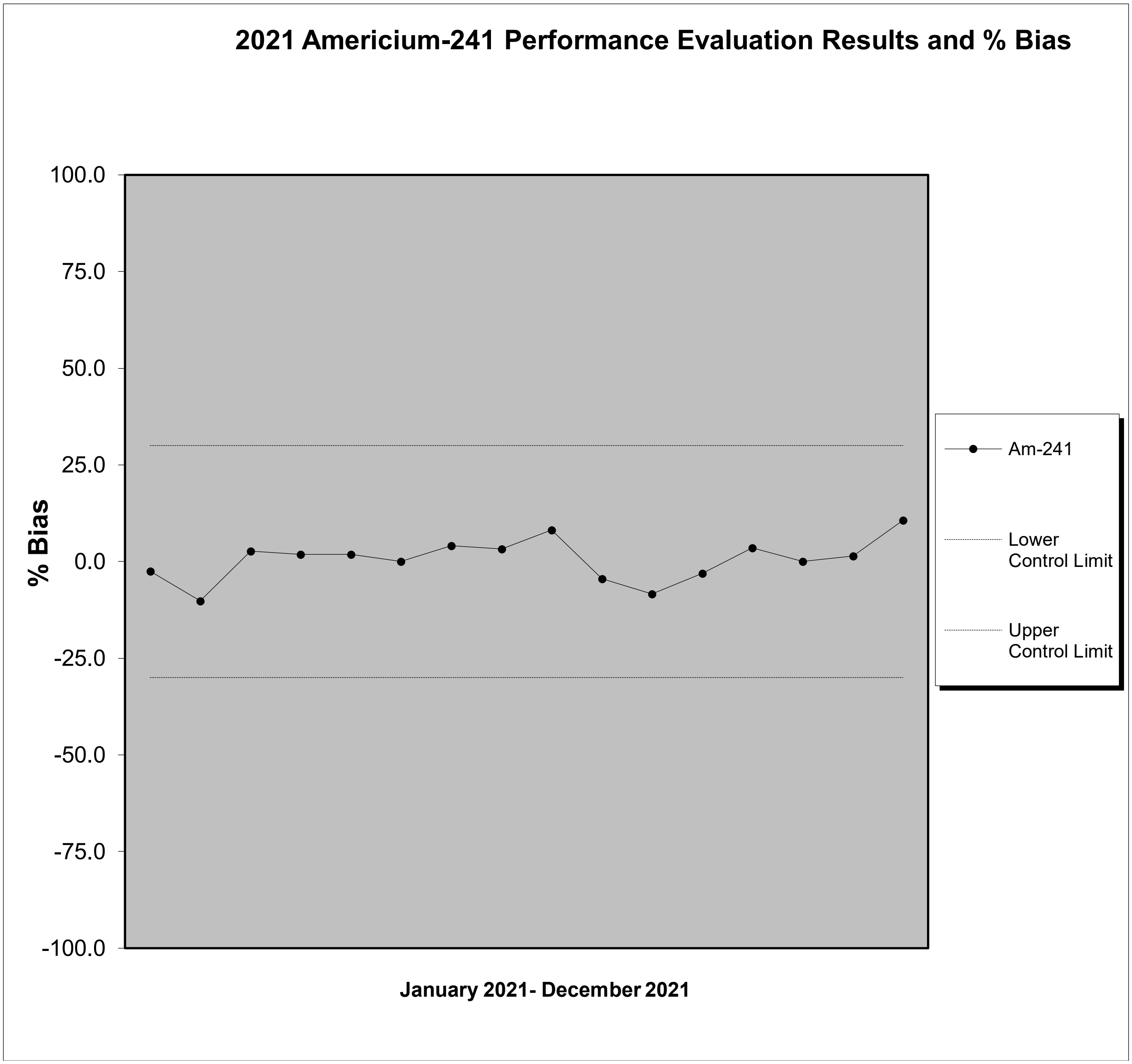


FIGURE 9

PLUTONIUM-238 PERFORMANCE EVALUATION RESULTS AND % BIAS

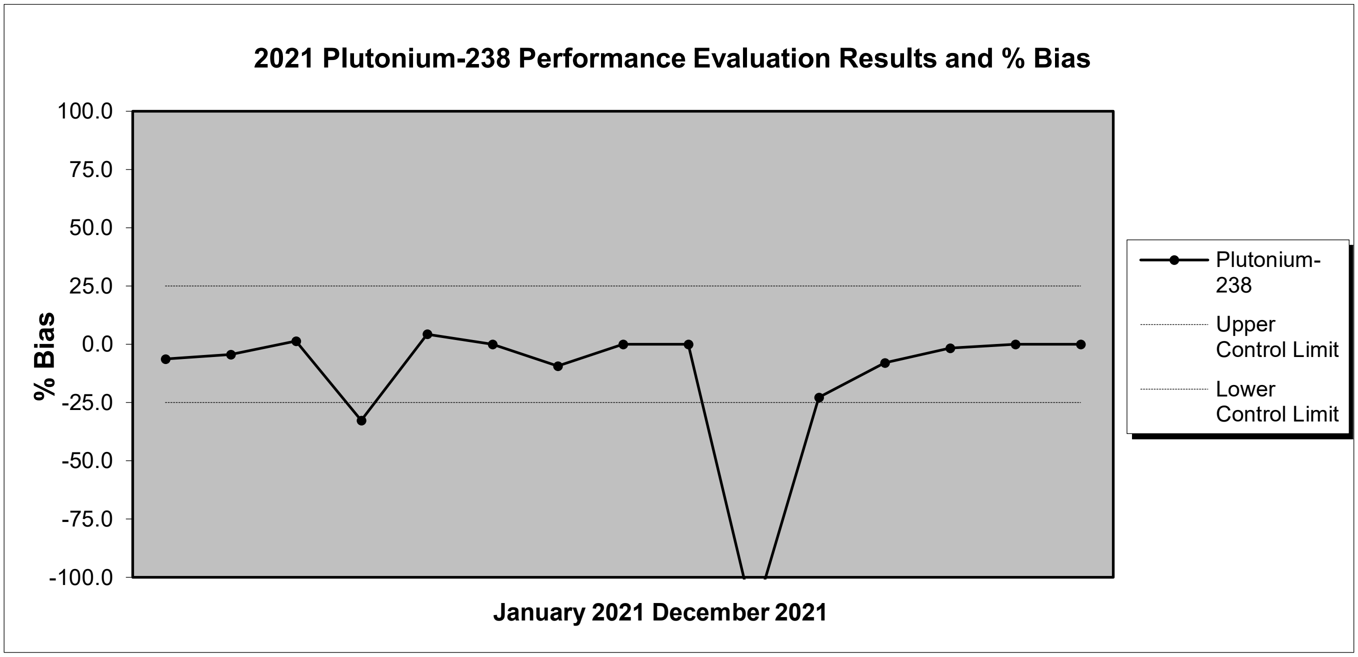


TABLE 6

REMP INTRA-LABORATORY DATA SUMMARY: BIAS AND PRECISION BY MATRIX

2021 REMP Intralab Results	Bias Criteria (+ / - 25%		Precision Criteria (Note 1)	
	WITHIN CRITERIA	OUTSIDE CRITERIA	WITHIN CRITERIA	OUTSIDE CRITERIA
MILK				
Gas Flow Sr 2nd count	54	0	59	1
Gas Flow Total Strontium	12	0	13	0
Gamma Spec Liquid RAD A-013 with Ba, La	32	0	105	0
Gamma Spec Liquid RAD A-013 with Iodine	0	0	2	0
SOLID				
Gamma Spec Solid RAD A-013	6	0	9	0
LSC Nickel 63	3	0	3	0
Gas Flow Sr 2nd count	5	0	8	0
Gas Flow Total Strontium	3	0	3	0
Gamma Spec Solid RAD A-013 with Iodine	16	0	37	0
FILTER				
Gross A & B	388	0	248	0
Gamma Spec Filter	35	0	78	0
LIQUID				
Tritium	192	0	249	0
LSC Iron-55	14	0	14	0
LSC Nickel 63	14	0	14	0
Gamma Iodine-131	1	0	1	0
Gas Flow Sr 2nd count	6	0	5	0
Gas Flow Total Strontium	13	0	15	0
Gross Alpha Non Vol Beta	23	0	71	0
Gamma Spec Liquid RAD A-013 with Ba, La	74	0	146	0
Gamma Spec Liquid RAD A-013 with Iodine	17	0	74	0
TISSUE				
Gas Flow Sr 2nd count	9	0	11	0
Gas Flow Total Strontium	5	0	5	0
Gamma Spec Solid RAD A-013 with Iodine	15	0	15	0
VEGETATION				
Gamma Spec Solid RAD A-013	10	0	10	0
Gas Flow Sr 2nd count	10	0	8	0
Gamma Spec Solid RAD A-013 with Iodine	73	0	102	0
AIR CHARCOAL				

Carbon-14 (Ascarite/Soda Lime Filter per Liter)	29	0	28	0
DRINKING WATER				
Tritium	23	0	24	0
LSC Iron-55	7	0	7	0
LSC Nickel 63	8	0	8	0
Gamma Iodine-131	16	0	14	0
Gas Flow Sr 2nd count	9	0	10	0
Gas Flow Total Strontium	10	0	8	0
Gross Alpha Non Vol Beta	64	0	58	0
Gamma Spec Liquid RAD A-013 with Ba, La	20	0	60	0
Gamma Spec Liquid RAD A-013 with Iodine	0	0	4	0

Total 1245 1557

Note 1: The RPD must be 20 percent or less, if both samples are greater than 5 times the MDC. If both results are less than 5 times MDC, then the RPD must be equal to or less than 100%. If one result is above the MDC and the other is below the MDC, then the RPD can be calculated using the MDC for the result of the one below the MDC. The RPD must be 100% or less. In the situation where both results are above the MDC but one result is greater than 5 times the MDC and the other is less than 5 times the MDC, the RPD must be less than or equal to 20%. If both results are below MDC, then the limits on % RPD are not applicable.

TABLE 7

ALL RADIOLOGICAL INTRA-LABORATORY DATA SUMMARY: BIAS AND PRECISION BY MATRIX:

2021 All Rad Intralab Results	Bias Criteria (+ / - 25%		Precision Criteria (Note 1)	
	WITHIN CRITERIA	OUTSIDE CRITERIA	WITHIN CRITERIA	OUTSIDE CRITERIA
MILK				
Gamma Spec Liquid RAD A-013	4	0	4	0
Gamma Iodine-129	5	0	5	0
Gamma Iodine-131	8	0	119	0
LSC Sulfur 35	1	0	2	0
Gas Flow Sr 2nd count	54	0	59	0
Gas Flow Strontium 90	8	0	8	0
Gas Flow Total Strontium	12	0	13	0
Gamma Spec Liquid RAD A-013 with Ba, La	32	0	105	0
Gamma Spec Liquid RAD A-013 with Iodine	4	0	4	0
SOLID				
Gamma Percent Leach	6	0	0	0
Gas Flow Radium 228	93	0	100	0
Alpha Spec Neptunium	680	0	685	0
Tritium	398	0	479	0
Tritium by Pyrolysis	0	0	1	0
Carbon-14	250	0	334	0
Carbon-14 by Pyrolysis	0	0	1	0
LSC Iron-55	110	0	115	0
Alpha Spec Polonium Solid	23	0	28	0
Gamma Nickel 59 RAD A-022	145	0	149	0
Gamma Spec Ra226 RAD A-013	10	0	9	0
Gamma Spec Solid RAD A-013	1448	0	1867	0
LSC Nickel 63	256	0	279	0
LSC Plutonium	207	0	222	0
Technetium-99	667	0	764	0
Gamma Spec Liquid RAD A-013	1	0	1	0
Gross Alpha Beta Soil Leach	80	0	86	0
ICP-MS Technetium-99 in Soil	3	0	3	0
LSC Selenium 79	31	0	33	0
Total Activity,	6	0	9	0
Tritium	32	0	33	0

Alpha Spec Am243	96	0	110	0
Gamma Iodine-129	103	0	159	0
Gross Alpha/Beta	1	0	1	0
Gas Flow Lead 210	32	0	34	0
Alpha Spec Uranium	814	0	942	0
LSC Promethium 147	4	0	5	0
LSC, Rapid Strontium 89 and 90	55	0	57	0
Alpha Spec Thorium	898	0	1017	0
ICP-MS Uranium-233, 234 in Solid	49	0	52	0
LSC Sulfur 35	3	0	3	0
Alpha Spec Neptunium (pCi/Sample)	1	0	1	0
Alpha Spec Plutonium	759	0	762	0
ICP-MS Technetium-99 Prep in Soil	4	0	3	0
LSC Calcium 45	0	0	1	0
Alpha Spec Plutonium	162	0	174	0
Alpha Spec Radium 226	37	0	46	0
Gas Flow Sr 2nd count	17	0	24	0
Gas Flow Strontium 90	359	0	365	0
Lucas Cell Radium 226	225	0	261	0
Total Activity Screen	1	0	1	0
Alpha Spec Am241 Curium	613	0	602	0
Alpha Spec Total Uranium	81	0	93	0
Gas Flow Total Strontium	105	0	103	0
ICP-MS Uranium-233, 234 Prep in Solid	48	0	52	0
ICP-MS Uranium-235, 236, 238 in Solid	53	0	55	0
Alpha Spec Polonium Solid	14	0	14	0
Gamma Spec Solid RAD A-013 with Iodine	16	0	37	0
GFC Chlorine-36 in Solids	17	0	19	0
Gamma Spec Solid RAD A-013 (pCi/Sample)	1	0	2	0
Technetium-99	1	0	1	0
Tritium	10	0	10	0
Alpha Spec Am241 (pCi/Sample)	1	0	1	0
ICP-MS Uranium-234, 235, 236, 238 in Solid	350	0	361	0
ICP-MS Uranium-235, 236, 238 Prep in Solid	51	0	55	0
Alpha Spec Thorium	1	0	1	0
Gross Alpha/Beta (Am/Cs Calibration) Solid	2	0	3	0
ICP-MS U-234, 235, 236, 238 Prep per sample	8	0	8	0
Gross Alpha/Beta	493	0	592	0

Alpha Spec Plutonium	1	0	1	0
Gas Flow Strontium 90	1	0	1	0
Gross Alpha/Beta (Americium Calibration) Solid	2	0	2	0
ICP-MS Uranium-234, 235, 236, 238 Prep in Solid	181	0	176	0
Gross Alpha Beta (F,U)	17	0	18	0
FILTER				
Alpha Spec Polonium	1	0	10	0
Gamma I-131, filter	4	0	4	0
Alpha Spec Neptunium	73	0	94	0
LSC Plutonium Filter	88	0	125	0
Tritium	28	0	157	0
Alpha Spec Californium	2	0	3	0
Carbon-14 Direct Count	0	0	9	0
Carbon-14	0	0	75	0
ICP-MS Tc-99 in Filter	0	0	5	0
Nickel-63	0	0	20	0
LSC Iron-55	56	0	65	0
Gamma Nickel 59 RAD A-022	77	0	83	0
Alpha Spec Californium FPL	10	0	12	0
LSC Nickel 63	63	0	75	0
Technetium-99	9	0	101	0
Gamma Spec Filter RAD A-013	165	0	220	0
ICP-MS Tc-99 Prep in Filter	0	0	5	0
LSC Selenium 79	4	0	5	0
Alphaspec Np Filter per Liter	5	0	19	0
Alphaspec Pu Filter per Liter	10	0	18	0
Gamma Iodine-129	10	0	63	0
Alpha Spec Am243	17	0	32	0
Gas Flow Lead 210	1	0	2	0
Alpha Spec Uranium	85	0	119	0
LSC, Rapid Strontium 89 and 90	76	0	84	0
Alpha Spec Thorium	45	0	78	0
Gas Flow Radium 228	6	0	10	0
Alpha Spec Plutonium	66	0	142	0
ICP-MS Uranium-233, 234 in Filter	1	0	7	0
Alpha Spec Plutonium	79	0	118	0
Alpha Spec Plutonium	3	0	3	0
Alpha Spec Polonium,(Filter/Liter)	0	0	2	0
Alpha Spec Radium 226	3	0	10	0

Gas Flow Sr 2nd Count	25	0	45	0
Gas Flow Strontium 90	61	0	110	1
Gas Flow Total Radium	2	0	5	0
LSC Plutonium 241 Filter per Liter	7	0	29	0
Lucas Cell Radium-226	5	0	6	0
Alpha Spec Am241Curium	122	0	195	0
Gas Flow Total Strontium	0	0	1	0
ICP-MS Uranium-233, 234 Prep in Filter	1	0	7	0
ICP-MS Uranium-235, 236, 238 in Filter	11	0	15	0
Total Activity in Filter,	0	0	9	0
Alphaspec Am241 Curium Filter per Liter	13	0	45	0
Tritium	91	0	125	0
GFC Chlorine-36 in Filters	1	0	9	0
Gamma Spec Filter RAD A-013 Direct Count	3	0	9	0
Carbon-14	15	0	25	0
Gross A & B (Americium Calibration) Liquid	2	0	36	0
Direct Count-Gross Alpha/Beta	74	0	0	0
Gross Alpha/Beta	23	0	37	0
ICP-MS Uranium-234, 235, 236, 238 in Filter	12	0	60	0
ICP-MS Uranium-235, 236, 238 Prep in Filter	8	0	15	0
Alpha Spec U	19	0	51	0
Gross A & B	418	0	314	0
LSC Iron-55	11	0	17	0
Technetium-99	14	0	32	0
Gas Flow Sr-90	8	0	31	0
LSC Nickel 63	31	0	38	0
Gamma Spec Charcoal	2	0	2	0
Gas Flow Pb-210	0	0	17	0
Gas Flow Ra-228	0	0	18	0
Gross Alpha Beta (Flame, Unflame)	11	0	12	0
Gamma Iodine 129	16	0	16	0
ICP-MS Uranium-234, 235, 236, 238 Prep in Filter	6	0	30	0
Gamma Spec Filter	86	0	137	0
Lucas Cell Ra-226	5	0	24	0
Alpha Spec Thorium	6	0	31	0
LIQUID				
Alpha Spec Uranium	550	0	811	0
Alpha Spec Polonium	9	0	13	0
Alpha Spec Neptunium	230	0	332	0

Tritium	1216	0	1259	0
Carbon-14	156	0	185	0
Plutonium	100	0	118	0
Chlorine-36 in Liquids	1	0	1	0
Iodine-131	4	0	4	0
LSC Iron-55	68	0	124	0
Gamma Nickel 59 RAD A-022	21	0	27	0
Gamma Iodine 131 RAD A-013	1	0	3	0
LSC Nickel 63	114	0	157	0
LSC Radon 222	10	0	10	0
Technetium-99	601	0	714	0
Gamma Spec Liquid RAD A-013	815	0	914	0
Alpha Spec Total U RAD A-011	55	0	72	0
LSC Selenium 79	40	0	40	0
Total Activity,	8	0	9	0
Alpha Spec Am243	10	0	25	0
Gamma Iodine-129	184	0	199	0
Gamma Iodine-131	1	0	1	0
ICP-MS Technetium-99 in Water	3	0	8	0
Gas Flow Lead 210	9	0	20	0
Gross Alpha, Beta	3	0	3	0
LSC Promethium 147	17	0	17	0
LSC, Rapid Strontium 89 and 90	9	0	9	0
Alpha Spec Polonium	2	0	5	0
Alpha Spec Thorium	250	0	393	0
Gas Flow Radium 228	6	0	5	0
Gas Flow Radium 228	537	0	645	0
Alpha Spec Plutonium	401	0	545	0
LSC Sulfur 35	16	0	15	0
Alpha Spec Plutonium	27	0	40	0
Alpha Spec Radium 226	45	0	46	0
Gas Flow Sr 2nd count	65	0	108	0
Gas Flow Strontium 90	318	0	387	0
Gas Flow Strontium 90	10	0	10	0
Gas Flow Total Radium	333	0	281	0
ICP-MS Technetium-99 Prep in Water	3	0	8	0
ICP-MS Uranium-233, 234 in Liquid	7	0	11	0
LSC Calcium 45	13	0	13	0
Lucas Cell Radium 226	317	0	502	0
Lucas Cell Radium-226	7	0	10	0

Total Activity Screen	0	0	1	0
Chlorine-36 in Liquids	19	0	21	0
Gamma Spec Drinking Water RAD A-013	8	0	6	0
Alpha Spec Am241 Curium	353	0	463	0
Gas Flow Total Strontium	118	0	125	0
Gross Alpha Non Vol Beta	722	0	974	0
LSC Phosphorus-32	6	0	8	0
ICP-MS Uranium-233, 234 Prep in Liquid	7	0	11	0
Tritium in Drinking Water by EPA 906.0	9	0	6	0
Gamma Spec Liquid RAD A-013 with Ba, La	76	0	155	0
Gamma Spec Liquid RAD A-013 with Iodine	76	0	157	0
Gas Flow Strontium 89 & 90	6	0	5	0
ICP-MS Uranium-235, 236, 238 in Liquid	10	0	19	0
Gas Flow Total Alpha Radium	9	0	9	0
Gross Alpha Co-precipitation	5	0	9	0
ICP-MS Uranium-235, 236, 238 Prep in Liquid	9	0	19	0
Gross Alpha/Beta	1	0	5	0
ICP-MS Uranium-234, 235, 236, 238 in Liquid	108	0	104	0
Gross Alpha Beta (Flame, Unflame)	253	0	269	0
Gross Alpha Beta (Americium Calibration) Liquid	32	0	74	0
ICP-MS Uranium-234, 235, 236, 238 Prep in Liquid	52	0	56	0
Alpha/Beta (Americium Calibration) Drinking Water	35	0	27	0
ECLS-R-GA NJ 48 Hr Rapid Gross Alpha	1	0	1	0
TISSUE				
Alpha Spec Neptunium	0	0	13	0
Tritium	7	0	19	0
Carbon-14	2	0	13	0
Gamma Nickel 59 RAD A-022	2	0	2	0
Gamma Spec Solid RAD A-013	54	0	77	0
LSC Nickel 63	2	0	2	0
LSC Plutonium	2	0	2	0
Technetium-99	2	0	15	0
Gamma Iodine-129	6	0	19	0
Gas Flow Lead 210	2	0	13	0
Alpha Spec Uranium	8	0	24	0
Alpha Spec Thorium	2	0	14	0
Alpha Spec Plutonium	5	0	19	0

Alpha Spec Plutonium	2	0	2	0
Gas Flow Sr 2nd count	9	0	11	0
Gas Flow Strontium 90	10	0	23	0
Lucas Cell Radium 226	3	0	12	0
Alpha Spec Am241 Curium	3	0	17	0
Gas Flow Total Strontium	5	0	5	0
Gamma Spec Solid RAD A-013 with Iodine	15	0	15	0
GFC Chlorine-36 in Solids	0	0	11	0
Gross Alpha/Beta	3	0	5	0
VEGETATION				
Carbon-14	3	0	3	0
Gamma Spec Solid RAD A-013	29	0	24	0
Technetium-99	1	0	1	0
Tritium	2	0	2	0
Gas Flow Lead 210	3	0	4	0
Alpha Spec Uranium	21	0	24	0
Alpha Spec Thorium	9	0	10	0
Alpha Spec Plutonium	21	0	14	0
Gas Flow Sr 2nd count	10	0	8	0
Gas Flow Strontium 90	22	0	16	0
Gas Flow Total Radium	3	0	4	0
Alpha Spec Am241 Curium	9	0	7	0
Gamma Spec Solid RAD A-013 with Iodine	73	0	102	0
Gamma Spec Solid RAD A-013 (pCi/Sample)	2	0	2	0
Alpha Spec Am241 (pCi/Sample)	0	0	2	0
Alpha Spec Uranium	0	0	2	0
Gross Alpha/Beta	7	0	6	0
Alpha Spec Plutonium	0	0	2	0
Gas Flow Strontium 90	4	0	2	0
AIR CHARCOAL				
Gamma Iodine-129	23	0	8	0
Carbon-14	11	0	11	0
Carbon-14 (Ascarite/Soda Lime Filter per Liter)	29	0	28	0
Gamma Spec Charcoal	14	0	14	0
Gamma Iodine 129	14	0	14	0
DRINKING WATER				
Alpha Spec Uranium	1	0	1	0
Tritium	23	0	24	0
Iodine-131	1	0	0	0

LSC Iron-55	7	0	7	0
LSC Nickel 63	8	0	8	0
LSC Radon 222	17	0	20	0
Gamma Spec Liquid RAD A-013	3	0	3	0
Gamma Iodine-129	2	0	3	0
Gamma Iodine-131	16	0	14	0
Gas Flow Radium 228	41	0	37	0
Gas Flow Sr 2nd count	9	0	10	0
Gas Flow Strontium 90	9	0	8	0
Lucas Cell Radium 226	3	0	4	0
Lucas Cell Radium-226	46	0	46	0
Gamma Spec Drinking Water RAD A-013	37	0	48	0
Gas Flow Total Strontium	10	0	8	0
Gross Alpha Non Vol Beta	159	0	138	0
Tritium in Drinking Water by EPA 906.0	41	0	42	0
Gamma Spec Liquid RAD A-013 with Ba, La	20	0	60	0
Gamma Spec Liquid RAD A-013 with Iodine	2	0	6	0
Gas Flow Strontium 89 & 90	11	0	7	0
Alpha/Beta (Americium Calibration) Drinking Water	11	0	12	0
ECLS-R-GA NJ 48 Hr Rapid Gross Alpha	2	0	2	0
Total	21797		26844	

Note 1: The RPD must be 20 percent or less, if both samples are greater than 5 times the MDC. If both results are less than 5 times MDC, then the RPD must be equal to or less than 100%. If one result is above the MDC and the other is below the MDC, then the RPD can be calculated using the MDC for the result of the one below the MDC. The RPD must be 100% or less. In the situation where both results are above the MDC but one result is greater than 5 times the MDC and the other is less than 5 times the MDC, the RPD must be less than or equal to 20%. If both results are below MDC, then the limits on % RPD are not applicable.

TABLE 8

2021 CORRECTIVE ACTION REPORT SUMMARY

<table>
<tr><th>CORRECTIVE ACTION
&
PE FAILURE</th><th>DISPOSITION</th></tr>
<tr><td>
Summary of RAD-124 Drinking Water Study Unacceptable Ratings
<table>
<tr><th>Sample ID</th><th>Parm</th><th>Reported Value</th><th>Reference Value</th><th>Acceptance Range</th></tr>
<tr><td>Naturals</td><td>Radium - 226</td><td>8.42 pCi/L</td><td>15.5 pCi/L</td><td>11.5-17.8 pCi/L</td></tr>
<tr><td>Naturals</td><td>Radium-228</td><td>19.5 pCi/L</td><td>12.9 pCi/L</td><td>8.54-15.8 pCi/L</td></tr>
<tr><td>Strontium 89/90</td><td>Strontium-89</td><td>74.6 pCi/L</td><td>61.3 pCi/L</td><td>49.4-69.2 pCi/L</td></tr>
</table>
</td><td>
Upon receipt of the PT report, an investigation was initiated by the Quality Department and a Corrective Action (CARR) team assembled. The team consisted of representatives from the affected laboratories. The sample preparation and analytical processes were reviewed. This included review of reagents and standards used in the sample preparation steps, calibration records, process control samples, and interviews with the analysts.

The investigation determined that the laboratory met all quality control criteria specified in each method. Additionally, all internal procedures and policies were performed as required. These failures were tracked through GEL’s internal non-conformance system.
</td></tr>
<tr><td></td><td>
Root Cause(s):

<u>Radium-226:</u> The laboratory reviewed the data of the original analysis and no anomalies were noted. A review of the sample preparation processes, and data set did not reveal any gross errors or possible contributors to the low bias. It is possible that an unknown systematic error must have occurred during the precipitation steps of the procedure resulting in the low bias.

<u>Radium-228:</u> The Batch data was reviewed and low gravemetric yields were identified. Ra-228 drinking water method includes two gravemetric yields and both yields were lower than normal for this method. It is apparent that the low yields, which are multiplied together to determine the final yield for the analysis, biased the result high. Original reported data was calculated with "typical" method yields obtaining result of 11.9 pCi/L (92% of known value). The low yields were not sample specific with MB and LCS yields being similar to the samples in the batch; therefore, an unknown systematic error must have occurred during the precipitation steps of the procedure that resulted in low yields.

<u>Strontium-89:</u> The result for Strontium-89 was 122% of the known value with the acceptance range limit of 114%. The Group Leader has reviewed the method to identify the bias. The method LCS trend was reviewed for the method and no anomalies were identified. The calibration used for the analysis was compared to the new calibration performed recently and the original reported
</td></tr>
</table>

data was processed with both calibrations for comparison. Data was comparable. Instrument run logs were reviewed and there was no indication of possible bias from run log. Sr89/90 drinking water method includes two gravemetric yields. Both gravemetric batch yields were reviewed and it was noted that the Yttrium yields appeared to be slightly higher than expected for this method. It is possible that the Yttrium yields were biased high due to analyst error during the drying process. The original reported data was processed with typically recovered Yttrium method yields and the Sr-89 value (65.8 pCi/L) was within the acceptance range at 108%.

•

Summary of RAD-125 Drinking Water Study Unacceptable Ratings

Sample ID	Parm	Reported Value	Reference Value	Acc
Naturals	Radium-226	14.2 pCi/L	19.3 pCi/L	1

Upon receipt of the PT report, an investigation was initiated by the Quality Department and a Corrective Action (CARR) team assembled. The team consisted of representatives from the affected laboratories. The sample preparation and analytical processes were reviewed. This included review of reagents and standards used in the sample preparation steps, calibration records, process control samples, and interviews with the analysts.

The investigation determined that the laboratory met all quality control criteria specified in each method. Additionally, all internal procedures and policies were performed as required. These failures were tracked through GEL's internal non-conformance system

Summary of MRAD-34 Study Unacceptable Ratings

Sample ID	Parm	Reported Value	Reference Value
Air Filter Gross Alpha/Beta	Gross Alpha	391 pCi/F	96.1 pCi/F
Water Gross Alpha/Beta	Gross Alpha	87.8 pCi/L	62.2 pCi.L
Water Radionuclides	Iron-55	494 pCi/L	275 pCi/L

Upon receipt of the PT report, an investigation was initiated by the Quality Department and a Corrective Action (CARR) team assembled. The team consisted of representatives from the affected laboratories. The sample preparation and analytical processes were reviewed. This included review of reagents and standards used in the sample preparation steps, calibration records, process control samples, and interviews with the analysts.

The investigation determined that the laboratory met all quality control criteria specified in each method. Additionally, all internal procedures and policies were performed as required. These failures were tracked through GEL's internal non-conformance system

Root Cause(s):

The results for this analysis were reviewed and it was noted that the result for the in-batch duplicate would have been acceptable recovering at 96% of the known value and met replication criteria. The laboratory investigated the transfer rig that was used to prep the unacceptable sample and noted loose fittings and cracked tubing. These may have contributed to the low bias in the sample preparation. The transfer rig was rebuilt and the other rigs inspected for possible wear issues that may need to be rebuilt or replaced.

<u>The laboratory successfully completed study RAD-126 for Ra-226 by 903.1</u>

Summary of MAPEP 44 Study Unacceptable Ratings

Sample ID	Parm	Reported Value	Reference Value	Acceptance Range
MAPEP-21-MaS44	Antimony	27.3 mg/kg	78 mg/kg	55-101 mg/kg
MAPEP-21-RdV44	Cesium-134 Strontium-90	2.51 Bq/samp. 0.444 Bq/samp.	3.6 Bq/samp. 0.673 Bq/samp.	2.52-4.68 Bq/samp. 0.471-0.875 Bq/samp.

Upon receipt of the PT report, an investigation was initiated by the Quality Department and a Corrective Action (CARR) team assembled. The team consisted of representatives from the affected laboratories. The sample preparation and analytical processes were reviewed. This included review of reagents and standards used in the sample preparation steps, calibration records, process control samples, and interviews with the analysts.

The investigation determined that the laboratory met all quality control criteria specified in each method. Additionally, all internal procedures and policies were performed as required. These failures were tracked through GEL's internal non-conformance system

Root Cause(s):

MAPEP-21-MaS44: The sample was prepared using standard hot-acid leach per section 7.5 of SW-846 3050B. More rigorous digestions were used in an attempt to increase solubility without success. It is suspected that the low bias in the result is due to an unidentified matrix interferant.

MAPEP-21-RdV44: The data has been reviewed for these analyses and no errors were noted. The Cesium-134 and Strontium-90 failed with a low bias compared to the known. It was noted that several other reported isotopes had a low bias but were within the acceptance ranges for their parameters. It is suspected that the sample preparation had an unidentified error during the digestion process.

Summary of RAD-126 Study Unacceptable Ratings

Sample ID	Parm	Reported Value	Reference Value	Acceptance Range
Rad Strontium	Sr-90	46.2 pCi/L	40.1 pCi/L	29.5-46.1 pCi/L

Upon receipt of the PT report, an investigation was initiated by the Quality Department and a Corrective Action (CARR) team assembled. The team consisted of representatives from the affected laboratories. The sample preparation and analytical processes were reviewed. This included review of reagents and standards used in the sample preparation steps, calibration records, process control samples, and interviews with the analysts.

The investigation determined that the laboratory met all quality control criteria specified in each method. Additionally, all internal procedures and policies were performed as required. These failures were tracked through GEL's internal non-conformance system

Root Cause(s):

Strontium-90-A review of the sample preparation processes and data set did not reveal any gross errors or possible contributors to the high bias. The reported value is 115% of the reference value which is within the laboratory's standard acceptance criteria of +/- 25% for Laboratory Control Samples. In addition, the sample was prepared/reported by analytical method 905.0. The result was within acceptance limits with an RPD of 11.7 when compared to the unacceptable value.

Summary of MAPEP 45 Study Unacceptable Ratings

Sample ID	Parm	Reported Value	Reference Value	Acceptance Range
MAPEP-21-GrF45	Gross Alpha	1.73 Bq/S	0.960 Bq/S	0.288-1.632 Bq/S
MAPEP-21-MaS45 (Radiological)	Uranium-234	79.6 Bq/kg	51.4 Bq/kg	36.0-66.8 Bq/kg
MAPEP-21-MaSF45	Np-237 Sr-90 (W)	0.00736 Bq/S 0.482 Bq/S	NA 0.6649 Bq/S	False positive test 0.4654-0.8644 Bq/S

Upon receipt of the PT report, an investigation was initiated by the Quality Department and a Corrective Action (CARR) team assembled. The team consisted of representatives from the affected laboratories. The sample preparation and analytical processes were reviewed. This included review of reagents and standards used in the sample preparation steps, calibration records, process control samples, and interviews with the analysts.

The investigation determined that the laboratory met all quality control criteria specified in each method. Additionally, all internal procedures and policies were performed as required. These failures were tracked through GEL's internal non-conformance system

MAPEP-21-MaW45 (Radiological)	Ra-226	0.310 Bq/L	0.226 Bq/L	0.158-0.294 Bq/L
MAPEP-21-RdF45	Sr-90 (W)	0.195 Bq/S	0.273 Bq/S	0.191-0.355 Bq/S

Root Cause:

MAPEP-21-GrF45: Gross Alpha: The data for this analysis has been reviewed and no errors were noted. It was found that the result from the original count for the sample preparation was within the acceptance limits of the study. The sample initially did not meet replication criteria for the in-batch duplicate and was recounted. The duplicate sample was not recounted during the process.

MAPEP-21-MaS45 (radiological) U-234: The laboratory preparation and counting procedures were evaluated for potential contributors to the high bias of these results. None were noted and the batches met QC criteria for recovery and duplication.

MAPEP-21-MaSF45: Upon review, it is suspected that the bias in the Np result is due to an unidentified matrix interferant. The sample should have been returned to the lab for additional clean up steps. The Sr warning result recovered at 72.5% of the known value. The laboratory evaluated both the prep and instrument processes for possible causes for the low bias. A definitive cause was not determined.

MAPEP-21-MaW45 (Radiological):Ra-226: The data has been reviewed and no errors were found. It was noted that the in-batch duplicate sample result was within acceptance limits for the study. The samples met RER replication criteria.

MAPEP-21-RdF45: Sr: This warning result recovered at 71% of the known value. The laboratory evaluated both the prep and instrument processes for possible causes for the low bias. A definitive source was not determined. This Sr warning result was analyzed in a separate laboratory than the synthetic fecal sample which uses an entirely separate processes for analysis.

Summary of MRAD-35 Study Unacceptable Ratings

Sample ID	Parm	Reported Value	Reference Value	Acceptance Range
Air Filter	Uranium-234	9.62 pCi/F	7.76 pCi/F	5.75-9.09 pCi/F
Water	Uranium-234	49.6 pCi/L	40.8 pCi/L	31.1-46.7 pCi/L

Upon receipt of the PT report, an investigation was initiated by the Quality Department and a Corrective Action (CARR) team assembled. The team consisted of representatives from the affected laboratories. The sample preparation and analytical processes were reviewed. This included review of reagents and standards used in the sample preparation steps, calibration records, process control samples, and interviews with the analysts.

The investigation determined that the laboratory met all quality control criteria specified in each method. Additionally, all internal procedures and policies were performed as required. These failures were tracked through GEL's internal non-conformance system

Root Cause(s):

The laboratory reviewed the data and found no errors. It was noted that the sample was replicated

	in the analysis batch and met replication criteria. For the water analysis, the result of the duplicate sample was within the acceptance range of the study. All analysis data met the acceptance QC criteria and procedures for initial calibration, continuing calibration, instrument controls and process controls were met. .

ENVIRONMENTAL DOSIMETRY COMPANY

ANNUAL QUALITY ASSURANCE STATUS REPORT

January - December 2021

Prepared By: Date: 3/16/22

Approved By: Date: 3/16/22

Environmental Dosimetry Company
10 Ashton Lane
Sterling, MA 01564

TABLE OF CONTENTS

LIST OF TABLES

EXECUTIVE SUMMARY

Routine quality control (QC) testing was performed for dosimeters issued by the Environmental Dosimetry Company (EDC) .

During this annual period100% (72/72) of the individual dosimeters, evaluated against the EDC internal performance acceptance criteria (high-energy photons only), met the criterion for accuracy and 100% (72/72) met the criterion for precision (Table 1). In addition, 100% (12/12) of the dosimeter sets evaluated against the internal tolerance limits met EDC acceptance criteria (Table 2) and 100% (6/6) of independent testing passed the performance criteria (Table 3). Trending graphs, which evaluate performance statistic for high-energy photon irradiations and co-located stations are given in Appendix A.

One internal assessment was performed in 2021.There were no findings.

I. INTRODUCTION

The TLD systems at the Environmental Dosimetry Company (EDC) are calibrated and operated to ensure consistent and accurate evaluation of TLDs. The quality of the dosimetric results reported to EDC clients is ensured by in-house performance testing and independent performance testing by EDC clients, and both internal and client directed program assessments.

The purpose of the dosimetry quality assurance program is to provide performance documentation of the routine processing of EDC dosimeters. Performance testing provides a statistical measure of the bias and precision of dosimetry processing against a reliable standard, which in turn points out any trends or performance changes. Two programs are used:

A. QC Program

Dosimetry quality control tests are performed on EDC Panasonic 814 Environmental dosimeters. These tests include: (1) the in-house testing program coordinated by the EDC QA Officer and (2) independent test perform by EDC clients. In-house test are performed using six pairs of 814 dosimeters, a pair is reported as an individual result and six pairs are reported as the mean result.Results of these tests are described in this report.

Excluded from this report are instrumentation checks. Although instrumentation checks represent an important aspect of the quality assurance program, they are not included as process checks in this report. Instrumentation checks represent between 5-10% of the TLDs processed.

B. QA Program

An internal assessment of dosimetry activities is conducted annually by the Quality Assurance Officer (Reference 1). The purpose of the assessment is to review procedures, results, materials or components to identify opportunities to improve or enhance processes and/or services.

II. PERFORMANCE EVALUATION CRITERIA

A. Acceptance Criteria for Internal Evaluations

1. Bias

For each dosimeter tested, the measure of bias is the percent deviation of the reported result relative to the delivered exposure. The percent deviation relative to the delivered exposure is calculated as follows:

$$\frac{\left(H_i' - H_i\right)}{H_i}100$$

where:

H_i' = the corresponding reported exposure for the i^{th} dosimeter (i.e., the reported exposure)

H_i = the exposure delivered to the i^{th} irradiated dosimeter (i.e., the delivered exposure)

2. Mean Bias

For each group of test dosimeters, the mean bias is the average percent deviation of the reported result relative to the delivered exposure. The mean percent deviation relative to the delivered exposure is calculated as follows:

$$\sum\left(\frac{(H_i' - H_i)}{H_i}\right)100\left(\frac{1}{n}\right)$$

where:

H_i' = the corresponding reported exposure for the ith dosimeter (i.e., the reported exposure)

H_i = the exposure delivered to the ith irradiated test dosimeter (i.e., the delivered exposure)

n = the number of dosimeters in the test group

Precision

For a group of test dosimeters irradiated to a given exposure, the measure of precision is the percent deviation of individual results relative to the mean reported exposure. At least two values are required for the determination of precision. The measure of precision for the ith dosimeter is:

$$\left(\frac{(H_i' - \bar{H})}{\bar{H}}\right)100$$

where:

H_i' = the reported exposure for the ith dosimeter (i.e., the reported exposure)

$\bar{H}$ = the mean reported exposure; i.e., $\bar{H} = \sum H_i'\left(\frac{1}{n}\right)$

n = the number of dosimeters in the test group

3. EDC Internal Tolerance Limits

All evaluation criteria are taken from the “EDC Quality System Manual,” (Reference 2). These criteria are only applied to individual test dosimeters irradiated with high-energy photons (Cs-137) and are as follows for Panasonic Environmental dosimeters: ± 15% for bias and ± 12.8% for precision.

B. QC Investigation Criteria and Result Reporting

EDC Quality System Manual (Reference 2) specifies when an investigation is required due to a QC analysis that has failed the EDC bias criteria. The criteria are as follows:

1. No investigation is necessary when an individual QC result falls outside the QC performance criteria for accuracy.
2. Investigations are initiated when the mean of a QC processing batch is outside the performance criterion for bias.

C. Reporting of Environmental Dosimetry Results to EDC Customers

1. All results are to be reported in a timely fashion.

4. If the QA Officer determines that an investigation is required for a process, the results shall be issued as normal. If the QC results prompting the investigation have a mean bias from the known of greater than ±20%, the results shall be issued with a note indicating that they may be updated in the future, pending resolution of a QA issue.

5. Environmental dosimetry results do not require updating if the investigation has shown that the mean bias between the original results and the corrected results, based on applicable correction factors from the investigation, does not exceed ±20%.

III. DATA SUMMARY FOR ISSUANCE PERIOD JANUARY-DECEMBER 2021

A. General Discussion

Results of performance tests conducted are summarized and discussed in the following sections. Summaries of the performance tests for the reporting period are given in Tables 1 through 3 and Figures 1 through 4.

Table 1 provides a summary of individual dosimeter results evaluated against the EDC internal acceptance criteria for high-energy photons only. During this period100% (72/72) of the individual dosimeters, evaluated against these criteria, met the tolerance limits for accuracy and 100% (72/72) met the criterion for precision. A graphical interpretation is provided in Figures 1 and 2.

Table 2 provides the bias and standard deviation results for each group (N=6) of dosimeters evaluated against the internal tolerance criteria. Overall,100% (12/12) of the dosimeter sets, evaluated against the internal tolerance performance criteria, met these criteria. A graphical interpretation is provided in Figure 3.

Table 3 presents the independent blind spike results for dosimeters processed during this annual period. All results passed the performance acceptance criterion. Figure 4 is a graphical interpretation of Seabrook Station blind co-located station results.

B. Result Trending

One of the main benefits of performing quality control tests on a routine basis is to identify trends or performance changes. The results of the Panasonic environmental dosimeter performance tests are presented in Appendix A. The results are evaluated against each of the performance criteria listed in Section II, namely: individual dosimeter accuracy, individual dosimeter precision, and mean bias.

All of the results presented in Appendix A are plotted sequentially by processing date.

IV. STATUS OF EDC CONDITION REPORTS (CR)

No condition reports were issued during this annual period.

V. STATUS OF AUDITS/ASSESSMENTS

1. Internal

EDC Internal Quality Assurance Assessment was conducted during the fourth quarter 2021. There were no findings identified.

2. External

None.

VI. PROCEDURES AND MANUALS REVISED DURING JANUARY - DECEMBER 2021

Several procedures were reissued with no changes as part of the 5 year review cycle.

VII. CONCLUSION AND RECOMMENDATIONS

The quality control evaluations continue to indicate the dosimetry processing programs at the EDC satisfy the criteria specified in the Quality System Manual. The EDC demonstrated the ability to meet all applicable acceptance criteria.

VIII. REFERENCES

1. EDC Quality Control and Audit Assessment Schedule, 2021.
2. EDC Manual 1, Quality System Manual, Rev. 4, September 28, 2020.

TABLE 1

PERCENTAGE OF INDIVIDUAL DOSIMETERS THAT PASSED EDC INTERNAL CRITERIA JANUARY – DECEMBER 2021(1), (2)

Dosimeter Type	Number Tested	% Passed Bias Criteria	% Passed Precision Criteria
Panasonic Environmental	72	100	100

(1)This table summarizes results of tests conducted by EDC.
(2)Environmental dosimeter results are free in air.

TABLE 2

MEAN DOSIMETER ANALYSES (N=6) JANUARY – DECEMBER 2021(1), (2)

Process Date	Exposure Level	Mean Bias %	Standard Deviation %	Tolerance Limit +/-15%
5/04/2021	33	0.6	0.9	Pass
5/06/2021	120	-0.2	1.4	Pass
5/26/2021	53	-3.8	1.6	Pass
7/27/2021	67	2.8	1.4	Pass
8/04/2021	91	-1.8	2.3	Pass
9/14/2021	47	-0.2	2.3	Pass
11/01/2021	28	3.7	0.6	Pass
11/03/2021	74	1.9	1.9	Pass
11/09/2021	103	1.1	1.1	Pass
01/26/2022	37	2.6	1.9	Pass
01/30/2022	85	-4.2	1.1	Pass
02/06/2022	58	2.9	1.2	Pass

(1)This table summarizes results of tests conducted by EDC for TLDs issued in 2021.
(2)Environmental dosimeter results are free in air.

TABLE 3
SUMMARY OF INDEPENDENT DOSIMETER TESTING JANUARY – DECEMBER 2021(1), (2)

Issuance Period	Client	Mean Bias %	Standard Deviation %	Pass / Fail
1st Qtr. 2021	SONGS	-3.8	1.4	Pass
1st Qtr. 2021	SONGS	-4.7	1.1	Pass
2nd Qtr.2021	Seabrook	3.1	1.0	Pass
3rd Qtr. 2021	Millstone	-4.7	1.4	Pass
4th Qtr.2021	PSEG(PNNL) 50mR	1.3	0.8	Pass
4th Qtr.2021	PSEG(PNNL) 100mR	1.8	0.8	Pass
4th Qtr.2021	PSEG(PNNL) 150mR	-0.6	0.5	Pass
4th Qtr.2021	PSEG(PNNL) 200mR	-2.6	2.0	Pass
4th Qtr.2021	Seabrook	2.6	1.4	Pass

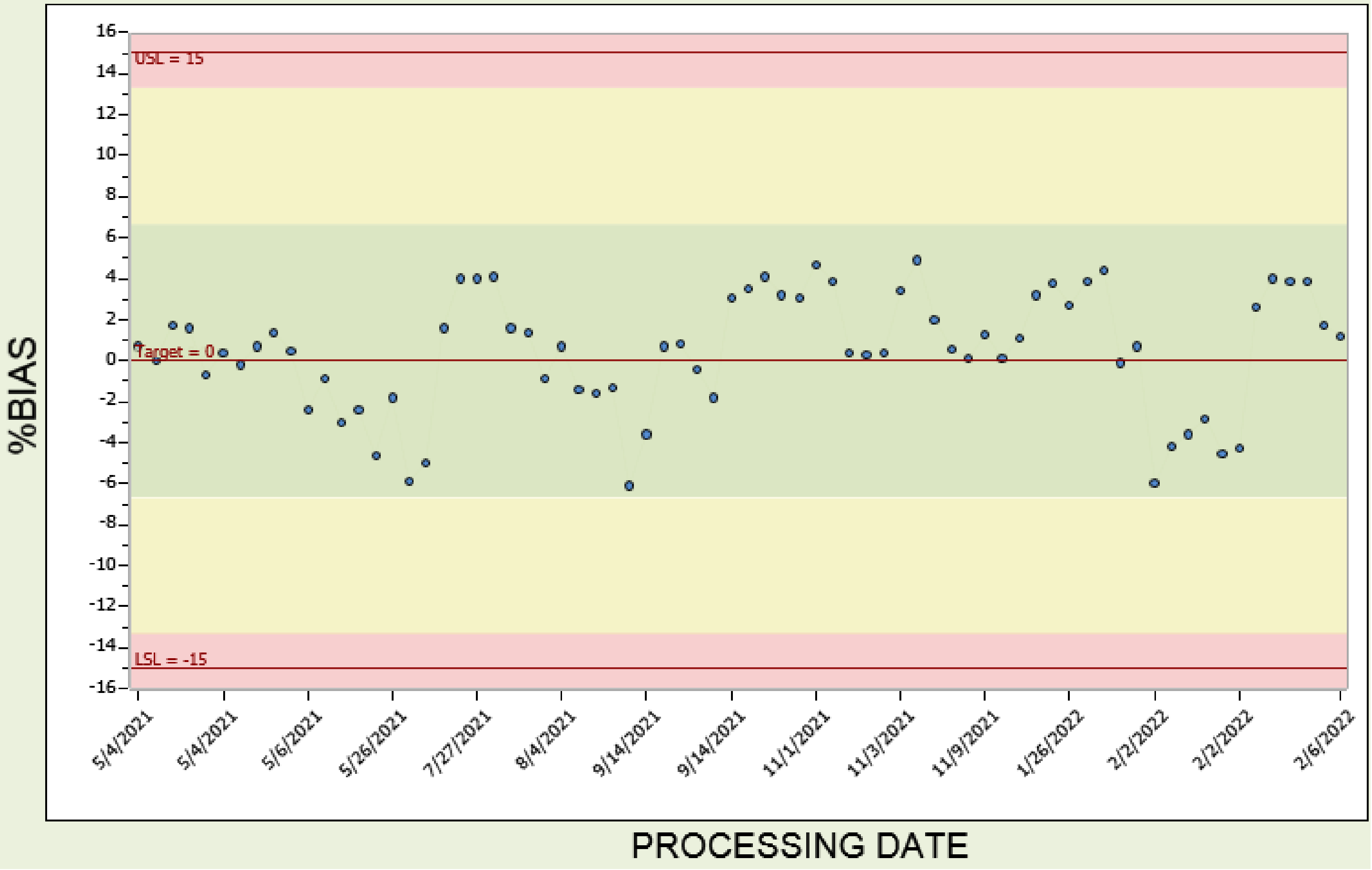
(1)Performance criteria are +/- 15%.
(2)Blind spikeirradiations using Cs-137

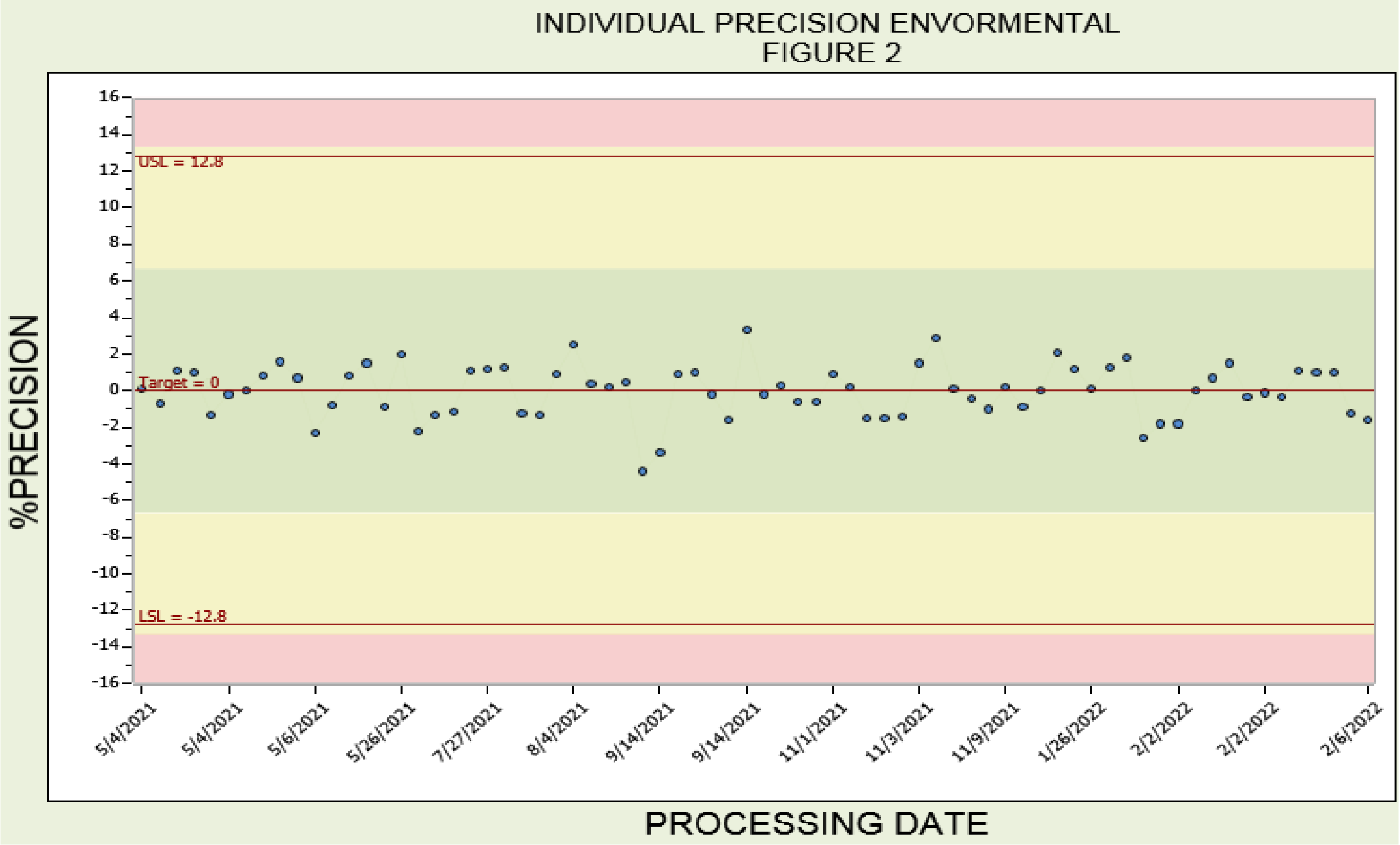
APPENDIX A

DOSIMETRY QUALITY CONTROL TRENDING GRAPHS

ISSUE PERIOD JANAURY - DECEMBER 2021

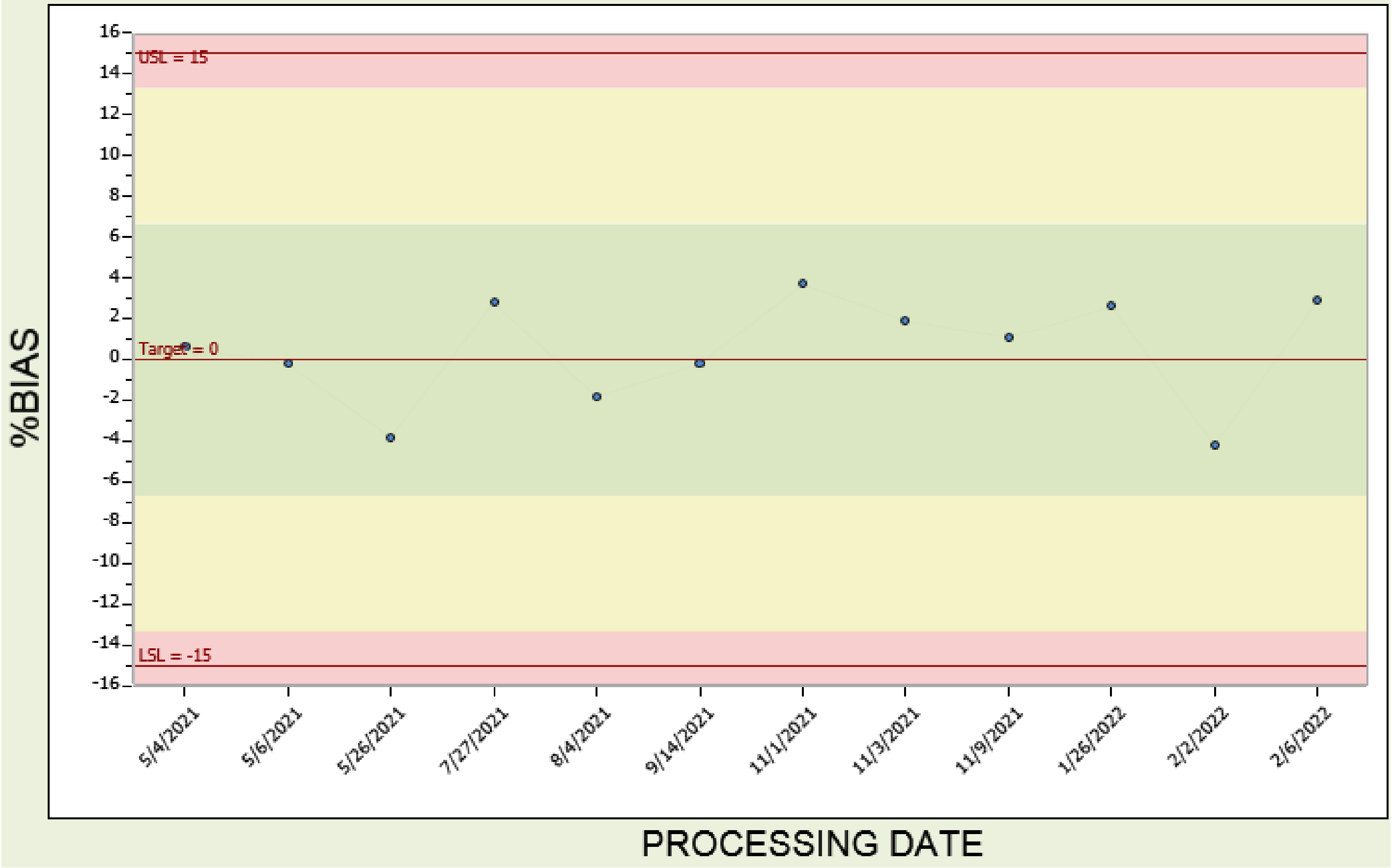
INDIVIDUAL ACCURACY ENVORMENTAL
FIGURE 1

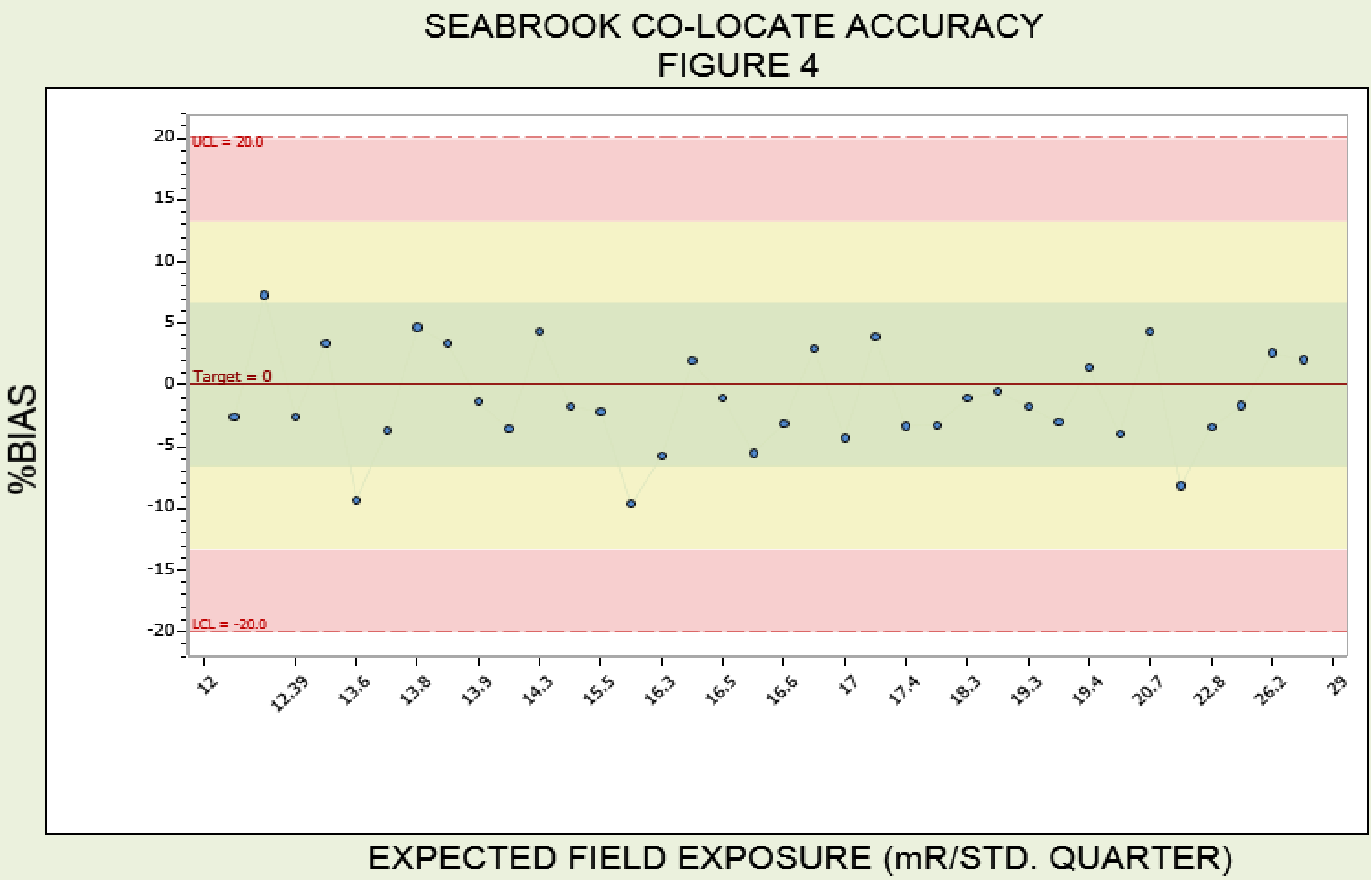




INDIVIDUAL PRECISION ENVORMENTAL
FIGURE 2

MEAN ACCURACY ENVORMENTAL
FIGURE 3





SEABROOK CO-LOCATE ACCURACY
FIGURE 4