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AMEREN MISSOURI
CALLAWAY ENERGY CENTER
FULTON, MISSOURI

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ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

to

THE UNITED STATES NUCLEAR REGULATORY COMMISSION

Part I

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Prepared by

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Submitted by

UNION ELECTRIC CO.
dba Ameren Missouri

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PREFACE

This Annual Radiological Environmental Operating Report (AREOR) describes the Ameren Missouri Callaway Energy Center Radiological Environmental Monitoring Program (REMP), and the program results for the calendar year 2024. It is submitted in accordance with section 5.6.2 of the Callaway Energy Center Technical Specifications.

Staff members of Teledyne Brown Engineering Laboratory in Knoxville, TN were responsible for the acquisition of data presented in this report. Environmental samples were collected by Ameren Missouri personnel or contractors to Ameren Missouri and shipped to Teledyne Brown Engineering Laboratory-Knoxville and Stanford Dosimetry, LLC, for analysis.

The report was prepared by Teledyne Brown Engineering and the Ameren Missouri Callaway Energy Center.

TABLE OF CONTENTS

PART II Page

LIST OF TABLES

In addition, the following tables are in the Appendices:

Appendix A

LIST OF FIGURES

Appendix D

1.0 INTRODUCTION

This report presents an analysis of the results of the Radiological Environmental Monitoring Program (REMP) conducted during 2024 for the Union Electric Company (dba Ameren Missouri) Callaway Energy Center.

The objectives of the REMP are to monitor potential critical pathways of radioactive effluent to man and determine the radiological impact on the environment caused by operation of the Callaway Energy Center. The Radiological Environmental Monitoring Program was initiated in April 1982.

The Callaway Energy Center consists of one 3565 MWt pressurized water reactor, which achieved initial criticality on October 2, 1984. The plant is located on a plateau approximately ten miles southeast of the City of Fulton in Callaway County, Missouri and approximately eighty miles west of the St. Louis metropolitan area. The Missouri River flows by the site in an easterly direction approximately five miles south of the site at its closest point.

Tabulation of the individual analyses for the year 2024 is included in Part II of this report.

2.0 SUMMARY

The Radiological Environmental Monitoring Program, as required by the U.S. Nuclear Regulatory Commission (NRC) Technical Specifications for the Callaway Energy Center is described herein. Results for the year 2024 are summarized and discussed.

For the year, the Callaway Energy Center was operated in compliance with Offsite Dose Calculation Manual (ODCM) and Radiological Effluent Controls (REC) requirements. Results from the REMP indicate the Callaway Energy Center has had no significant radiological impact on the health and safety of the public or on the environment.

3.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

3.1 Program Design and Data Interpretation

The purpose of the Radiological Environmental Monitoring Program at the Callaway Energy Center is to assess the impact of the plant on its environment. For this purpose, samples are collected from waterborne, airborne, ingestion and terrestrial pathways and analyzed for radioactive content. Direct radiation levels are monitored by thermoluminescent dosimeters (TLDs).

Sources of environmental radiation can include the following:

(1) Natural background radiation arising from cosmic rays and primordial radionuclides;
(2) Fallout from atmospheric nuclear detonations;
(3) Releases from nuclear power plants, planned or accidental; and
(4) Industrial and medical radioactive waste.

Effects due to operation of the Callaway Energy Center must be distinguished from those due to other sources in interpreting the data.

The indicator-control concept is a major interpretive aid; where feasible the design of the Callaway Energy Center program has both indicator and control stations. Most types of samples are collected at indicator locations (nearby, downwind, or downstream) and at control locations (distant, upwind, or upstream). A station effect would be indicated if the radiation level at an indicator location was significantly larger than that at the control location. The difference would have to be greater than could be accounted for by typical fluctuations in radiation levels arising from other sources.

The monitoring program includes analyses for iodine-131, a fission product, and tritium, which is produced by cosmic rays, atmospheric nuclear detonations, and also by nuclear power plants. Most samples are analyzed for gamma-emitting isotopes, with results for the following groups quantified: zirconium-95, cesium-137, and cerium-144. These three gamma-emitting isotopes are selected as radiological impact indicators because of the different characteristic proportions in which they appear in the fission product mix produced by a nuclear reactor and that produced by a nuclear detonation. Each of the three isotopes is produced in roughly equivalent amounts by a reactor: each constitutes about 10% of the total activity of fission products ten days after reactor shutdown. On the other hand, ten days after a nuclear explosion, the contributions of zirconium-95, cerium-144, and cesium-137 to the activity of the resulting debris are in the approximate ratio 4:1:0.03 (Eisenbud,1963).

The other group quantified consists of niobium-95, ruthenium-103 and -106, cesium-134, barium-lanthanum-140, and cerium-141. These isotopes are released in small quantities by nuclear power plants, but to date their major source of injection into the general environment has been atmospheric nuclear testing. Nuclides of the next group, manganese-54, cobalt-58 and-60, and zinc-65, are activation products and arise from activation of corrosion products. They are typical components of nuclear power plant effluents but are not produced in significant quantities by nuclear detonation.

Nuclides of the final group, beryllium-7, which is of cosmogenic origin, and potassium-40, a naturally-occurring isotope, were chosen as analytical monitors and should not be considered radiological impact indicators.

Other means of distinguishing sources of environmental radiation can be employed in interpreting the data. Current radiation levels can be compared with previous levels, including pre-operational data. Results of the monitoring program can be related to those obtained in other parts of the world. Finally, results can be related to events known to cause elevated levels of radiation in the environment, e.g., a nuclear accident.

3.2 Program Description

The sampling and analysis schedules for the environmental radiological monitoring program at the Callaway Energy Center are summarized in Tables 5.1 and 5.2 and briefly reviewed below. Table 5.1 identifies sampling locations and specifies as to type (indicator or control) and its distance, and direction relative to the reactor site. The types of samples collected at each location, required analyses and the frequency of collections are presented in Table 5.2.

To monitor the air environment, airborne particulate and airborne iodine samples are collected by continuous pumping, at six locations. The airborne particulates are collected on glass fiber filters and the airborne iodine through activated charcoal cartridges. Both filters and cartridges are exchanged weekly. Airborne particulates are analyzed for gamma-emitting isotopes. Charcoal cartridges are analyzed for iodine-131.

The ingestion pathway is monitored by sampling of milk (if available), fish and green leafy vegetation.

Milk samples are collected semimonthly when animals are on pasture and monthly the rest of the year. There were no milk indicator or control stations identified by the Land Use Census for the subject year. Milk samples are analyzed for iodine-131 and gamma-emitting isotopes when available.

Monthly during the growing season, edible green leafy vegetation is collected from both indicator and control locations. Vegetation samples typically consist of mustard greens, turnip greens, cabbage, lettuce, collards, radish greens, swiss chard, broccoli and poke. Other edible broad leaf vegetation is collected if primary varieties are not available. The samples are analyzed for iodine-131 and other gamma-emitting isotopes.

The waterborne pathway is monitored by sampling surface water, groundwater and drinking water, and shoreline sediments. Water samples are analyzed for tritium and gamma-emitting isotopes, and sediments are analyzed for gamma-emitting isotopes.

The waterborne pathway is also monitored by upstream and downstream semiannual collections of fish. The five most abundant recreational or commercial fish species are collected. The edible portions of the samples are analyzed for gamma-emitting isotopes.

Monthly composite samples of surface water from the Missouri River are collected from one indicator location (S02) and from one control location (S01). The surface water samples are composites of daily collections by automatic river samplers.

Onsite surface water from ponds is analyzed for tritium and gamma-emitting isotopes. The collection frequencies are semiannually.

To monitor possible sources of ground water contamination due to plant operations, non-potable ground water samples were collected monthly or quarterly from well locations both onsite and along the discharge pipeline. The samples were analyzed for tritium and gamma-emitting isotopes.

Potable well water samples are collected quarterly from the plant drinking water supply and neighboring property owners. The samples were analyzed for tritium and gamma-emitting isotopes.

Shoreline sediment is collected semiannually at the plant's intake (A) and discharge (C). These samples are collected within two feet of the edge of the water. The samples are analyzed for gamma-emitting isotopes.

3.2 Program Description (continued)

The direct ambient gamma radiation pathway is also considered. This exposure is monitored by thermoluminescent dosimeters (TLDs) at forty-four locations in and around the Callaway site. The TLDs are placed in 16 sectors around the plant as specified in the ODCM-RECS. Five of the TLD stations have neutron monitoring capability and three locations are designated as controls. TLDs are exchanged and analyzed quarterly.

Soil is collected annually from seven indicator locations (F2, F6, PR3, PR7, W2, W5 and W6) and two control locations (M9, W1) to monitor the terrestrial environment. The samples are analyzed for gamma-emitting isotopes.

3.3 Program Execution

The program was executed as described in the preceding section with the following exceptions.

(1) Airborne Particulate and Iodine:

The GFCI was found tripped on 01/25/2024 at Air Station A-11. Due to low air volume, the required detection limits for Cs-134, Cs-137 and I-131 could not be met (CR# 202400564).

A potential environmental air sampler trend was discovered. During the completion of the RP Department Semi Annual Trend Report for Q3 and Q4 of 2023, a total of 5 condition reports were identified pertaining to environmental air samplers. All these condition reports were written due to air sampler equipment issues. (CR#'s 202400564, 202304751, 202306177, 202305701, 202305289).

Air Station A-7 was found without power on 05/30/2024, 09/26/2024 and 10/03/2024. The samples collected on 05/30/2024 and 10/03/2024 were missed. However, the station A-7 air sample collected on 09/26/2024 was analyzed and no deviations were found (CR#'s 202403920, 202406158 & 202406303).

LAS-4205-HP at Air Station 7 lost flow for some time and the sample volume was lower than typical for the 08/08/2024 sample collection at this station. The sample was analyzed, and no deviations were found (CR#202405262).

On 07/25/2024 it was found that the Air Station A-8 sampler had a broken hose, so the sample volume was lower than normal. The sample was analyzed, and no deviations were found (CR#20245036).

(2) Direct Radiation:

Posted dosimetry location changes. Stores 2 X-Ray machine has not been used for some years, and we have no plans to use it in the future, the Posted Dosimetry for this location (locations 135 & 136) are being removed from the Posted Dosimetry program. HTP-ZZ-01462-DTI-Posted Dosim, Rev 016, has been updated and published (CR#202400389).

(3) Milk Collection:

Milk samples were unable to be collected at location CA-MLK-M11 on 10/08/2024, 10/22/2024, 11/26/2024 and 12/23/2024. The new milk provider was not prepared for the commitment to provide milk samples on time and eventually changed their mind about being a provider (CR#s 202406406, 202406683, 202407288, & 202407681).

(4) Food Products-Leafy Green Vegetables:

There were no environmental vegetation samples available for collection in April 2024 (CR# 202402620).

Environmental vegetation sample CA-FPL-V-9 was unavailable on 08/05/2024 (CR#202405200).

(5) Drinking Water:

The drinking water at location CA-DWA-4 was unavailable on both 05/08/2024 and 08/05/2024 (CR#'s 202403427 & 202405264).

(6) Surface Water:

CA-SWA-S01 was not obtainable at intake structure due to unsafe weather conditions. There was an ice storm in progress at the time. Resume grab sampling when weather permits and continue to work job to fix intake river sampler (CR#202400463).

The Intake River Sampler is leaking approximately 4 drops per min when the pump is running. The leak is in at the first connection upstream of the D-Y valve inside the cabinet. The leak only occurs when the pump is running which is about 5 minutes every hour. The leak currently does not affect the operability of the pump (CR#202401327).

The Portland River sampler was found to be sampling at a reduced flow rate of ~15 ml (grams) per hour. The sampler has been getting the minimum volume of 250 ml (grams) for the day, but the reduced sample rate has triggered RPTS to get a daily grab sample if the 250ml is not obtained. Job 24001459 written to troubleshoot & repair. (CR#202403004).

The Portland River sampler has been trending low sample volumes since 06/27/2024. Two to eight times a day, notifications are received that sample volume is less the 18mL. Procedurally we need a sample volume between 20mL and 30mL, currently we are still making our 250mL a day to meet the ODCM requirement (CR#202404554).

During op checks on the Portland sampler pump vault, it was determined that the water level is too high (at the base of the pump) and the Portland pump vault flooded. Job 24003233 was written to pump out the vault (CR#202406161).

Intake River sampler leakage discovered. The Intake River sampler weekly collection bottle was found at a higher level than expected (8 days' worth over 7 days). When performing an op check, during manual sampling, excessive dripping was observed. Although the amount of the manual sample and weekly collection was still within a satisfactory band, troubleshooting, and/or repair/replacement of the D-Y valve needs to be completed before the O-rings completely fail. Job 24003512 was written to correct the condition. (CR#202406748).

A technician was sent to the river and found the intake river sampler to be oversampling at a rate of 32 ml per hour, which is greater than the 20-30 ml/Hr required. The sampler was shut down. A daily grab sample for 10/27/2024 was not needed since the sampler had >250 ml for the day. Job 24003513 was initiated to investigate and repair the problem. (CR#202406778).

(7) Non-potable Wells:

The well samples scheduled to be collected on 02/21/24 at locations CA-WWA-U1MW-047 and CA-WWA-U1MW-005 could not be collected due to dry well conditions. (CR#202401290).

U1MW-939R was found open during operator rounds. Technicians involved in the June sampling were interviewed and did not recall forgetting to cover the well. These wells are flush mounted and cannot be locked against inadvertent access. Therefore, inadvertent access cannot be ruled out at this time. Sent site wide communications regarding not tampering with these wells. (CR#202404848).

The well sample CA-WWA-U1MW-047 was unable to be collected on 08/07/2024 due to an insufficient water level for sampling (CR#202405412).

Analysis of CA-WWA-U1MW-017 collected on 11/15/2024 identified an isotope that was not detected historically. A back-up sample was provided for reanalysis, and the previous preliminary result was considered invalid (CR#202407531).

The well sample CA-WWA-U1MW-047 was sampled on 11/15/2024 until dry (CR#202407285).

The well sample CA-WWA-U1MW-004 was unable to be collected on 11/20/2024 because the well was dry (CR#202407285).

3.4 Laboratory Procedures

Gamma-spectroscopic analyses were performed with HPGe detectors. Levels of iodine-131 in vegetation and concentrations of airborne iodine-131 in charcoal samples were also determined by gamma spectroscopy.

Tritium was measured by liquid scintillation.

The procedures and specifications followed in the laboratory for these analyses are as required in the Teledyne Brown Engineering Quality Assurance manual and are explained in the Teledyne Brown Engineering Analytical Procedures. A synopsis of analytical procedures used for the environmental samples is provided in Appendix B. In addition to internal quality control measures performed by Teledyne Brown Engineering, the laboratory also participates in an Interlaboratory Comparison Program. Participation in this program ensures that independent checks on the precision and accuracy of the measurements of radioactive material in environmental samples are performed. The results of the Interlaboratory Comparison are provided in Appendix A.

Radiological analyses of environmental media characteristically approach and frequently fall below the detection limits of state-of-the-art measurement methods. The “less than” values in the data tables were calculated from each specific analysis and are dependent on sample size, detector efficiency, length of counting time, chemical yield (when appropriate) and the radioactive decay factor from time of counting to time of collection. Teledyne Brown Engineering’s analytical methods meet or are below the Lower Limit of Detection (LLD) requirements given in Table 2 of the USNRC Branch Technical Position, Radiological Monitoring Acceptable Program (November 1979, Revision 1). Appendix B contains a discussion of the LLD formulas.

Environmental TLDs are processed by Environmental Dosimetry Company, affiliated with Stanford Dosimetry, LLC.

3.5 Program Modifications

Milk Collection – Restored M9 as Milk control and M11 as new milk provider near the plant. This does not meet the ODCM milk requirement, so broadleaf vegetables will still be collected. Added map to assist locating M11.

3.6 Detection and Reporting Limits

Table 5.3 gives the minimum required detection limits for radiological environmental sample analysis. For each sample type, the table lists the detection level for each isotope. The lower limit of detection (LLD) used in this report is described in NRC Regulatory Guide 4.1 Rev. 1, "Program for Monitoring Radioactivity in the Environs of Nuclear Power Plants" and the NRC Radiological Assessment Branch Technical Position, Rev. 1, November 1979, "An Acceptable Radiological Environmental Monitoring Program".

3.7 Land Use Census

The Land Use Census is performed annually during the growing season. In 2024 the field inspection of the sectors was conducted October 16, 2024, within a five-mile radius of the Callaway Energy Center. The area around the plant was divided into 16 meteorological sectors. The locations of the nearest resident, nearest milk animal, and nearest garden of greater than 500 square feet producing broadleaf vegetation were identified.

The results of the census are presented in Table 5.4. The table includes radial direction and distance from the Callaway Energy Center for each location. The bearings listed in Table 5.4 were measured from the Callaway Plant to the sample location.

There are no changes to the closest residents in 2024. No milking animals were located during the survey however one resident in Sector R expressed interest in providing samples for milk. There is one new participant for garden samples in Sector H. All residents included in the summary report were verified by the Callaway County Assessor’s GIS aerial photography.

The Missouri Department of Natural Resources has not identified any new water wells along the Mud Creek or Logan Creek corridors.

The US Army Corps of Engineers was contacted, and they confirmed that no new drinking water intakes have been located along the Missouri River within ten (10) river miles downstream from the Callaway Plant. Also, no irrigation uses of the Missouri River were identified between the discharge point and Portland, MO during the survey.

3.8 Errata from previous Annual Radiological Environmental Operating Reports

None.

4.0 RESULTS AND DISCUSSION

All collections and analyses were made as scheduled, except for those listed in Table 5.5.

Results are summarized in Table 5.6 as recommended by the Nuclear Regulatory Commission. For each type of analysis and sample medium, the table lists the mean and range of all indicator and control locations, as well as that location with the highest mean and range.

The tabulated results of all measurements are not included in this section, although references to these results will be made in the discussion. A complete tabulation of results for 2024 is contained in Part II of the Annual Report on the Radiological Environmental Monitoring Program for the Callaway Energy Center.

4.1 Atmospheric Nuclear Detonations and Nuclear Accidents

The Fukushima Daiichi nuclear accident occurred March 11, 2011. There were no reported accidents involving significant release to the environment at nuclear reactor facilities in 2024. The last reported atmospheric test was conducted on October 16, 1980, by the People's Republic of China. There were no reported atmospheric nuclear tests in 2024.

4.2 Program Findings

Airborne Particulates and Iodine

No gamma-emitting isotopes were identified other than naturally occurring Be-7. There was no I-131 activity detected in any of the charcoal canister samples.

Air sampling for 2024 indicates no radiological effects of plant operation.

Direct Radiation (TLDs)

Forty-four gamma sensitive TLDs were placed in 16 sectors around the Callaway site each quarter. Measurements from forty-one indicator locations averaged 14.53 mrem/quarter and the three control locations averaged 13.76 mrem/quarter. Readings ranged from 10.07 to 16.91 mrem /quarter, with the highest quarterly average from the indicator location CA-IDM-10, averaging 15.93 mrem/quarter. The TLD readings were consistent with the results for the years 2000 through 2023 as detailed in table 5.7.

Five neutron sensitive TLDs were placed in locations at the Site Boundary closest to the Independent Spent Fuel Storage Facility Installation (ISFSI) and at a control location approximately 14 miles from the site. There was no significant measurable neutron dose and there was no effect from the ISFSI in 2024.

Milk

No milking animals were located during the 2024 Land Use Census survey. Sampling was restored at M9 as a milk control location and M11 as a new milk provider. However, there are not enough sampling locations to fulfill the ODCM milk sampling requirement, so leafy green (broadleaf) vegetation sampling was still performed. There was no I-131 activity detected in milk samples. No gamma-emitting isotopes were detected in milk samples except for naturally occurring potassium-40.

4.2 Program Findings (continued)

Broadleaf Vegetation

There was no I-131 activity detected in broadleaf vegetation samples. No gamma-emitting isotopes were detected in broadleaf vegetation samples except for naturally occurring potassium-40. Vegetation data for 2024 show no radiological effects of plant operation.

Fish

Edible portions of fish were analyzed by gamma spectroscopy. No gamma-emitting isotopes, except for naturally occurring potassium-40, were detected in fish.

Soil

Cesium-137 activity was detected at one of the seven indicator sample locations at a concentration of 353 pCi/kg dry. The cesium-137 activity is consistent with levels observed from 1999 through 2023; these levels are attributable to the deposition of fallout from previous decades.

Surface Water

Tritium was detected in three out of the twelve samples tested in 2024 at the downstream location S02 ranging from 241 pCi/L to 326 pCI/L. No gamma-emitting isotopes were detected in any of the samples taken in 2024.

Surface Water, Ponds

No tritium or gamma activity was detected in any of the twelve pond samples analyzed in 2024.

Drinking Water Wells (potable water)

Sixty-two samples from sixteen different locations were analyzed for tritium and gamma-emitting isotopes in 2024. No tritium or gamma-emitting isotopes were detected.

Wells and Ponds (non-potable water)

Eight groundwater samples from deep wells F-05 and F-15 were analyzed for tritium and gamma-emitting isotopes. No tritium or gamma emitting isotopes detected form any of the deep well samples taken in 2024.

Twenty-five samples from the wells that were part of the limited site investigation (LSI) in 2014 were analyzed for tritium in 2024 including wells CA-WWA-U1MW-031, CA-WWA-U1MW-034, CA-WWA-U1MW-036, CA-WWA-U1MW-039, CA-WWA-U1MW-047, CA-WWA-U1MW-058 and CA-WWA-U1MW-059. Tritium activity was detected in one of the wells, CA-WWA-U1MW-031 at a concentration of 321 pCi/L. These levels were a decline from 2023 and show that the contamination is being remedied by natural attenuation as described in previous AREOR's.

Wells, CA-WWA-U1MW-GWS, CA-WWA-U1MW-937B, CA-WWA-U1MW-937D, CA-WWA-U1MW-939R, CA-WWA-U1MW-940, CA-WWA-U1MW-941 and CA-WWA-U1MW-IFSFI (sump) are in the Plant Protected Area adjacent to the power block. As described in previous AREOR's, the tritium activity in the wells within the power block are believed to be the result of washout from gaseous effluents. The 2024 results are consistent with the results from 2015 through 2023 and demonstrate the continued decline from previous years due to natural attenuation.

4.2 Program Findings (continued)

Sediments

Two samples of shoreline sediments were collected in March and again in October of 2024 at both an indicator and a control location and analyzed for gamma-emitting isotopes. No gamma-emitting isotopes were detected except for naturally occurring potassium-40 in any of the sediment samples.

5.0 TABLES

Table 5.1. Sampling Locations. (TLDs) Update with additions (if any) and deletions

Location Code	Distance / Direction [1]	Description	Sample Types [2]
1a	10.8 mi. 310 ° NW	City of Fulton on Hwy Z, 0.65 mi. E of Bus. 54, W of Campus Apartments	IDM
3	1.2 mi. 308 ° NW	0.1 mi. West of Hwy CC on Gravel Rd., 0.8 mi. South Hwy O	IDM
5	1.3 mi. 79 ° ENE	Meteorological Tower	IDM
6	2.0 mi. 274 ° W	Cty Rd. 428, 1.2 mi. West of Hwy CC	IDM
7	1.4 mi. 184 ° S	Cty Rd. 459, 2.6 mi. North of Hwy 94	IDM
9	3.8 mi. 183 ° S	NW Side of the Cty Rd. 459 and Hwy 94 Junction	IDM
10	3.9 mi. 159 ° SSE	Hwy 94, 1.8 mi. East of Cty Rd. 459	IDM
11a	4.7 mi. 139 ° SE	City of Portland	IDM
14	4.9 mi. 122 ° ESE	SE Side of Intersection Hwy D and Hwy 94	IDM
17	3.7 mi. 88 ° E	Cty Rd. 4053, 0.3 mi. E of Hwy 94	IDM
18a	3.7 mi. 67 ° ENE	East side of Hwy D, 0.5 mi. South of Hwy O	IDM
20	4.7 mi. 46 ° NE	City of Readsville	IDM
21	3.8 mi. 23 ° NNE	Cty Rd. 155, 1.9 mi. North of Hwy O	IDM
22a	0.9 mi. 10 ° NNE	Cty Rd 448, 0.9 mi south of HWY O, co-located with air station A8	IDM
23	6.6 mi. 15 ° NNE	City of Yucatan	IDM
26 [3]	11.7 mi. 82 ° E	Town of Americus	IDM
27 [3]	9.3 mi. 114 ° ESE	Town of Bluffton	IDM
30a	4.4 mi. 206 ° SSW	City of Steedman, N side of Belgian Dr., 150 ft. East of Hwy CC	IDM
31a	7.8 mi. 224 ° SW	City of Mokane, Jct. Hwy C and Cty Rd. 400, 0.9 mi. N. of Hwy 94	IDM
32	5.4 mi. 250 ° WSW	Hwy VV, 0.6 mi. west of Cty Rd. 447	IDM
32a	5.0 mi. 243 ° WSW	Cty Rd. 447	IDM
33	7.4 mi. 272 ° W	City of Hams Prairie, SE of Hwy C and Hwy AD Junction	IDM
34	9.5 mi. 292 ° WNW	NE Side of Hwy C and Cty Rd. 408 Junction	IDM
35	5.8 mi. 340 ° NNW	City of Toledo	IDM
36	4.9 mi. 7 ° N	Cty Rd. 155, 0.8 mi. South of Cty Rd. 132	IDM
37	0.5 mi. 195 ° SSW	Cty Rd. 459, 0.9 mi. South of Hwy CC	IDM
38	4.6 mi. 334 ° NNW	Cty Rd. 133, 1.5 mi. South of Hwy UU	IDM
39	5.4 mi. 312 ° NW	Cty Rd. 111	IDM
39a	5.0 mi. 308 ° NW	Cty Rd. 111	IDM
40	4.2 mi. 292 ° WNW	NE Side of Cty Rd. 112 and Hwy O Junction	IDM
41	5.2 mi. 277 ° W	Hwy AD, 2.5 mi. East of Hwy C	IDM
42	4.4 mi. 231 ° SW	Cty Rd. 447, 2.6 mi. North of Cty Rd. 463	IDM
43	0.5 mi. 223 ° SW	Cty Rd. 459, 0.7 mi. South of Hwy CC	IDM
44	1.7 mi. 254 ° WSW	Hwy CC, 1.0 mi. South of Cty Rd. 459	IDM
45	1.0 mi. 285 ° WNW	Cty Rd. 428, 0.1 mi. West of Hwy CC	IDM
46	1.5 mi. 328 ° NNW	NE Side of Hwy CC and Cty Rd. 466 Intersection	IDM
47	1.0 mi. 10 ° N	Cty Rd. 448, 0.9 mi. South of Hwy O	IDM
48	0.4 mi. NE	Cty Rd. 448, 1.5 mi. South of Hwy O, Plant Security Sign Post	IDM
49	1.6 mi. 95 ° E	Cty Rd. 448, Reform Wildlife Mgmt. Parking Area, Gate Post.	IDM
50	0.9 mi. 168 ° SSE	Cty Rd. 459, 3.3 mi. North of Hwy 94	IDM
51a	0.3 mi. 150° SE	Owner Control Fence, SE of the Water Treatment Plant	IDM
52	0.4 mi. 111 ° ESE	Light Pole Near the East Plant Security Fence	IDM
60 [3]	13.5 mi. 224 ° SW	Just past Tebbetts City sign	IDM

Table 5.1. Sampling Locations. (TLDs, continued)

Location Code	Distance / Direction [1]	Description	Sample Types [2]
60N [3]	13.5 mi 224 º SW	Co-located with location 60	IDM
61	1.9 mi 334 º NNW	Community of Reform, Corner of CC and O	IDM
61N	1.9 mi 334 º NNW	Co-located with location 61	IDM
62N	1.2 mi. 308 º NW	Co-located with location 3	IDM
63N	0.9 mi. 10 º NNE	Co-located with air station A8 and location 22a	IDM
64N	1.0 mi. 285 º WNW	Co-located with location 45	IDM

Table 5.1. Sampling Locations (Airborne Radioiodine and Particulate samples, Surface Ponds, Potable Water)

A1	1.3 mi. 79 º ENE	Meteorological Tower	APT, AIO
A7	9.5 mi. 312 º NW	C. Bartley Farm, Fulton, MO	APT, AIO
A8	0.9 mi. 10 º NNE	County Road 448, 0.9 miles South of Hwy 0	APT, AIO
A9	1.9 mi. 334 º NNW	Community of Reform	APT, AIO
A10	0.89 mi 276 º W	EOF Parking lot	APT, AIO
A11	0.71 mi 166 º SSE	Sludge lagoons lift pumps area	APT, AIO
3	2.9 mi. 168 º SSE	Potable water, County Road 448 Ward Residence	DWA
4	2.6 mi. 158 º SSE	Potable water, County Road 448 Miller Residence	DWA
5	2.5 mi. 153 º SSE	Potable water, County Road 448 Brucker Brothers Farm	DWA
7	2.1 mi. 108 º ESE	Potable water, County Road 448 S. Kriete Residence	DWA
8 [4]	3.4 mi. 193 º SSW	Potable water, County Road 457 Curry Residence	DWA
9	2.9 mi. 204 º SSW	Potable water, County Road 457 Clardy Residence	DWA
10	2.7 mi. 208 º SSW	Potable water, County Road 457 T. Dillon Residence	DWA
12	3.6 mi. 165 º SSE	Potable water, County Road 464 J. Dillon Residence	DWA
21	2.4 mi. 120 º ESE	Potable water, County Road 469 Baumgarth Residence	DWA
22	4.8 mi. 140 º SE	Potable water, State Road 94 Plummer Residence	DWA
23	5.6 mi. 142 º SE	Potable water, County Road 466 Curdt Residence	DWA
24	2.9 mi. 203 º SSW	Potable water, County Road 457 Farley Residence	DWA
25	1.89 mi. 79 º E	Potable water, County Road 448 M. Kriete Residence	DWA
V16	1.64 mi. 255 º WSW	Potable water, Hwy CC Wallendorf Farm, Steedman, MO	DWA
V19	3.28 MI. 162 º SSE	Potable water, Dillon Drive, Dillon Farm, Portland, MO	DWA
PW1	Callaway Cafeteria, 0.13 mi. 234 º SW	Potable water, Unit 1 Construction well #3 open from 400'-1400'	DWA
Pond 01	0.6 mi. 264 º W	Fishing Pond	SWA
Pond 02	0.7 mi. 232 º SW	Fishing Pond	SWA
Outfall 010	0.6 mi. 42 º NE	Stormwater Run-Off Pond	SWA
Wetlands 01	0.6 mi. 152 º SSE	Wetlands Pond #1	SWA
Wetlands 02	0.7 mi. 160 º SSE	Wetlands Pond #2	SWA
Sludge Lagoon	~0.8 mi. 153 º SSE [5]	In-service Sludge Lagoon	SWA
S01 [3]	4.8 mi. 150 º SSE	555 feet Upstream of Discharge North Bank	SWA
S02	4.9 mi. 138 º SE	1.1 River Miles Downstream of Discharge North Bank	SWA

Table 5.1. Sampling Locations, Non-potable Groundwater Wells

Location Code	Distance / Direction [1]	Description	Sample Types [2]
U1MW-937B	Plant Peninsula Area, 0.04 mi. 209 º SSW	Monitoring Well, West of the Turbine Bldg.	WWA
U1MW-937D	Plant Peninsula Area, 0.1 mi. 92 º E	Monitoring Well, North of Discharge Monitor Tanks	WWA
U1MW-939R	Plant Peninsula Area, 0.05 mi. 109 º ESE	Monitoring Well, East of the Fuel Bldg.	WWA
U1MW-940	Plant Peninsula Area, 0.05 mi. 78 º ENE	Monitoring Well, West of the Radwaste Bldg.	WWA
U1MW-941	Plant Peninsula Area, 0.07 mi. 81 º E	Monitoring Well, West of the Radwaste Bldg.	WWA
U1MW-GWS	Plant Peninsula Area, 0.02 mi. 135 º SE	Ground Water Sump, West of Reactor Bldg. and Fuel Bldg.	WWA
U1MW-ISFSI	ISFSI sump, 0.08 mi. 21 º NNE	Near ISFSI pad	WWA
U1MW-004	3.7 mi. 165 º SSE	South of Dillon residence, Groundwater Monitoring Well	WWA
U1MW-005	3.8 mi. 160 º SSE	South of Brownlee / Hudson residence, Groundwater Monitoring Well	WWA
U1MW-006	3.0 mi. 171 º S	South of Ward Residence, Groundwater Monitoring Well	WWA
U1MW-010	3.1 mi. 173 º S	Old Pipeline Bed, Groundwater Monitoring Well	WWA
U1MW-013	0.8 mi. 159 º SSE	Pipeline Corridor, south of sludge ponds	WWA
U1MW-014	3.7 mi. 171 º S	Pipeline Corridor, near manhole 6B	WWA
U1MW-015	3.9 mi. 162 º SSE	Pipeline Corridor, North of HWY 94.	WWA
U1MW-016	4.5 mi. 151 º SSE	Pipeline Corridor, near heavy haul road at intake structure	WWA
U1MW-017	3.68 mi. 171 º S	Pipeline Corridor, near manhole 6B	WWA
U1MW-018	3.75 mi. 172 º S	Pipeline Corridor, near manhole 6B	WWA
U1MW-019	3.71 mi.172 º S	Pipeline Corridor, near manhole 5	WWA
U1MW-020	3.88 mi.164 º SSE	Pipeline Corridor, near manhole 3B	WWA
U1MW-031	0.18 mi. 78 º ENE	~1m from manhole 86-2 & 1m from HDPE discharge pipeline	WWA
U1MW-034	0.21 mi. 98 º E	~130m from manhole 86-2, HDPE discharge line bedding	WWA
U1MW-036	0.26 mi. 122 º ESE	~300m from MH 86-2, HDPE discharge line bedding at cross connection pipe	WWA
U1MW-039	0.61 mi. 168 º SSE	~1100m from manhole 86-2, HDPE discharge line bedding outside OCA	WWA
U1MW-047	4.56 mi. 151 º SSE	Upstream side of HDPE gate valve vault at intake structure inside HDPE pipeline bedding	WWA
U1MW-058	0.31 mi. 132 º SE	~400m from manhole 86-2, Techite discharge line bedding	WWA
U1MW-059	1.04 mi. 166 º SSE	~1700m from MH86-2, Techite discharge line bedding outside OCA	WWA
U2 MW 2S	1.8 mi. 5 º N	Located on the periphery of the plateau	WWA
U2 MW 5S	1.1 mi. 261 º W	Located on the periphery of the plateau	WWA
U2 MW 8	0.4 mi. 12 º NNE	Located radially outward from central part of the plateau	WWA
U2 MW 16	2.9 mi. 203 º SSW	Located along Mud Creek, Farley Property, screened for CJC aquifer	WWA
F05	0.9 mi. 169 º S	CJC aquifer monitoring well	WWA
F15	0.4 mi. 29 º NNE	Outside OCA fence in center portion of plateau, screened for CJC aquifer	WWA

Table 5.1. Sampling Locations, Soil, Food Products, Milk, Fish, and Sediments.

Location Code	Distance / Direction [1]	Description	Sample Types [2]
F2	1.0 mi. 235 º SW	Callaway Plant Forest Ecology Plot F2.	SOL
F6	1.6 mi. 51 º NE	Callaway Plant Forest Ecology Plot F6.	SOL
PR3	0.95 mi. 108 º ESE	Callaway Plant Forest Ecology Plot PR3.	SOL
PR7	0.46 mi. 320 º NNW	Callaway Plant Forest Ecology Plot PR7.	SOL
W1 [3]	0.52 mi. 150 º SSE	Callaway Plant Wetlands #1, High Ground.	SOL
W2	0.55 mi. 155 º SSE	Callaway Plant Wetlands #1, Inlet Area.	SOL
W5	~0.8 mi. 153 º SSE[5]	In-service Sludge Lagoon.	SOL
W6	0.67 mi. 154 º SSE	Callaway Plant Wetlands #2, inlet area	SOL
M9 [3]	13 mi. 228 º SW	Ferguson Farm, Tebbetts, MO.	SOL
M9 [3]	13 mi. 228 º SW	Ferguson Farm, Tebbetts, MO.	MLK
M11	2.12 mi. 345 º NNW	Akers Farm, Steedman, MO.	MLK
V9	1.9 mi. 294 º WNW	Meehan Farm, Steedman, MO	FPL
V16	1.64 mi. 255 º WSW	Wallendorf Farm, Steedman, MO	FPL
V19	3.28 mi. 162 º SSE	Richard and Amy Dillon Farm	FPL
V20	17.73 mi. 238 º WSW	Nathaniel Kline, 3651 State Road AA, Holts Summit, MO	FPL
A [3,6]	~4.8 mi. 150 º SSE	Between 0.6 and 10.0 river miles upstream of the plant intake.	AQF
A [3,]	~4.8 mi. 150 º SSE	Upstream of the plant intake.	AQS
C [6]	~4.9 mi. 138 º SE	Downstream, of the plant discharge, between the confluence of the Missouri River and Logan Creek and the Portland boat ramp	AQF
C	~4.9 mi. 138 º SE	Vicinity of Portland – north bank	AQS

[1] Distances are measured from the midpoint of the two reactors as described in Final Safety Analysis Report (FSAR) Sec. 2.1.1.1.

[2] AIO = Air Iodine, APT = Air Particulate, AQF = Fish, AQS = Sediment, FPL = Leafy Green Vegetables, FC = Food Crops, IDM = TLD, MLK = Milk, SOL = Soil, SWA = Surface Water, DWA = Drinking Water, WWA = Ground Water.

[3] Control Location.

[4] Property ownership changed from Brandt to Curry in 2022.

[5] The coordinates of the in-service sludge lagoon are determined at the time of sampling in accordance with HTP-ZZ-07101-DTI-REMP-SMPL-SCHED.

[6] The expanded collection areas provide sufficient habitat to collect the required number of species, see HTP-ZZ-07101-DTI-REMP-SMPL-SCHED.

Table 5.2. Collection Frequencies and Required Analyses [1] (January 1 through December 31, 2024)

Sample Type	Media Code	Collection Frequency	Required Analyses
Direct radiation	IDM	Quarterly	Gamma dose for each sample. Neutron dose for the samples monitoring ISFSI direct radiation.
Airborne iodine	AIO	Weekly	^{131}I
Air particulate	APT	Weekly	PGE[3] each sample
Surface water (river)	SWA	Monthly composite	PGE and ^{3}H
Surface water (onsite ponds)	SWA	Semiannually	PGE and ^{3}H. If contaminated with gamma emitting nuclides of plant origin, analyze for HTD[4] nuclides.
Groundwater (not potable)	WWA	Quarterly[5]	PGE and ^{3}H. If contaminated with gamma emitting nuclides of plant origin, analyze for HTD[4] nuclides. [6]
Well water-potable	DWA	Quarterly	PGE and ^{3}H. If contaminated with gamma emitting nuclides of plant origin, analyze for HTD[4] nuclides.
Shoreline sediment	AQS	Semiannually	PGE
Sludge pond sediment	SOL	Annually	PGE
Soil	SOL	Annually	PGE
Milk animal	MLK	Semimonthly when animals are on pasture, monthly other times	PGE and ^{131}I
Leafy green vegetables	FPL	Monthly when available [2]	PGE and ^{131}I
Fish	AQF	Semiannually	PGE on edible portion

[1] Samples required by ODCM unless specified otherwise.

[2] The growing season is defined as the months April 1- November 1 but will vary according to weather conditions.

[3] Principal Gamma Emitters (PGE) are defined as ^{54}Mn, ^{59}Fe, ^{58}Co, ^{60}Co, ^{65}Zn, ^{95}Zr/Nb, ^{134}Cs, ^{137}Cs, ^{140}Ba/La and other gamma- emitting nuclides that may be identified during the gamma spectroscopy analysis.

[4] Hard to Detect (HTD) nuclides are defined as ^{89}Sr, ^{90}Sr, ^{55}Fe, ^{63}Ni, ^{237}Np, ^{238}Pu, ^{239}/^{240}Pu, ^{241}Pu, ^{241}Am, ^{242}Cm and ^{243}/^{244}Cm.

[5] Monthly for locations U1MW-937B, U1MW-937D, U1MW-939R, U1MW-940, U1MW-941 and U1MW-GWS.

[6] Wells ISFSI Sump, U1MW-18, U1MW-19, U1MW-20, U1MW-31, U1MW-34, U1MW-36, U1MW-39, U1MW-47, U1MW-58, U1MW-59, U2MW-2S, U2MW-5S, U2MW-8, and U2MW-16 are analyzed for tritium only.

Table 5.3. Minimum Required Detection Capabilities for REMP Sample Analysis[1]

Analysis	Water (pCi/L)	Airborne (pCi/m^3)	Fish (pCi/kg wet)	Milk (pCi/L)	Food Products (pCi/kg wet)	Non-Food Products (pCi/kg wet)	Soil and Sediment (pCi/kg dry)
H-3	3000/2000[3]					3000	
Mn-54	15		130				
Fe-59	30		260				
Co-58/60	15		130				
Zn-65	30		260				
Zr-Nb-95 [2]	15						
I-131	1000/1[3]	0.07		1	60		
Cs-134	15	0.05	130	15	60	60	150
Cs-137	18	0.06	150	18	80	80	180
Ba-La-140 [2]	15			15			

[1] This list does not mean only these nuclides will be detected and reported. Other peaks which are measurable and identifiable will be reported.

[2] Total activity, parent plus daughter activity.

[3] LLDs for Surface and Drinking / Ground water are the same, with the exception of H-3 and I-131. The Drinking / Ground water LLDs for H-3 and I-131 are 2000 and 1 pCi/liter respectively.

Table 5.4 2024 Land Use Census Results.

Closest Receptor in Miles

Sector	Residence	Garden [1, 2]	Milk [1]
N(A)	2.37	NI	NI
NNE(B)	2.16	2.97	NI
NE(C)	2.26	NI	NI
ENE(D)	2.86	NI	NI
E(E)	3.51	NI	NI
ESE(F)	2.11	4.47	NI
SE(G)	2.72	NI	NI
SSE(H)	3.11	3.28	NI
S(J)	2.86	NI	NI
SSW(K)	2.38	NI	NI
SW(L)	2.63	2.72	NI
WSW(M)	1.20	1.96	NI
W(N)	1.56	3.55	NI
WNW(P)	1.93	1.93	NI
NW(Q)	2.07	NI	NI
NNW(R)	1.81	2.12	NI

[1] NI = None Identified.
[2] Broadleaf Vegetation

Table 5.5. Missed Collections and Analyses, Callaway Energy Center

Sample Type	Analysis	Location(s)	Collection Date or Period	Comments
WWA	H-3	CA-WWA-U1MW-047	02/21/2024	No water due to dry well (CR#202401290).
WWA	Gamma, H-3	CA-WWA-U1MW-005	02/21/2024	No water due to dry well (CR#202401290).
FPL	Gamma	(CA-FPL-V9, CA-FPL-V16, CA-FPL-V19, CA-FPL-V20)	April 2024	No environmental vegetation samples available (CR#202402620).
DWA	Gamma	CA-DWA-4	05/08/2024	Sample was unavailable (CR#202403427).
AIO	I-131	CA-AIO-A7	05/30/2024	Air station A-7 found without power (CR#202403920).
APT	Gamma	CA-APT-A7	05/30/2024	Air station A-7 found without power (CR#202403920).
FPL	Gamma	CA-FPL-V9	08/05/2024	Sample was unavailable (CR#202405200).
DWA	Gamma	CA-DWA-4	08/05/2024	Sample was unavailable (CR#202405264).
WWA	H-3	CA-WWA-U1MW-047	08/07/2024	Insufficient water level for sampling (CR#202405412).
AIO	I-131	CA-AIO-A7	10/03/2024	Air station A-7 found without power (CR#202406303).
APT	Gamma	CA-APT-07	10/03/2024	Air station A-7 found without power (CR#202406303).
MLK	Gamma	CA-MLK-M11	10/08/2024	New milk provider was unprepared (CR#202406406).
MLK	Gamma	CA-MLK-M11	10/22/2024	New milk provider was unprepared (CR#202406683).
WWA	H-3	CA-WWA-U1MW-047	11/15/2024	No water due to dry well (CR#202407285).
WWA	Gamma, H-3	CA-WWA-U1MW-004	11/20/2024	No water due to dry well (CR#202407285).
MLK	Gamma	CA-MLK-M11	11/26/2024	New milk provider was unprepared (CR#202407288).
MLK	Gamma	CA-MLK-M11	12/23/2024	New milk provider was unprepared (CR#202407288).

Table 5.6 Radiological Environmental Monitoring Program Summary

Sample Type (Units)	Type and Number of Analyses(a)		Req'd LLD(b)	Indicator Locations Mean, Fraction, Range (c)	Location with Highest Annual Mean		Control Locations Mean, Fraction, Range (c)	Number Non-Routine Results(e)
					Location (d)	Mean, Fraction, Range (c)		
Waterborne Pathway								
Surface Water (pCi/L)	H-3	24	3000	284 (3/12) (241-326)	-	-	ND	0
	GS	24	(b)	ND	-	-	ND	0
Surface Water, Ponds (pCi/L)	H-3	12	3000	ND	-	-	None	0
	GS	12	(b)	ND	-	-	None	0
Potable Wells (pCi/L)	H-3	62	2000	ND	-	-	ND	0
	GS	62	(b)	ND	-	-	ND	0
Wells (non-potable) (pCi/L)	H-3	171	3000	519 (25/171) (181-919)	CA-U1MW-939R 0.05 mi. 109° / ESE	680 (12/12) (315-919)	None	0
	GS	114	(b)	ND	-	-	None	0
Sediments (pCi/kg) dry	Cs-134	4	150	ND	-	-	ND	0
	Cs-137	4	180	ND	-	-	ND	0
Airborne Pathway								
Airborne Particulates (pCi/m^3)	GS	311	(b)	ND	-	-	None	0
Airborne Iodine (pCi/m^3)	I-131	311	0.07	ND	-	-	None	0
Soil								
Soil (pCi/kg) dry	Cs-134	9	150	ND	-	-	ND	0
	Cs-137	9	180	353 (1/7) (353)	F-006 1.6 mi. 51° / NE	353 (1/1)	ND	0

Table 5.6 Radiological Environmental Monitoring Program Summary

Sample Type (Units)	Type and Number of Analyses(a)	Req'd LLD(b)	Indicator Locations Mean, Fraction, Range (c)	Location with Highest Annual Mean		Control Locations Mean, Fraction, Range (c)	Number Non-Routine Results(e)
				Location (d)	Mean, Fraction, Range (c)		
Ingestion Pathway							
Food Products Leafy Green Vegetables (pCi/kg wet)	GS 56	(b)	ND	-	-	ND	0
Fish Edible Flesh (pCi/kg) wet	GS 20	(b)	ND	-	-	ND	0
Milk (pCi/L)	I-131 4	1	ND	-	-	ND	0
	GS 4	(b)	ND	-	-	ND	0
Direct Radiation							
(Quarterly TLDs) (mrem/Qtr)	Gamma 176	-	14.5 (164/164) (10.1-16.9)	CA-IDM-10 3.9 mi. 159° SSE	15.9 (3/3) (15.5-16.5)	13.8 (12/12) (10.0-16.7)	0
	Neutron 20	-	ND	-	-	ND	0

(a) GS = gamma spectroscopy.
(b) LLD = nominal lower limit of detection based on a 4.66 sigma counting error for background sample. LLD's for gamma spectroscopy are in Table 5.3.
(c) Mean and range are based on detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (F). ND= not detected.
(d) Locations are specified by station code (Table 5.2) and distance (miles) and direction relative to reactor site.
(e) Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.
(f) Units: pCi/L.

Table 5.7 Direct Radiation Dose (mrem/90 days) for the Period 2000-2023.

Station Code	Mean	3σ	Mean + 3σ	Max
CA-IDM-1A	15.8	2.8	18.6	18.0
CA-IDM-3*	16.8	2.8	19.5	20.0
CA-IDM-5	14.2	2.7	16.9	17.1
CA-IDM-6	16.1	3.5	19.7	19.0
CA-IDM-7	16.0	3.1	19.1	19.0
CA-IDM-9	14.9	2.5	17.3	17.0
CA-IDM-10	16.9	2.6	19.5	19.3
CA-IDM-11A	16.9	2.9	19.8	19.3
CA-IDM-14	15.8	2.6	18.4	18.7
CA-IDM-17	15.8	3.0	18.9	18.3
CA-IDM-18A	16.0	4.3	20.3	18.9
CA-IDM-20	16.4	2.9	19.2	19.3
CA-IDM-21	16.2	3.4	19.5	19.0
CA-IDM-22A*	14.1	5.3	19.4	18.0
CA-IDM-23	16.5	2.5	19.0	19.0
CA-IDM-26(C)	11.3	2.3	13.6	13.1
CA-IDM-27(C)	17.0	2.9	19.9	20.0
CA-IDM-30A	15.6	2.7	18.2	18.2
CA-IDM-31A	16.8	2.6	19.5	19.0
CA-IDM-32	16.6	2.7	19.4	19.0
CA-IDM-32A	15.9	3.9	19.7	20.0
CA-IDM-33	15.8	2.7	18.5	18.0
CA-IDM-34	15.2	2.8	18.0	18.0
CA-IDM-35	14.6	2.6	17.2	17.3
CA-IDM-36	15.2	3.6	18.7	18.7
CA-IDM-37	15.7	2.7	18.4	18.0
CA-IDM-38	11.3	2.2	13.5	13.9
CA-IDM-39	15.6	3.2	18.8	19.0
CA-IDM-39A	16.2	3.4	19.5	19.0
CA-IDM-40	16.7	3.4	20.1	19.2
CA-IDM-41	15.6	3.2	18.7	19.0
CA-IDM-42	13.6	2.5	16.1	16.2
CA-IDM-43	15.8	2.9	18.7	18.7
CA-IDM-44	16.0	3.3	19.3	19.0
CA-IDM-45*	14.6	3.2	17.8	20.0
CA-IDM-46	16.3	2.7	19.0	19.9
CA-IDM-47	15.5	2.7	18.2	18.0
CA-IDM-48	16.4	2.9	19.3	19.0
CA-IDM-49	15.2	3.1	18.3	18.0
CA-IDM-50	16.1	3.0	19.0	20.0
CA-IDM-51A	16.9	2.7	19.6	19.8
CA-IDM-52	16.5	2.8	19.3	19.1
CA-IDM-60(C)*	15.9	2.6	18.5	18.0
CA-IDM-61*	14.2	3.8	17.9	15.7

* ISFSI monitoring
(C) Control location

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APPENDIX A
SUMMARY OF INTRALABORATORY COMPARISONS

INTERLABORATORY COMPARISION PROGRAM

The purpose of the Interlaboratory Comparison Program (ICP) is to confirm the accuracy of results produced by Teledyne Brown Engineering. Samples of various matrices (i.e. soil, water, vegetation, air filters, and milk) are spiked with known amounts of radioactivity by commercial vendors of this service and by departments within the government. TBE participates in three programs. Two are commercial, Analytics Inc. and Environmental Resource Associates (ERA) and one is a government sponsored program, the Department of Energy's (DOE) Mixed Analyte Performance Evaluation Program (MAPEP). The DOE's MAPEP was created to mimic conditions found at DOE sites which do not resemble typical environmental samples obtained at commercial nuclear power facilities. All three programs are blind performance evaluation studies in which samples with known activities are sent to TBE for analysis. Once analyzed, TBE submits the results to the respective agency for evaluation. The results of these evaluations are published in TBE's quarterly and annual QA reports.

The National Institute of Standards and Technology (NIST) is the approval authority for laboratory providers participating in Intercomparison Study Programs; however, at this time, there are no approved laboratories for environmental and/or radiochemical isotope analyses.

For the TBE laboratory, 152 out of 167 required analyses performed met the specified acceptance criteria. Fifteen analyses did not meet the specified acceptance criteria and were addressed through the TBE Corrective Action Program. A summary of the NCR dispositions is provided.

A.1 Analytics Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
March 2024	E14089	Milk	Sr-89	pCi/L	79.6	78.2	1.02	A
			Sr-90	pCi/L	12.6	11.9	1.06	A
	E14090	Milk	Ce-141	pCi/L	75.6	85.0	0.89	A
			Co-58	pCi/L	-0.069	Not Measured		
			Co-60	pCi/L	139	158	0.88	A
			Cr-51	pCi/L	212	230	0.92	A
			Cs-134	pCi/L	167	198	0.84	A
			Cs-137	pCi/L	158	171	0.93	A
			Fe-59	pCi/L	81.1	86.5	0.94	A
			I-131	pCi/L	80.9	90.8	0.89	A
			Mn-54	pCi/L	173	183	0.95	A
			Zn-65	pCi/L	165	176	0.93	A
	E14091	Charcoal	I-131	pCi	90.1	90.3	1.00	A
	E14092	AP	Ce-141	pCi	68.1	67.5	1.01	A
			Co-58	pCi	1.73	Not Measured		
			Co-60	pCi	168	126	1.34	N(1)
			Cr-51	pCi	182	183	0.99	A
			Cs-134	pCi	157	157	1.00	A
			Cs-137	pCi	132	136.0	0.97	A
			Fe-59	pCi	70.3	68.6	1.02	A
			Mn-54	pCi	144	145	0.99	A
			Zn-65	pCi	125	140	0.89	A
	E14093	Soil	Ce-141	pCi/g	0.106	0.071	1.48	N(1)
			Co-58	pCi/g	-0.005	Not Measured		
			Co-60	pCi/g	0.121	0.133	0.91	A
			Cr-51	pCi/g	0.198	0.194	1.02	A
			Cs-134	pCi/g	0.206	0.166	1.24	W
			Cs-137	pCi/g	0.207	0.209	0.99	A
			Fe-59	pCi/g	0.063	0.073	0.87	A
			Mn-54	pCi/g	0.140	0.153	0.91	A
			Zn-65	pCi/g	0.149	0.148	1.01	A
	E14094	AP	Sr-89	pCi	83.9	90.6	0.93	A
			Sr-90	pCi	11.7	13.8	0.85	A
September 2024	E14095	Milk	Sr-89	pCi/L	88.0	92.3	0.95	A
			Sr-90	pCi/L	12.4	15.2	0.82	A
	E14096	Milk	Ce-141	pCi/L	124	124	1.00	A
			Co-58	pCi/L	154	150	1.03	A
			Co-60	pCi/L	232	236	0.98	A

A.1 Analytics Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
			Cr-51	pCi/L	284	274	1.04	A
			Cs-134	pCi/L	180.0	187	0.96	A
			Cs-137	pCi/L	126	127	0.99	A
			Fe-59	pCi/L	127.0	113	1.12	A
			I-131	pCi/L	85.3	89.0	0.96	A
			Mn-54	pCi/L	162	162	1.00	A
			Zn-65	pCi/L	294	275	1.07	A
	E14097	Charcoal	I-131	pCi	98.8	92.6	1.07	A
	E14098	AP	Ce-141	pCi	82.0	76.7	1.07	A
			Co-58	pCi	91.0	92.6	0.98	A
			Co-60	pCi	180	146	1.23	W
			Cr-51	pCi	208	170	1.22	W
			Cs-134	pCi	116	116	1.00	A
			Cs-137	pCi	83.1	78.9	1.05	A
			Fe-59	pCi	75.6	70.2	1.08	A
			Mn-54	pCi	101	100	1.01	A
			Zn-65	pCi	167	170	0.98	A
	E14099	Soil	Ce-141	pCi/g	0.224	0.222	1.01	A
			Co-58	pCi/g	0.249	0.268	0.93	A
			Co-60	pCi/g	0.420	0.423	0.99	A
			Cr-51	pCi/g	0.492	0.492	1.00	A
			Cs-134	pCi/g	0.278	0.336	0.83	A
			Cs-137	pCi/g	0.276	0.295	0.94	A
			Fe-59	pCi/g	0.233	0.204	1.14	A
			Mn-54	pCi/g	0.279	0.290	0.96	A
			Zn-65	pCi/g	0.538	0.494	1.09	A
	E14100	AP	Sr-89	pCi	79.8	82.7	0.96	A
			Sr-90	pCi	12.0	13.6	0.88	A
	E14197	Liquid	Gr-A (Am241)	pCi/L	47.6	50.1	0.95	A
			Gr-B (Cs137)	pCi/L	248	270	0.92	A

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

A.2 DOE's Mixed Analyte Performance Evaluation Program (MAPEP)
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Range	Evaluation [b]
February 2024	24-MaS50	Soil	Fe-55	Bq/kg	297	650	455 - 845	N[3]
			Ni-63	Bq/kg	1070	1530	1071 - 1989	N[4]
			Tc-99	Bq/kg	325	336	235 - 437	A
			Th-228	Bq/kg	34.6	48.8	34.2 - 63.4	W
			Th-230	Bq/kg	49.7	54.0	38.0 - 70.0	A
			Th-232	Bq/kg	36.4	45.1	31.6 - 58.6	A
	24-MaSU50	Urine	Cs-134	Bq/L	1.12	1.36	0.95-1.77	A
			Cs-137	Bq/L	2.00	2.23	1.56-2.90	A
			Co-57	Bq/L	1.06	1.26	0.88 - 1.64	A
			Co-60	Bq/L	2.26	2.38	1.67 - 3.09	A
			K-40	Bq/L	-1.80	NR	-	
			Mn-54	Bq/L	1.44	1.51	1.06 - 1.96	A
			U-234	Bq/L	0.00101		*(1)*	A
			U-238	Bq/L	0.00228		*(1)*	A
			Zn-65	Bq/L	-0.42	0.84	0.59-1.09	NE[5]
	24-MaW50	Water	Ni-63	Bq/L	0.338	0.80	*(2)*	A
			Tc-99	Bq/L	9.95	7.47	5.23 - 9.71	N[6]
	24-RdV50	Vegetation	Cs-134	Bq/sample	2.80	3.67	2.57 - 4.77	W
			Cs-137	Bq/sample	2.21	2.57	1.80 - 3.34	A
			Co-57	Bq/sample	2.23	2.53	1.77 - 3.29	A
			Co-60	Bq/sample	2.42	2.96	2.07 - 3.85	A
			Mn-54	Bq/sample	0.033		*(1)*	A
			Sr-90	Bq/sample	0.276	0.529	0.370 - 0.688	N[7]
			Zn-65	Bq/sample	6.83	8.02	5.61 - 10.43	A
August 2024	24-MaS51	Soil	Fe-55	Bq/kg	*(8)*	780	546-1014	N[9]
			Ni-63	Bq/kg	1140.00	1450.00	1015 - 1885	W
			Tc-99	Bq/kg	155.00	171.00	120 - 222	A
			Th-228	Bq/kg	38.00	43.30	30.3 - 56.3	A
			Th-230	Bq/kg	46.10	44.00	30.8 - 57.2	A
			Th-232	Bq/kg	38.90	42.60	29.8 - 55.4	A
	24-MaW51	Water	Ni-63	Bq/L	0.60	-	*(1)*	A
			Tc-99	Bq/L	11.90	11.20	7.8 - 14.6	A
	24-RdV51	Vegetation	Cs-134	Bq/sample	3.12	2.89	2.02 - 3.76	A
			Cs-137	Bq/sample	2.18	1.91	1.34 - 2.48	A
			Co-57	Bq/sample	0.00	-	*(1)*	A
			Co-60	Bq/sample	2.24	2.01	1.41 - 2.61	A
			Mn-54	Bq/sample	3.76	3.53	2.47 - 4.59	A
			Sr-90	Bq/sample	0.95	2.39	1.67 - 3.11	N[10]
			Zn-65	Bq/sample	10.30	9.13	6.39 - 11.87	A

(a) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurement made during standard preparation

(b) DOE/MAPEP evaluation:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

(1) False positive test

(2) Sensitivity evaluation

(3) See **CAR 23-31**

(4) See **NCR 24-08**

(5) Not Evaluated, re-reported as Falst Pos by MAPEP

(6) See **NCR 24-10**

(7) See **NCR 24-11**

A.3 ERA Environmental Radioactivity Cross Check Program
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Limits	Evaluation [b]
March 2024	MRAD-40	Water	Am-241	pCi/L	101	139	95.4 - 178	A
			Fe-55	pCi/L	2185	2480	1460- 3610	A
			Pu-238	pCi/L	62.0	70.4	42.3 - 91.2	A
			Pu-239	pCi/L	61.2	76.5	47.3 - 94.3	A
		Soil	Am-241	pCi/kg	NR	1880	1020 - 2660	
			Pu-238	pCi/kg	667	512	255 - 778	A
			Pu-239	pCi/kg	562	545	297 - 784	A
			Sr-90	pCi/kg	4050	3630	1130 - 5650	A
			U-234	pCi/kg	3040	4360	2040 - 5710	A
			U-238	pCi/kg	3270	4320	2370 - 5800	A
		AP	Am-241	pCi/filter	38.8	55.0	39.3 - 73.3	N(1)
			Fe-55	pCi/filter	387	386	141 - 616	A
			Pu-238	pCi/filter	45.9	41.1	31.0 - 50.5	A
			Pu-239	pCi/filter	54.9	56.1	41.9 - 67.7	A
			U-234	pCi/filter	11.1	11.6	8.60 - 13.6	A
			U-238	pCi/filter	12.8	11.5	8.68 - 13.7	A
			GR-A	pCi/filter	116	95.9	50.1 - 158	A
			GR-B	pCi/filter	42.1	22.2	13.5 - 33.5	N(2)
April 2024	RAD-137	Water	Ba-133	pCi/L	62.8	65.9	50.1 - 81.7	A
			Cs-134	pCi/L	51.0	57.8	42.8 - 72.8	A
			Cs-137	pCi/L	153	186	149 - 223	A
			Co-60	pCi/L	92.1	98.8	79.7 - 118	A
			Zn-65	pCi/L	208	240	188 - 292	A
			GR-A	pCi/L	35.2	52.6	39.6 - 65.6	N(3)
			GR-B	pCi/L	49	46.5	33.9 - 59.1	A
			U-Nat	pCi/L	56.0	59.3	52.8-65.8	A
			H-3	pCi/L	19,000	21,300	18,200 - 24,400	A
			Sr-89	pCi/L	48.9	52.2	37.8 - 66.6	A
			Sr-90	pCi/L	32.6	37.6	32.0 - 43.2	A
			I-131	pCi/L	21.8	25.1	21.7 - 28.5	A
September 2024	MRAD-41	Water	Am-241	pCi/L	108.0	117.0	80.3-150	A
			Fe-55	pCi/L	615	1230	723-1790	N(4)
			Pu-238	pCi/L	99	103	61.9-133	A
			Pu-239	pCi/L	123	133	82.3-164	A
		Soil	Am-241	pCi/kg	1320	1110	599-1570	A
			Pu-238	pCi/kg	1380	1860	928-2830	A
			Pu-239	pCi/kg	796	1030	561-1480	A
			Sr-90	pCi/kg	3240	4730	1470-7370	A

			U-234	pCi/kg	2540	2860	1340-3750	A
			U-238	pCi/kg	2390	2840	1560-3810	A
		AP	Am-241	pCi/filter	27.0	29.1	20.8-38.8	A
			Fe-55	pCi/filter	644	800	292-1280	A
			Pu-238	pCi/filter	22.3	21.5	16.2-26.4	A
			Pu-239	pCi/filter	30.6	32.4	24.2-39.1	A
			U-234	pCi/filter	14.0	31.1	23.1-36.4	N(5)
			U-238	pCi/filter	14.2	30.9	23.3-36.9	N(5)
			GR-A	pCi/filter	80.0	72.4	37.8-119	A
			GR-B	pCi/filter	57.5	47.9	29.0-72.4	A
October 2024	RAD-139	Water	Ba-133	pCi/L	30.3	27.4	15.5-39.3	A
			Cs-134	pCi/L	73.3	80.2	63.0-97.4	A
			Cs-137	pCi/L	46.6	46.3	23.3-69.3	A
			Co-60	pCi/L	44.2	45.3	31.6-59.0	A
			Zn-65	pCi/L	104	114.0	75.0-153	A
			GR-A	pCi/L	47.6	51.7	38.9-64.5	A
			GR-B	pCi/L	44.2	48.1	35.2-61.0	A
			U-Nat	pCi/L	28.3	26.90	23.6-30.2	A
			H-3	pCi/L	4,690	5,320	3870-6770	A
			Sr-89	pCi/L	57.5	44.2	30.6-57.8	A
			Sr-90	pCi/L	37.3	35.6	30.2-41.0	A
			I-131	pCi/L	28.3	26.3	22.7-29.9	A

(a) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(b) ERA evaluation:

A = Acceptable - Reported value falls within the Acceptance Limits

N = Not Acceptable - Reported value falls outside of the Acceptance Limits

*(1) See **NCR 24-02***

*(2) See **NCR 24-03***

*(3) See **NCR 24-05***

*(4) See **NCR 24-15***

A. NCR 24-02: ERA March MRAD-40 study with Air Particulate AM-241 evaluated as "Not Acceptable." TBE reported 38.8 pCi/filter and the known value returned at 55.0 pCi/filter (range 39.3-73.3). The root cause investigation determined that the sample was not logged into the system correctly and therefore not prepared with the required tracer. To correct and prevent recurrence, personnel involved are to utilize a template to ensure all analyses are logged as required and the QA Manager will perform sample log review as a back up to ensure accuracy. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

B. NCR 24-03: ERA March MRAD-40 air particulate study GR-B evaluated as "Not Acceptable." TBE reported 42.1 pCi/filter and the known value returned at 22.2 pCi/filter (range 13.5-33.5). The root cause investigation determined that alpha-to-beta crosstalk was more significant than normal which caused the beta activity to report falsely high data. To correct and prevent recurrence, personnel involved are to adjust the alpha-to-beta crosstalk via correction calculation measures when high alpha activities are observed. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

C. NCR 24-05: ERA April RAD-137 water study GR-A evaluated as "Not Acceptable." TBE reported 35.2 pCi/L and the known value returned at 52.6 pCi/L (range 39.6-65.6). The root cause investigation determined that the provided samples contained a solids content that was significantly higher than the typical client samples tested by the laboratory. A set aliquot volume for prior ERA samples was used and not adjusted to account for the sudden increase in solid content. To correct and prevent recurrence, new sample types were ordered from ERA that used Am-241 to better reflect client sample testing and acceptable results were achieved. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

D. NCR 24-06: E&Z Analytics March E14092 air particulate study Co-60 evaluated as "Not Acceptable." TBE reported 168 pCi and the known value returned at 126 pCi. Additionally, March E14093 soil Ce-141 evaluated as "Not Acceptable." TBE reported 0.106pCi/g and the known value returned at 0.071pCi/g. The root cause investigation was unable to determine any anomaly thus no proposed corrective action. No recurrence has occurred.

E. CAR 24-02 (CAR 23-31): MAPEP February 24-MaS50 soil study Fe-55 evaluated as "Not Acceptable." TBE reported 297 Bq/Kg and the known value returned at 650 Bq/Kg (range 455-845). The root cause investigation suspects that the current analytical procedure is not sufficient to add the interferences added to the sample by MAPEP. This investigation is still ongoing (See NCR 24-16) as the suggested corrective action did not provide desired results.

F. NCR 24-08: MAPEP February 24-MaS50 soil study Ni-63 evaluated as "Not Acceptable." TBE reported 1070 Bq/Kg and the known value returned at 1530 Bq/Kg (range 1071-1989). The root cause investigation suspected that the sample contained added interferences that are not typically seen in client samples. All QC efforts associated with the sample were acceptable and no anomalies found, even after reanalysis. To correct and prevent recurrence, samples suspected of additional interferences will include the addition of Ni-59 tracer to determine yield results when calculating results. TBE analytical procedure TBE-2013 was updated to include this change.

G. NCR 24-09: MAPEP February 24-MaSU50 urine study Zn-65 evaluated as “Not Acceptable.” The root cause investigation determined that the sample was spiked lower than TBE’s typical detection limit and client requirements. The report was revised by MAPEP indicating “Not Evaluated,” resulting in this nuclide to not be considered a failure.

H. NCR 24-10: MAPEP February 24-MaW50 water study Tc-99 evaluated as “Not Acceptable.” TBE reported 9.95Bq/L and the known value returned 7.47Bq/L (range 5.23-9.71). The root cause investigation suspects Thorium interference that was not removed during the column separation process of the analytical procedure; however, it cannot be confirmed as all QC efforts associated with the sample were acceptable and with no anomalies found. To potentially correct and prevent recurrence, an additional rinse step was added to the procedure. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

I. NCR 24-11: MAPEP February 24-RdV50 vegetation study Sr-90 evaluated as “Not Acceptable.” TBE reported 0.276Bq/sample and the known value returned 0.529Bq/sample (range 0.370-0.688). The root cause investigation determined a laboratory accident resulting in a spilled (loss) of sample. No corrective action was performed as the cause was an unintentional sample spill.

J. NCR 24-14: ERA September MRAD-41 air particulate study U-234/238 evaluated as “Not Acceptable.” TBE reported 14.0/14.2 pCi/filter and the known value returned at 31.1/30.9 pCi/filter (range 23.1-36.9). The root cause investigation determined that the laboratory technician placed double the amount of tracer in the sample by error. To correct and prevent recurrence, samples that have been digested/leached with carrier/tracer added will have a label placed over the cap indicating it has already been added. Additionally, the beaker that aliquot is put in should have markings to indicate carrier/tracer has already been added to the sample.

K. NCR 24-15: ERA September MRAD-41 water study Fe-55 evaluated as “Not Acceptable.” TBE reported 615 pCi/L and the known value returned at 1230 pCi/L (range 723-1790). The root cause is still under investigation.

L. NCR 24-16: MAPEP August 24-MaS51 soil study Fe-55 evaluated as “Not Acceptable.” TBE did not report a value and the known value returned 780Bq/Kg (range 546-1014). The root cause is still under investigation.

M. NCR 24-17: MAPEP August 24-RdV51 vegetation study Sr-90 evaluated as “Not Acceptable.” TBE reported 0.95Bq/sample and the known value returned 2.39Bq/sample (range 1.67-3.11). The root cause is still under investigation.

APPENDIX B
SYNOPSIS OF ANALYTICAL PROCEDURES

SYNOPSIS OF ANALYTICAL PROCEDURES

Appendix B is a synopsis of the analytical procedures performed during this reporting period on samples collected for Ameren Missouri Callaway Energy Center's Radiological Environmental Monitoring Program. All analyses have been mutually agreed upon by Callaway Energy Center and Teledyne Brown Engineering and include those recommended by the USNRC Branch Technical Position, Rev. 1, November 1979.

ANALYSIS TITLE **PAGE**

GROSS BETA ANALYSIS OF AIR PARTICULATE SAMPLES

Air Particulates

After a delay of five or more days, allowing for the radon-222 and radon-220 (thoron) daughter products to decay, the filters are counted in a gas-flow proportional counter.

Calculations of the results, the two sigma error and the lower limit of detection (LLD):

$$\text{RESULT } (pCi/m^3) = ((S/T) - (B/t))/(2.22\ V\ E)$$

$$\text{TWO SIGMA ERROR } (pCi/m^3) = 2((S/T^2) + (B/t^2))^{1/2}/(2.22\ V\ E)$$

$$\text{LLD } (pCi/m^3) = 4.66(B^{1/2})/(2.22\ V\ E\ t)$$

where:

S	=	Gross counts of sample including blank
B	=	Counts of blank
E	=	Counting efficiency
T	=	Number of minutes sample was counted
t	=	Number of minutes blank was counted
V	=	Sample aliquot size (cubic meters)

DETERMINATION OF GROSS BETA ACTIVITY IN WATER SAMPLES

Introduction

The procedures described in this section are used to measure the overall radioactivity of water samples without identifying the radioactive species present. No chemical separation techniques are involved.

One liter of the sample is evaporated on a hot plate. A smaller volume may be used if the sample has a significant salt content as measured gravimetrically. If requested by the customer, the sample is filtered through No. 54 filter paper before evaporation, removing particles greater than 30 microns in size.

After evaporating to a small volume in a beaker, the sample is rinsed into a 2-inch diameter stainless steel planchette, which is stamped with a concentric ring pattern to distribute residue evenly. Final evaporation to dryness takes place under heat lamps.

Residue mass is determined by weighing the planchette before and after mounting the sample. The planchette is counted for beta activity on an automatic proportional counter. Results are calculated using empirical self-absorption curves which allow for the change in effective counting efficiency caused by the residue mass.

Detection Capability

Detection capability depends upon the sample volume actually represented on the planchette, the background and the efficiency of the counting instrument, and upon self-absorption of beta particles by the mounted sample. Because the radioactive species are not identified, no decay corrections are made and the reported activity refers to the counting time.

The minimum detectable level (MDL) for water samples is nominally 1.6 picoCuries per liter for gross beta at the 4.66 sigma level (1.0 pCi/L at the 2.83 sigma level), assuming that 1 liter of sample is used and that 0.5 gram of sample residue is mounted on the planchette. These figures are based upon a counting time of 50 minutes and upon representative values of counting efficiency and background of 0.2 and 1.2 cpm, respectively

The MDL becomes significantly lower as the mount weight decreases because of reduced self-absorption. At a zero mount weight, the 4.66 sigma MDL for gross beta is 0.9 pCi/L. These values reflect a beta counting efficiency of 0.38.

ANALYSIS OF SAMPLES FOR TRITIUM

(Liquid Scintillation)

Water

Ten milliliters of water are mixed with 10 ml of a liquid scintillation "cocktail" and then the mixture is counted in an automatic liquid scintillator.

Calculation of the results, the two sigma error and the lower limit detection (LLD) in pCi/L:

RESULT = $(N-B)/(2.22\ V\ E)$

TWO SIGMA ERROR = $2((N + B)/\Delta t)^{1/2} / (2.22\ V\ E)$

LLD = $4.66(B/\Delta t)^{1/2}/(2.22\ V\ E)$

where:

N	=	the gross cpm of the sample
B	=	the background of the detector in cpm
2.22	=	conversion factor changing dpm to pCi
V	=	volume of the sample in ml
E	=	efficiency of the detector
Δt	=	counting time for the sample

ANALYSIS OF SAMPLES FOR IODINE-131

Milk or Water

Two or more liters of sample are first equilibrated with stable iodide carrier. A batch treatment with anion exchange resin is used to remove iodine from the sample. The iodine is then stripped from the resin with sodium hypochlorite solution, is reduced with hydroxylamine hydrochloride and is extracted into carbon tetrachloride as free iodine. It is then back-extracted as iodide into sodium bisulfite solution and is precipitated as palladium iodide. The precipitate is weighed for chemical yield and is mounted on a nylon planchette for low-level beta counting.

Calculations of results, two sigma error and the lower limit of detection (LLD) in pCi/L:

$$\text{RESULT} = (N/\Delta t - B)/(2.22\ E\ V\ Y\ DF)$$

$$\text{TWO SIGMA ERROR} = 2((N/\Delta t + B)/\Delta t)^{1/2}/(2.22\ E\ V\ Y\ DF)$$

$$\text{LLD} = 4.66(B/\Delta t)^{1/2}/(2.22\ E\ V\ Y\ DF)$$

where:

N	=	total counts from sample (counts)
Δt	=	counting time for sample (min)
B	=	background rate of counter (cpm)
2.22	=	dpm/pCi
V	=	volume or weight of sample analyzed
Y	=	chemical yield of the mount or sample counted
DF	=	decay factor from the collection to the counting date
E	=	efficiency of the counter for I-131, corrected for self absorption effects by the formula
E	=	$E_s(\exp -0.0061M)/(\exp -0.0061M_s)$
E_s	=	efficiency of the counter determined from an I-131 standard mount
Ms	=	mass of $Pd1_2$ on the standard mount, mg
M	=	mass of PdI_2 on the sample mount, mg

GAMMA SPECTROMETRY OF SAMPLES

Milk or Water

A 1.0 or 4.0 liter Marinelli beaker is filled with a representative aliquot of the sample. The sample is then counted until detection limits are met with a shielded high purity germanium (HPGe) detector coupled to a VAX-based data acquisition system, which performs pulse height analysis.

Dried Solids other than Soils and Sediments

A large quantity of the sample is dried at a low temperature, less than 100°C. As much as possible (up to the total sample) is loaded into a tare, standard 240 cc container and weighed. The sample is then counted until detection limits are met with a shielded HPGe detector coupled to a VAX-based data acquisition system, which performs pulse height analysis.

Fish

As much as possible (up to the total sample) of the edible portion of the sample is loaded into a tared Marinelli and weighed. The sample is then counted until detection limits are met with a shielded HPGe detector coupled to a VAX-based data acquisition system, which performs pulse height analysis.

Soils and Sediments

Soils and sediments are dried at a low temperature, less than 100°C. The soil or sediment is loaded fully into a tared, standard 240 cc container and weighed. The sample is then counted until detection limits are met with a shielded HPGe detector coupled to a VAX-based data acquisition system, which performs pulse height and analysis.

Charcoal Cartridges (Air Iodine)

Charcoal cartridges are counted up to five at a time, with one positioned on the face of an HPGe detector and up to four on the side of the HPGe detector. Each HPGe detector is calibrated for both positions. The detection limit for iodine-131 of each charcoal cartridge can be determined (assuming no positive iodine-131) uniquely from the volume of air, which passed through it. In the event iodine-131 is observed in the initial counting of a set, each charcoal cartridge is then counted separately, positioned on the face of the detector.

Air Particulates

The thirteen airborne particulate filters for a quarterly composite for each field station are aligned one in front of another and then counted until detection limits are met with a shielded HPGe detector coupled to a VAX-based data acquisition system which performs pulse height analysis.

A VAX software program defines peaks by certain changes in the slope of the spectrum. The program also compares the energy of each peak with a library of peaks for isotope identification and then performs the radioactivity calculation using the appropriate fractional gamma ray abundance, half-life, detector efficiency, and net counts in the peak region.

The calculation of results, two sigma error and the lower limit of detection (LLD) in pCi/volume or pCi/mass:

RESULT = $(S-B)/(2.22\ t\ E\ V\ F\ DF)$

TWO SIGMA ERROR = $2(S+B)^{1/2}/(2.22\ t\ E\ V\ F\ DF)$

LLD = $4.66(B)^{1/2}/(2.22\ t\ E\ V\ F\ DF)$

where:

	S	=	Area, in counts, of sample peak and background (region of spectrum of interest)
	B	=	Background area, in counts, under sample peak, determined by a linear interpolation of the representative backgrounds on either side of the peak
	t	=	length of time in minutes the sample was counted
	2.22	=	dpm/pCi
	E	=	detector efficiency for energy of interest and geometry of sample
	V	=	sample aliquot size (liters, cubic meters, kilograms, or grams)
	F	=	fractional gamma abundance (specific for each emitted gamma)
	DF	=	decay factor from the mid-collection date to the counting date

ADDENDUM TO GAMMA SPECTROMETRY PROCEDURE

Ba-140 (half-life =~12.8d) decays to LA-140 (half-life ~40 hrs) and the daughter radionuclide, La-140 approaches ~ 90 % of the Ba-140 activity within ~ 6 days. The La-140 photon energy at 1596 keV is used to quantify the Ba-140 activity due to its high photon emission probability yield (96%) producing a higher count rate when present and therefore, a smaller associated counting error.

Zr-95 (half-life = ~65d) decays to Nb-95 (half-life = ~35d). The photon energy of Nb-95 (~765 keV) is used to quantify Zr-95 because of the high photon emission probability yield (~100%) yielding a higher count rate and an associated lower counting error. The daughter radionuclide, Nb-95 approaches the Zr-95 activity after a time period of ~65 days, an estimated time interval occurring between sample exposure, collection and shipping, and analysis.

Appendix C. NON-RADIOLOGICAL MONITORING PROGRAM

1.0. Introduction

Union Electric Company Callaway Plant, d.b.a. Ameren Missouri Callaway Energy Center, in accordance with federal regulations and a desire to maintain the quality of the local environment around Callaway Plant has implemented an Environmental Protection Plan, (EPP) contained in Appendix B of the Callaway Plant Operating License.

The objective of the EPP is to provide for protection of non-radiological environmental values during operation of the Callaway Plant.

This report describes the conduct of the EPP for the Callaway Plant during 2024.

2.0. Unusual or Important Events

No unusual or important events reportable under the EPP Section 4.1 were identified during 2024.

3.0. EPP Non-compliances

During 2024, there was zero non-compliance with the EPP.

4.0. Nonroutine Reports

There were no nonroutine reports submitted in accordance with the EPP, Section 5.4.2 in 2024.

5.0. Plant Design and Operation Environmental Evaluations.

This section lists all changes in the plant design, operation, tests or experiments installed during 2024, which could have involved a potentially significant unreviewed environmental question in accordance with section 3.1 of Appendix B.

During 2024, no major plant changes were completed that could have involved a potentially significant unreviewed environmental question.

APPENDIX D

Sampling Location Maps

Figure D-1. Radiological Environmental Sampling Locations 1, 2, 3, mile radius from site location.

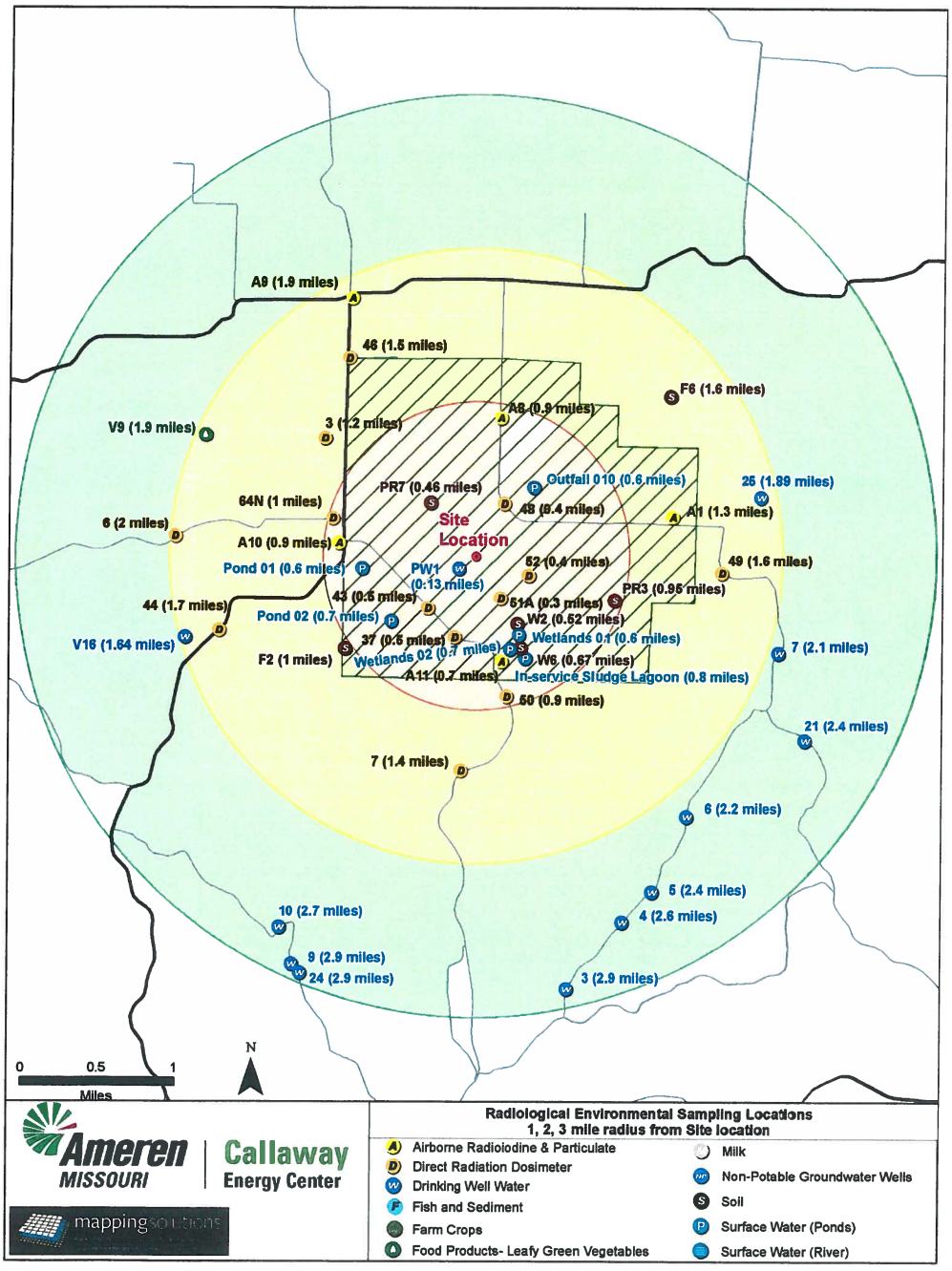


Figure D-2. Radiological Environmental Sampling Locations 3, 4, 5, 6 mile radius from site location.

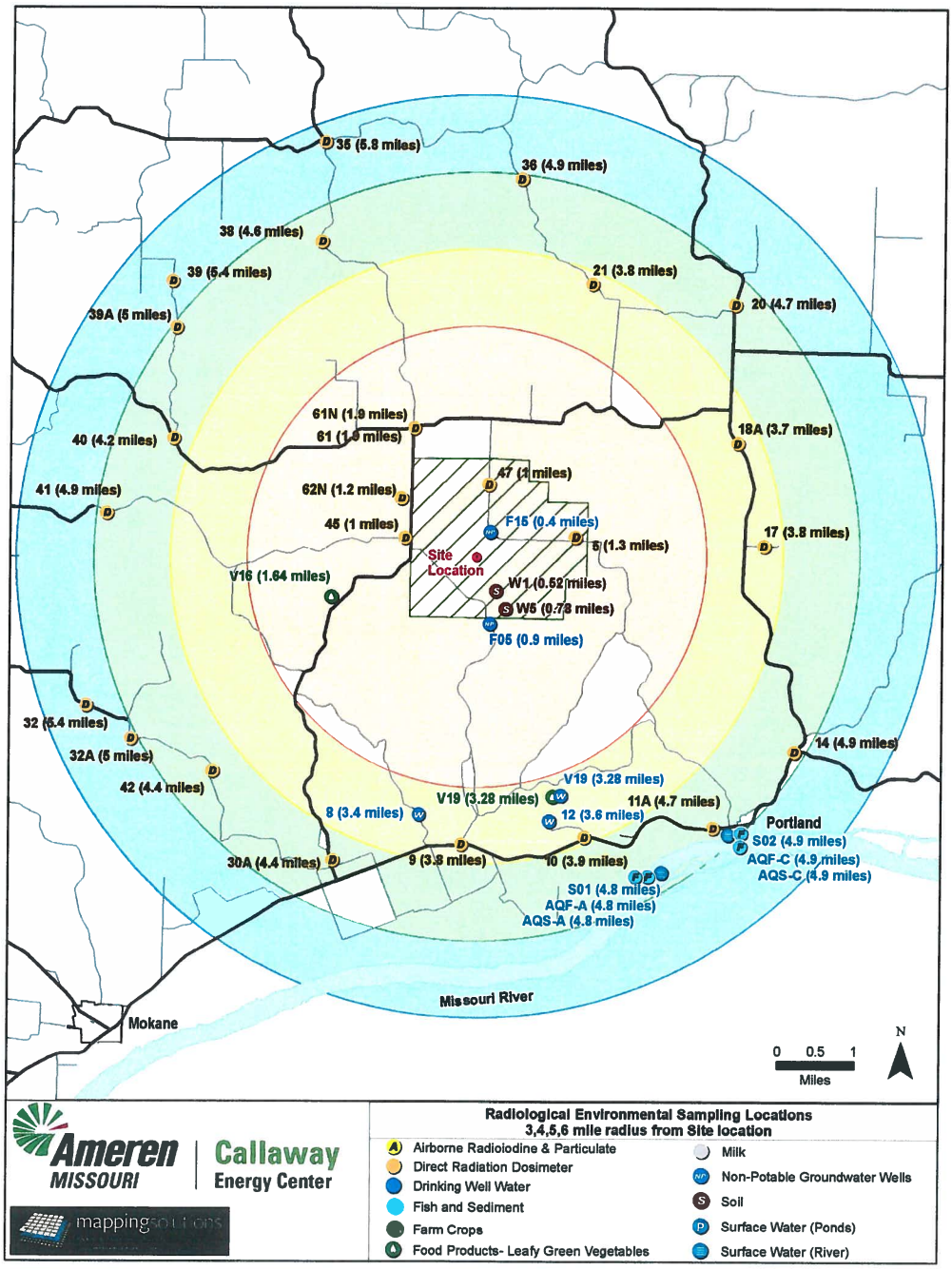


Figure D-3. Radiological Environmental Sampling Locations 5, 10, 15 mile radius from site location.

Figure D-4. Non-Potable Groundwater Monitoring Wells, 600 ft radius from Site.

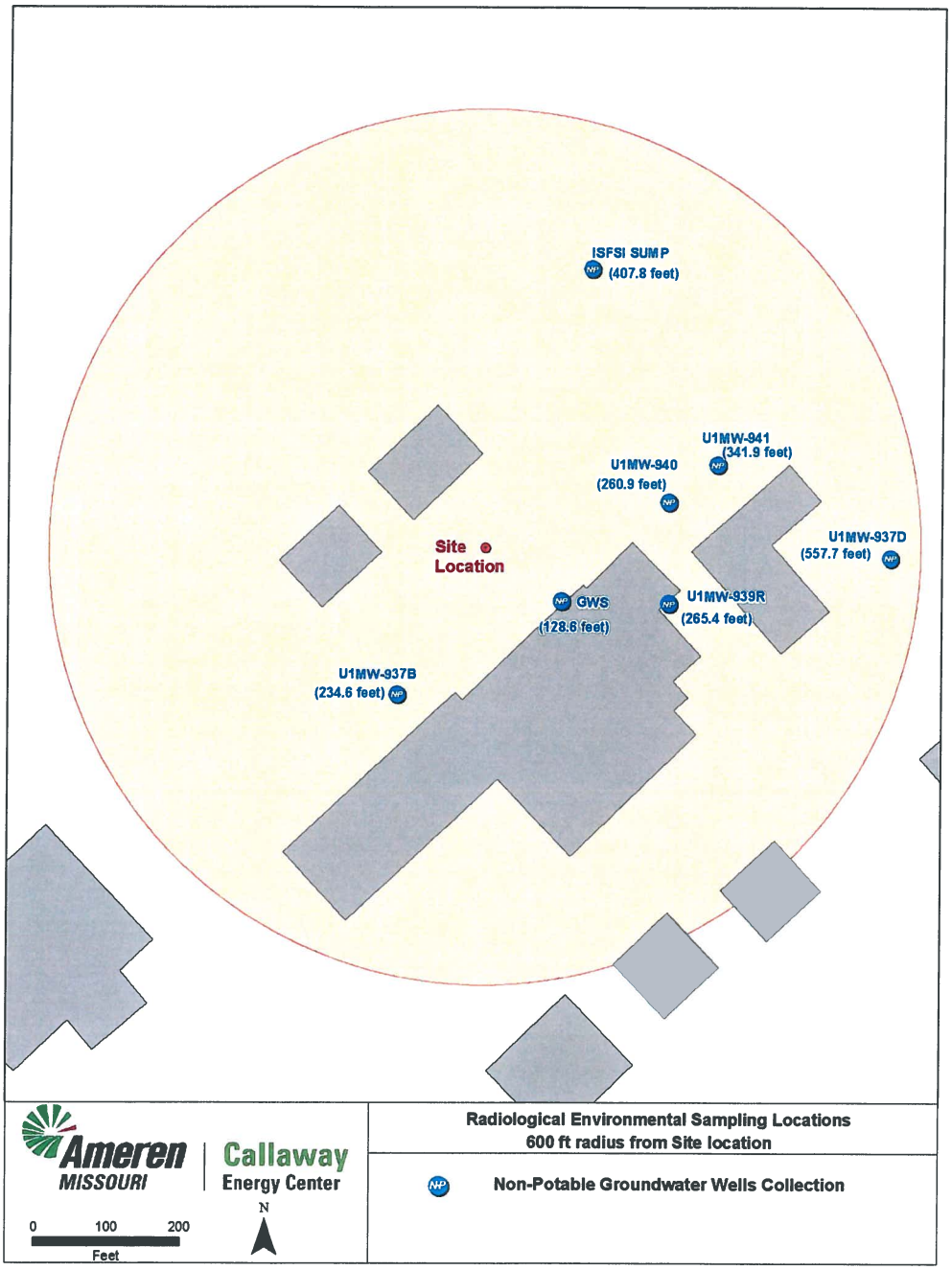
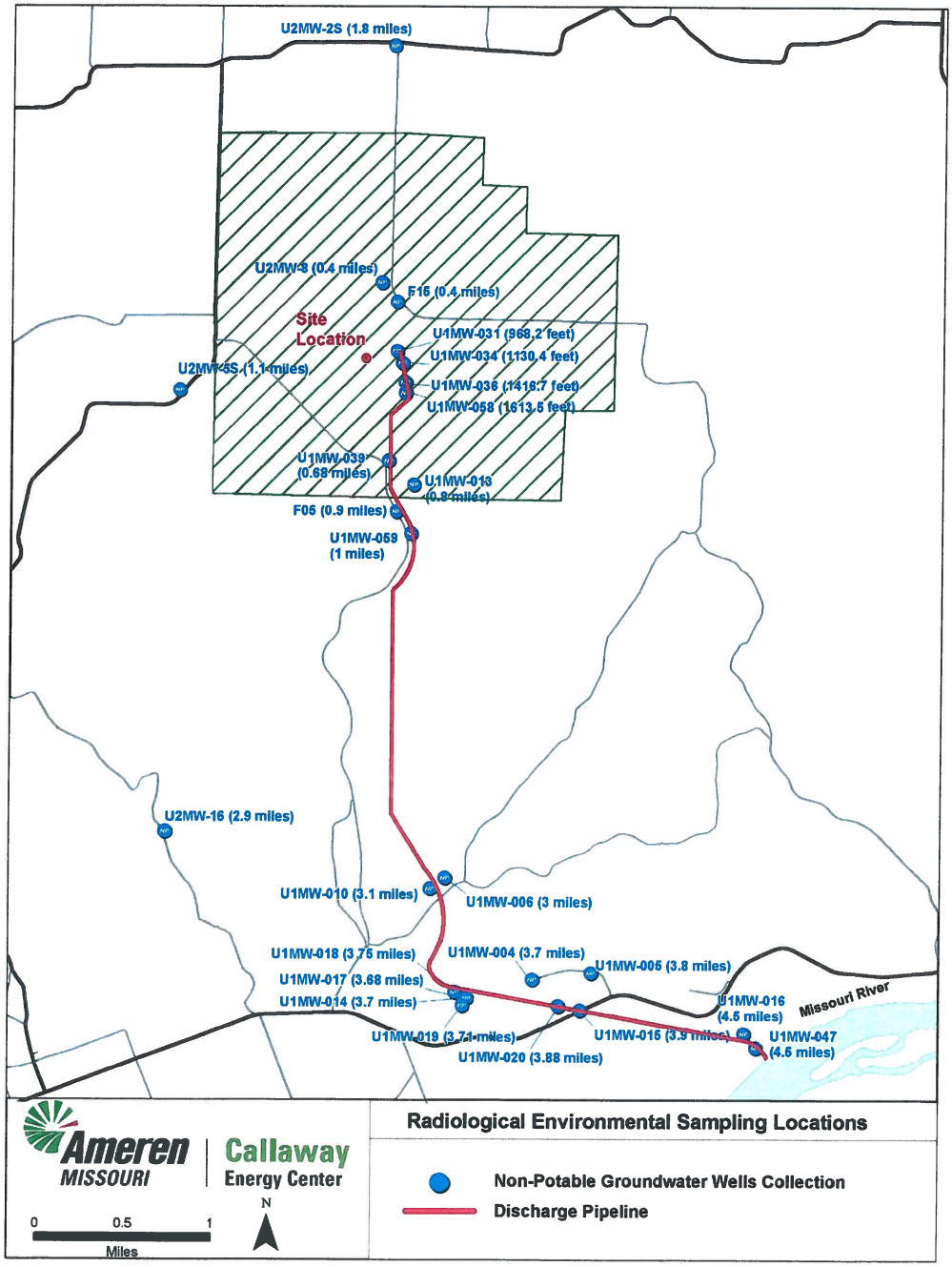


Figure D-5. Non-Potable Groundwater Monitoring Wells Collection.



AMEREN MISSOURI
CALLAWAY ENERGY CENTER
FULTON, MISSOURI

Docket Numbers 50-483 and 72-1045

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

to

THE UNITED STATES NUCLEAR REGULATORY COMMISSION

Part II

DATA TABULATIONS AND ANALYSES

January 1 to December 31, 2024

Prepared by

Teledyne Brown Engineering
(Knoxville, Tennessee)
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Callaway Energy Center

Submitted by

UNION ELECTRIC CO.
dba Ameren Missouri

Project No. AM001-3EREMPCALL-24

Table of Contents

1.0 Introduction

The following constitutes a supplement to the Annual Report for the Radiological Environmental Monitoring Program conducted at the Ameren Missouri, Callaway Energy Center, Fulton, Missouri in 2024. Results of completed analyses are presented in the attached tables.

For information regarding sampling locations, type and frequency of collection, and sample codes, refer to Part I, Tables 5.1 - 5.2 and the figures in Appendix D.

Analyses results from additional sampling may be found in Appendix A.

List of Tables

2.0 Analytical Data Tables

for

Callaway Energy Center

Table 1A Airborne particulate sample analysis results for gamma emitters

Collection: Weekly Units: pCi/m3

		BE-7	CO-58	CO-60	ZR-95	CS-134	CS-137	BALA140	CE-144
Project LLDs		-	-	-	-	0.050	0.060	-	-
Collect Date	Volume								
Sample Location: CA-APT-A1									
01-04-24	278300	< 0.222	< 0.025	< 0.029	< 0.042	< 0.028	< 0.024	< 0.058	< 0.100
01-11-24	273700	< 0.188	< 0.023	< 0.022	< 0.033	< 0.018	< 0.014	< 0.033	< 0.065
01-18-24	283900	< 0.144	< 0.012	< 0.019	< 0.020	< 0.016	< 0.015	< 0.031	< 0.044
01-25-24	280500	< 0.161	< 0.015	< 0.027	< 0.036	< 0.016	< 0.019	< 0.023	< 0.064
02-01-24	273500	< 0.158	< 0.012	< 0.013	< 0.024	< 0.012	< 0.024	< 0.050	< 0.083
02-08-24	270100	< 0.229	< 0.016	< 0.013	< 0.028	< 0.025	< 0.019	< 0.038	< 0.062
02-15-24	270300	< 0.175	< 0.011	< 0.024	< 0.025	< 0.017	< 0.021	< 0.031	< 0.064
02-22-24	274400	< 0.236	< 0.009	< 0.020	< 0.030	< 0.025	< 0.018	< 0.057	< 0.069
02-29-24	267500	< 0.237	< 0.021	< 0.016	< 0.027	< 0.021	< 0.020	< 0.047	< 0.066
03-07-24	270600	< 0.236	< 0.014	< 0.019	< 0.020	< 0.022	< 0.019	< 0.024	< 0.063
03-14-24	272900	< 0.227	< 0.016	< 0.027	< 0.034	< 0.027	< 0.020	< 0.049	< 0.070
03-21-24	269100	< 0.282	< 0.030	< 0.024	< 0.060	< 0.036	< 0.029	< 0.079	< 0.104
03-27-24	232700	< 0.252	< 0.013	< 0.016	< 0.036	< 0.031	< 0.016	< 0.057	< 0.057
04-04-24	305600	< 0.229	< 0.020	< 0.027	< 0.046	< 0.018	< 0.023	< 0.044	< 0.088
04-11-24	269800	< 0.325	< 0.037	< 0.042	< 0.056	< 0.041	< 0.031	< 0.038	< 0.127
04-18-24	269600	< 0.303	< 0.038	< 0.049	< 0.066	< 0.044	< 0.035	< 0.027	< 0.145
04-25-24	281900	< 0.281	< 0.025	< 0.043	< 0.029	< 0.025	< 0.025	< 0.053	< 0.102
05-02-24	276900	< 0.277	< 0.031	< 0.039	< 0.058	< 0.037	< 0.031	< 0.051	< 0.155
05-09-24	297800	< 0.263	< 0.033	< 0.037	< 0.061	< 0.038	< 0.035	< 0.082	< 0.113
05-16-24	290800	< 0.268	< 0.025	< 0.024	< 0.041	< 0.023	< 0.026	< 0.045	< 0.095
05-23-24	284800	< 0.180	< 0.015	< 0.022	< 0.035	< 0.022	< 0.013	< 0.026	< 0.065
05-30-24	293600	< 0.268	< 0.021	< 0.037	< 0.068	< 0.036	< 0.035	< 0.064	< 0.118
06-06-24	295700	< 0.298	< 0.027	< 0.028	< 0.046	< 0.023	< 0.026	< 0.057	< 0.095
06-13-24	296400	< 0.375	< 0.040	< 0.048	< 0.061	< 0.046	< 0.036	< 0.096	< 0.152
06-20-24	299000	< 0.186	< 0.012	< 0.024	< 0.024	< 0.021	< 0.016	< 0.028	< 0.061
06-27-24	300600	< 0.253	< 0.019	< 0.030	< 0.029	< 0.038	< 0.023	< 0.042	< 0.082
07-03-24	254300	< 0.379	< 0.044	< 0.047	< 0.053	< 0.045	< 0.036	< 0.061	< 0.128
07-11-24	340100	0.212 +/- 0.121	< 0.021	< 0.033	< 0.027	< 0.023	< 0.020	< 0.061	< 0.084
07-18-24	298000	< 0.320	< 0.022	< 0.042	< 0.050	< 0.028	< 0.033	< 0.053	< 0.138
07-25-24	294700	0.190 +/- 0.112	< 0.024	< 0.032	< 0.020	< 0.018	< 0.029	< 0.060	< 0.093
08-01-24	300000	< 0.378	< 0.043	< 0.063	< 0.056	< 0.041	< 0.034	< 0.100	< 0.154
08-08-24	299600	< 0.288	< 0.020	< 0.032	< 0.044	< 0.026	< 0.027	< 0.044	< 0.071
08-15-24	282400	< 0.323	< 0.033	< 0.040	< 0.072	< 0.038	< 0.035	< 0.061	< 0.112
08-22-24	294700	< 0.239	< 0.015	< 0.020	< 0.021	< 0.028	< 0.019	< 0.043	< 0.088
08-29-24	276800	0.176 +/- 0.109	< 0.019	< 0.020	< 0.032	< 0.019	< 0.017	< 0.054	< 0.079
09-05-24	294900	< 0.240	< 0.022	< 0.024	< 0.046	< 0.018	< 0.024	< 0.033	< 0.071
09-12-24	290800	0.259 +/- 0.110	< 0.014	< 0.025	< 0.024	< 0.024	< 0.019	< 0.043	< 0.073
09-19-24	295100	< 0.266	< 0.037	< 0.036	< 0.057	< 0.029	< 0.024	< 0.068	< 0.105
09-26-24	295700	< 0.194	< 0.017	< 0.017	< 0.025	< 0.022	< 0.010	< 0.021	< 0.074
10-03-24	289900	< 0.267	< 0.026	< 0.017	< 0.044	< 0.029	< 0.030	< 0.036	< 0.103
10-10-24	290400	0.227 +/- 0.099	< 0.010	< 0.013	< 0.017	< 0.013	< 0.012	< 0.028	< 0.040
10-17-24	286000	< 0.216	< 0.018	< 0.021	< 0.034	< 0.013	< 0.014	< 0.042	< 0.062
10-24-24	285500	< 0.333	< 0.032	< 0.038	< 0.059	< 0.040	< 0.028	< 0.049	< 0.146
10-31-24	289800	< 0.282	< 0.015	< 0.022	< 0.039	< 0.030	< 0.022	< 0.063	< 0.099
11-07-24	295200	< 0.227	< 0.025	< 0.028	< 0.024	< 0.023	< 0.015	< 0.025	< 0.084
11-14-24	297400	< 0.167	< 0.018	< 0.034	< 0.037	< 0.018	< 0.017	< 0.055	< 0.071
11-21-24	294200	< 0.276	< 0.023	< 0.036	< 0.035	< 0.023	< 0.026	< 0.076	< 0.094
11-27-24	248100	< 0.353	< 0.054	< 0.043	< 0.064	< 0.045	< 0.037	< 0.116	< 0.152
12-05-24	333600	< 0.259	< 0.021	< 0.027	< 0.047	< 0.024	< 0.026	< 0.052	< 0.144
12-12-24	292600	< 0.271	< 0.026	< 0.037	< 0.049	< 0.032	< 0.025	< 0.023	< 0.154
12-19-24	290500	< 0.240	< 0.026	< 0.029	< 0.059	< 0.029	< 0.026	< 0.058	< 0.092
12-26-24	289300	< 0.260	< 0.028	< 0.021	< 0.044	< 0.032	< 0.027	< 0.051	< 0.098

Table 1A Airborne particulate sample analysis results for gamma emitters

Collection: Weekly Units: pCi/m3

		BE-7	CO-58	CO-60	ZR-95	CS-134	CS-137	BALA140	CE-144
Project LLDs		-	-	-	-	0.050	0.060	-	-
Collect Date	Volume								
Sample Location: CA-APT-A7									
01-04-24	275900	< 0.274	< 0.027	< 0.041	< 0.044	< 0.036	< 0.027	< 0.064	< 0.112
01-11-24	274800	< 0.168	< 0.028	< 0.020	< 0.036	< 0.028	< 0.015	< 0.072	< 0.063
01-18-24	275700	< 0.138	< 0.012	< 0.018	< 0.015	< 0.012	< 0.015	< 0.030	< 0.038
01-25-24	279100	< 0.172	< 0.024	< 0.039	< 0.037	< 0.019	< 0.011	< 0.045	< 0.096
02-01-24	270900	< 0.165	< 0.019	< 0.038	< 0.045	< 0.029	< 0.022	< 0.039	< 0.084
02-08-24	271400	< 0.203	< 0.015	< 0.023	< 0.031	< 0.018	< 0.007	< 0.039	< 0.069
02-15-24	268200	< 0.248	< 0.023	< 0.031	< 0.049	< 0.027	< 0.025	< 0.043	< 0.115
02-22-24	270600	< 0.251	< 0.025	< 0.023	< 0.052	< 0.032	< 0.032	< 0.048	< 0.095
02-29-24	264300	0.182 +/- 0.102	< 0.021	< 0.027	< 0.025	< 0.020	< 0.022	< 0.032	< 0.077
03-07-24	266900	< 0.260	< 0.024	< 0.035	< 0.061	< 0.024	< 0.027	< 0.025	< 0.136
03-14-24	254800	< 0.174	< 0.024	< 0.012	< 0.028	< 0.010	< 0.018	< 0.024	< 0.085
03-21-24	252500	< 0.299	< 0.021	< 0.015	< 0.023	< 0.033	< 0.033	< 0.025	< 0.128
03-27-24	218400	< 0.304	< 0.029	< 0.036	< 0.067	< 0.041	< 0.036	< 0.109	< 0.125
04-04-24	287000	< 0.280	< 0.024	< 0.043	< 0.062	< 0.031	< 0.035	< 0.072	< 0.160
04-11-24	251700	< 0.323	< 0.036	< 0.033	< 0.056	< 0.047	< 0.034	< 0.046	< 0.181
04-18-24	252200	< 0.343	< 0.039	< 0.048	< 0.054	< 0.027	< 0.037	< 0.058	< 0.130
04-25-24	258700	< 0.291	< 0.032	< 0.033	< 0.038	< 0.033	< 0.023	< 0.038	< 0.099
05-02-24	251800	< 0.279	< 0.033	< 0.042	< 0.046	< 0.040	< 0.027	< 0.068	< 0.116
05-09-24	254700	< 0.328	< 0.032	< 0.033	< 0.065	< 0.038	< 0.026	< 0.065	< 0.114
05-16-24	247800	< 0.283	< 0.020	< 0.037	< 0.046	< 0.030	< 0.028	< 0.053	< 0.103
05-23-24	249900	< 0.249	< 0.030	< 0.032	< 0.051	< 0.034	< 0.027	< 0.052	< 0.120
05-30-24	1(a)	< 66.6	< 5.9	< 8.5	< 13.4	< 6.7	< 7.5	< 13.5	< 26.0
06-06-24	279200	< 0.270	< 0.023	< 0.035	< 0.060	< 0.027	< 0.024	< 0.082	< 0.112
06-13-24	281800	< 0.284	< 0.026	< 0.035	< 0.038	< 0.030	< 0.028	< 0.057	< 0.120
06-20-24	284300	0.301 +/- 0.098	< 0.025	< 0.016	< 0.030	< 0.022	< 0.017	< 0.030	< 0.070
06-27-24	284300	< 0.262	< 0.025	< 0.025	< 0.051	< 0.028	< 0.026	< 0.064	< 0.092
07-03-24	241600	< 0.247	< 0.026	< 0.034	< 0.050	< 0.033	< 0.031	< 0.059	< 0.106
07-11-24	319800	< 0.467	< 0.063	< 0.070	< 0.093	< 0.048	< 0.039	< 0.132	< 0.179
07-18-24	278800	< 0.427	< 0.046	< 0.059	< 0.067	< 0.049	< 0.036	< 0.078	< 0.176
07-25-24	275600	< 0.303	< 0.026	< 0.032	< 0.041	< 0.036	< 0.026	< 0.063	< 0.102
08-01-24	274700	< 0.272	< 0.029	< 0.023	< 0.031	< 0.031	< 0.029	< 0.059	< 0.089
08-08-24	191400	< 0.271	< 0.033	< 0.059	< 0.067	< 0.026	< 0.036	< 0.079	< 0.102
08-15-24	268400	< 0.279	< 0.020	< 0.033	< 0.050	< 0.033	< 0.028	< 0.063	< 0.086
08-22-24	267000	< 0.181	< 0.017	< 0.022	< 0.039	< 0.016	< 0.015	< 0.036	< 0.065
08-29-24	268600	< 0.236	< 0.020	< 0.026	< 0.040	< 0.023	< 0.017	< 0.046	< 0.067
09-05-24	270600	< 0.269	< 0.009	< 0.033	< 0.044	< 0.026	< 0.026	< 0.052	< 0.094
09-12-24	272800	0.195 +/- 0.090	< 0.023	< 0.031	< 0.033	< 0.022	< 0.024	< 0.048	< 0.058
09-19-24	268300	< 0.251	< 0.019	< 0.033	< 0.038	< 0.020	< 0.019	< 0.047	< 0.071
09-26-24	108300	< 0.380	< 0.044	< 0.051	< 0.076	< 0.048	< 0.037	< 0.109	< 0.167
10-03-24		No Sample*							
10-10-24	245600	0.197 +/- 0.088	< 0.012	< 0.014	< 0.020	< 0.014	< 0.011	< 0.030	< 0.040
10-17-24	284900	< 0.241	< 0.016	< 0.025	< 0.034	< 0.022	< 0.019	< 0.038	< 0.078
10-24-24	280500	< 0.294	< 0.029	< 0.041	< 0.030	< 0.032	< 0.020	< 0.068	< 0.099
10-31-24	291700	< 0.382	< 0.045	< 0.059	< 0.061	< 0.040	< 0.033	< 0.078	< 0.155
11-07-24	304600	< 0.199	< 0.014	< 0.025	< 0.022	< 0.017	< 0.015	< 0.033	< 0.073
11-14-24	305000	< 0.335	< 0.042	< 0.052	< 0.048	< 0.033	< 0.036	< 0.053	< 0.152
11-21-24	302400	< 0.203	< 0.020	< 0.029	< 0.046	< 0.028	< 0.022	< 0.056	< 0.101
11-27-24	255400	< 0.232	< 0.027	< 0.034	< 0.044	< 0.023	< 0.021	< 0.080	< 0.123
12-05-24	344400	< 0.247	< 0.024	< 0.030	< 0.028	< 0.024	< 0.022	< 0.051	< 0.095
12-12-24	301400	< 0.373	< 0.040	< 0.063	< 0.073	< 0.042	< 0.049	< 0.088	< 0.197
12-19-24	298300	< 0.293	< 0.027	< 0.030	< 0.045	< 0.040	< 0.038	< 0.049	< 0.180
12-26-24	298400	< 0.194	< 0.021	< 0.028	< 0.041	< 0.018	< 0.020	< 0.040	< 0.083

(a) No air volume. See Part I, Section 3.3 Program Execution

*No Sample - Please refer to section 1.0 List of Missing Sample

Table 1A Airborne particulate sample analysis results for gamma emitters

Collection: Weekly Units: pCi/m3

		BE-7	CO-58	CO-60	ZR-95	CS-134	CS-137	BALA140	CE-144
Project LLDs		-	-	-	-	0.050	0.060	-	-
Collect Date	Volume								
Sample Location: CA-APT-A8									
01-04-24	274000	< 0.281	< 0.020	< 0.030	< 0.038	< 0.025	< 0.023	< 0.049	< 0.081
01-11-24	272800	< 0.209	< 0.020	< 0.032	< 0.039	< 0.021	< 0.013	< 0.068	< 0.076
01-18-24	269200	< 0.128	< 0.009	< 0.016	< 0.023	< 0.015	< 0.013	< 0.034	< 0.052
01-25-24	264500	< 0.191	< 0.024	< 0.024	< 0.028	< 0.016	< 0.015	< 0.038	< 0.065
02-01-24	271900	< 0.123	< 0.024	< 0.028	< 0.032	< 0.025	< 0.020	< 0.040	< 0.056
02-08-24	274700	< 0.231	< 0.022	< 0.035	< 0.031	< 0.021	< 0.020	< 0.040	< 0.087
02-15-24	273600	< 0.211	< 0.021	< 0.026	< 0.039	< 0.019	< 0.023	< 0.031	< 0.051
02-22-24	271200	< 0.233	< 0.027	< 0.031	< 0.048	< 0.028	< 0.017	< 0.058	< 0.104
02-29-24	266200	< 0.275	< 0.013	< 0.029	< 0.030	< 0.032	< 0.021	< 0.028	< 0.081
03-07-24	270300	< 0.187	< 0.022	< 0.020	< 0.033	< 0.026	< 0.020	< 0.035	< 0.070
03-14-24	271700	< 0.222	< 0.019	< 0.024	< 0.050	< 0.029	< 0.026	< 0.053	< 0.072
03-21-24	264700	< 0.221	< 0.013	< 0.022	< 0.022	< 0.023	< 0.017	< 0.038	< 0.060
03-27-24	228600	< 0.278	< 0.029	< 0.040	< 0.055	< 0.032	< 0.033	< 0.043	< 0.123
04-04-24	304800	< 0.349	< 0.041	< 0.050	< 0.075	< 0.042	< 0.041	< 0.083	< 0.121
04-11-24	268300	< 0.222	< 0.023	< 0.035	< 0.040	< 0.021	< 0.021	< 0.060	< 0.088
04-18-24	269800	< 0.358	< 0.037	< 0.041	< 0.074	< 0.033	< 0.040	< 0.063	< 0.130
04-25-24	268500	< 0.336	< 0.034	< 0.040	< 0.061	< 0.040	< 0.030	< 0.083	< 0.168
05-02-24	267300	< 0.418	< 0.049	< 0.075	< 0.077	< 0.049	< 0.046	< 0.099	< 0.150
05-09-24	271100	< 0.335	< 0.035	< 0.049	< 0.060	< 0.031	< 0.033	< 0.082	< 0.135
05-16-24	266800	< 0.381	< 0.037	< 0.062	< 0.074	< 0.048	< 0.036	< 0.074	< 0.144
05-23-24	270700	< 0.272	< 0.032	< 0.034	< 0.053	< 0.025	< 0.030	< 0.046	< 0.124
05-30-24	267300	< 0.316	< 0.036	< 0.042	< 0.065	< 0.037	< 0.032	< 0.036	< 0.140
06-06-24	268100	< 0.291	< 0.029	< 0.034	< 0.048	< 0.030	< 0.024	< 0.028	< 0.100
06-13-24	267900	< 0.255	< 0.026	< 0.014	< 0.060	< 0.028	< 0.029	< 0.061	< 0.095
06-20-24	267200	< 0.244	< 0.025	< 0.025	< 0.039	< 0.029	< 0.022	< 0.046	< 0.095
06-27-24	268700	0.295 +/- 0.147	< 0.035	< 0.043	< 0.057	< 0.035	< 0.030	< 0.068	< 0.148
07-03-24	229400	< 0.303	< 0.032	< 0.040	< 0.068	< 0.040	< 0.031	< 0.071	< 0.136
07-11-24	307400	< 0.378	< 0.044	< 0.050	< 0.086	< 0.041	< 0.040	< 0.156	< 0.134
07-18-24	267200	< 0.356	< 0.043	< 0.059	< 0.083	< 0.043	< 0.046	< 0.103	< 0.165
07-25-24	135800	< 0.304	< 0.034	< 0.044	< 0.069	< 0.046	< 0.038	< 0.076	< 0.139
08-01-24	249200	< 0.318	< 0.039	< 0.029	< 0.062	< 0.033	< 0.034	< 0.071	< 0.130
08-08-24	266200	< 0.278	< 0.027	< 0.020	< 0.050	< 0.022	< 0.020	< 0.059	< 0.117
08-15-24	282300	< 0.239	< 0.024	< 0.025	< 0.040	< 0.027	< 0.021	< 0.040	< 0.076
08-22-24	283700	< 0.207	< 0.026	< 0.022	< 0.034	< 0.019	< 0.023	< 0.040	< 0.086
08-29-24	286300	< 0.206	< 0.025	< 0.047	< 0.039	< 0.030	< 0.032	< 0.060	< 0.099
09-05-24	292300	0.234 +/- 0.084	< 0.016	< 0.025	< 0.041	< 0.024	< 0.021	< 0.040	< 0.058
09-12-24	294900	< 0.246	< 0.021	< 0.040	< 0.042	< 0.029	< 0.023	< 0.066	< 0.105
09-19-24	291900	< 0.250	< 0.017	< 0.025	< 0.035	< 0.016	< 0.021	< 0.067	< 0.066
09-26-24	295700	< 0.338	< 0.041	< 0.036	< 0.031	< 0.041	< 0.039	< 0.058	< 0.145
10-03-24	297700	< 0.235	< 0.028	< 0.028	< 0.037	< 0.025	< 0.019	< 0.053	< 0.086
10-10-24	296500	< 0.247	< 0.022	< 0.027	< 0.037	< 0.024	< 0.024	< 0.041	< 0.097
10-17-24	288200	< 0.212	< 0.021	< 0.019	< 0.032	< 0.019	< 0.012	< 0.022	< 0.064
10-24-24	261700	< 0.312	< 0.027	< 0.036	< 0.043	< 0.033	< 0.023	< 0.048	< 0.112
10-31-24	263500	< 0.224	< 0.017	< 0.027	< 0.032	< 0.011	< 0.013	< 0.035	< 0.060
11-07-24	255100	< 0.269	< 0.032	< 0.054	< 0.064	< 0.031	< 0.027	< 0.029	< 0.108
11-14-24	271700	< 0.169	< 0.021	< 0.033	< 0.045	< 0.016	< 0.021	< 0.024	< 0.070
11-21-24	280000	< 0.159	< 0.014	< 0.020	< 0.024	< 0.015	< 0.014	< 0.031	< 0.055
11-27-24	240700	< 0.232	< 0.035	< 0.038	< 0.055	< 0.032	< 0.029	< 0.127	< 0.125
12-05-24	331000	< 0.195	< 0.023	< 0.030	< 0.043	< 0.024	< 0.021	< 0.049	< 0.085
12-12-24	284100	< 0.373	< 0.032	< 0.047	< 0.081	< 0.036	< 0.037	< 0.085	< 0.134
12-19-24	284100	< 0.209	< 0.031	< 0.039	< 0.041	< 0.025	< 0.024	< 0.033	< 0.088
12-26-24	284400	< 0.285	< 0.037	< 0.042	< 0.058	< 0.035	< 0.029	< 0.058	< 0.127

Table 1A Airborne particulate sample analysis results for gamma emitters

Collection: Weekly Units: pCi/m3

		BE-7	CO-58	CO-60	ZR-95	CS-134	CS-137	BALA140	CE-144
Project LLDs		-	-	-	-	0.050	0.060	-	-
Collect Date	Volume								
Sample Location: CA-APT-A9									
01-04-24	272600	< 0.332	< 0.042	< 0.052	< 0.056	< 0.043	< 0.037	< 0.066	< 0.178
01-11-24	270100	< 0.302	< 0.031	< 0.035	< 0.051	< 0.033	< 0.031	< 0.119	< 0.103
01-18-24	272700	< 0.162	< 0.015	< 0.018	< 0.026	< 0.014	< 0.013	< 0.025	< 0.061
01-25-24	271200	< 0.209	< 0.022	< 0.032	< 0.036	< 0.026	< 0.017	< 0.059	< 0.076
02-01-24	267200	< 0.170	< 0.012	< 0.033	< 0.034	< 0.021	< 0.016	< 0.059	< 0.061
02-08-24	267200	< 0.175	< 0.013	< 0.032	< 0.028	< 0.021	< 0.017	< 0.039	< 0.073
02-15-24	267300	< 0.245	< 0.033	< 0.014	< 0.060	< 0.031	< 0.027	< 0.047	< 0.107
02-22-24	269900	< 0.200	< 0.020	< 0.013	< 0.034	< 0.015	< 0.016	< 0.043	< 0.064
02-29-24	262000	< 0.242	< 0.020	< 0.020	< 0.031	< 0.013	< 0.025	< 0.028	< 0.070
03-07-24	265500	< 0.277	< 0.027	< 0.026	< 0.039	< 0.038	< 0.021	< 0.063	< 0.096
03-14-24	264100	0.263 +/- 0.150	< 0.018	< 0.028	< 0.049	< 0.023	< 0.021	< 0.045	< 0.069
03-21-24	264100	< 0.198	< 0.013	< 0.024	< 0.040	< 0.023	< 0.017	< 0.045	< 0.064
03-27-24	227100	< 0.337	< 0.024	< 0.040	< 0.041	< 0.038	< 0.023	< 0.034	< 0.135
04-04-24	299800	< 0.251	< 0.022	< 0.034	< 0.039	< 0.024	< 0.029	< 0.075	< 0.087
04-11-24	263300	< 0.250	< 0.029	< 0.042	< 0.043	< 0.027	< 0.019	< 0.060	< 0.086
04-18-24	243800	< 0.286	< 0.029	< 0.031	< 0.062	< 0.036	< 0.024	< 0.058	< 0.119
04-25-24	261200	< 0.305	< 0.020	< 0.015	< 0.051	< 0.028	< 0.025	< 0.057	< 0.111
05-02-24	261500	< 0.253	< 0.035	< 0.021	< 0.050	< 0.037	< 0.031	< 0.076	< 0.103
05-09-24	266600	< 0.321	< 0.025	< 0.044	< 0.057	< 0.037	< 0.030	< 0.047	< 0.118
05-16-24	263900	< 0.274	< 0.036	< 0.038	< 0.051	< 0.038	< 0.032	< 0.053	< 0.117
05-23-24	270100	< 0.222	< 0.024	< 0.021	< 0.037	< 0.025	< 0.020	< 0.046	< 0.095
05-30-24	266700	< 0.263	< 0.028	< 0.035	< 0.054	< 0.027	< 0.026	< 0.055	< 0.071
06-06-24	268400	< 0.332	< 0.037	< 0.035	< 0.062	< 0.039	< 0.040	< 0.053	< 0.167
06-13-24	270800	0.238 +/- 0.089	< 0.028	< 0.026	< 0.040	< 0.029	< 0.019	< 0.055	< 0.090
06-20-24	275300	< 0.217	< 0.023	< 0.032	< 0.042	< 0.022	< 0.024	< 0.043	< 0.104
06-27-24	278400	< 0.356	< 0.025	< 0.028	< 0.061	< 0.035	< 0.035	< 0.069	< 0.101
07-03-24	239000	< 0.253	< 0.027	< 0.031	< 0.037	< 0.026	< 0.025	< 0.054	< 0.090
07-11-24	324200	< 0.257	< 0.029	< 0.039	< 0.056	< 0.024	< 0.024	< 0.089	< 0.099
07-18-24	284600	< 0.400	< 0.037	< 0.050	< 0.065	< 0.046	< 0.041	< 0.077	< 0.184
07-25-24	289300	< 0.272	< 0.029	< 0.032	< 0.054	< 0.030	< 0.027	< 0.026	< 0.099
08-01-24	291700	< 0.253	< 0.025	< 0.034	< 0.039	< 0.023	< 0.023	< 0.059	< 0.112
08-08-24	300300	< 0.428	< 0.035	< 0.043	< 0.091	< 0.049	< 0.046	< 0.073	< 0.176
08-15-24	309700	< 0.263	< 0.027	< 0.036	< 0.046	< 0.032	< 0.029	< 0.055	< 0.096
08-22-24	314500	< 0.302	< 0.028	< 0.035	< 0.058	< 0.027	< 0.027	< 0.046	< 0.083
08-29-24	323700	< 0.407	< 0.034	< 0.059	< 0.061	< 0.032	< 0.037	< 0.083	< 0.133
09-05-24	280000	0.196 +/- 0.114	< 0.015	< 0.021	< 0.036	< 0.014	< 0.019	< 0.020	< 0.065
09-12-24	280300	0.224 +/- 0.163	< 0.029	< 0.018	< 0.038	< 0.025	< 0.021	< 0.042	< 0.098
09-19-24	274700	< 0.246	< 0.022	< 0.027	< 0.029	< 0.023	< 0.018	< 0.035	< 0.077
09-26-24	277800	< 0.250	< 0.022	< 0.036	< 0.031	< 0.019	< 0.025	< 0.053	< 0.090
10-03-24	277600	< 0.303	< 0.039	< 0.029	< 0.061	< 0.026	< 0.024	< 0.051	< 0.098
10-10-24	280500	0.156 +/- 0.138	< 0.013	< 0.019	< 0.023	< 0.016	< 0.014	< 0.021	< 0.051
10-17-24	284100	< 0.246	< 0.018	< 0.018	< 0.029	< 0.028	< 0.024	< 0.028	< 0.091
10-24-24	283100	< 0.376	< 0.047	< 0.056	< 0.081	< 0.043	< 0.038	< 0.111	< 0.140
10-31-24	282500	< 0.192	< 0.015	< 0.024	< 0.025	< 0.013	< 0.018	< 0.044	< 0.071
11-07-24	277600	< 0.213	< 0.024	< 0.030	< 0.028	< 0.023	< 0.021	< 0.023	< 0.075
11-14-24	279500	< 0.230	< 0.023	< 0.035	< 0.045	< 0.025	< 0.025	< 0.053	< 0.099
11-21-24	273900	0.095 +/- 0.093	< 0.012	< 0.016	< 0.017	< 0.014	< 0.012	< 0.020	< 0.043
11-27-24	234100	< 0.216	< 0.029	< 0.034	< 0.043	< 0.019	< 0.024	< 0.100	< 0.114
12-05-24	324700	< 0.300	< 0.043	< 0.049	< 0.058	< 0.039	< 0.028	< 0.063	< 0.118
12-12-24	280500	< 0.228	< 0.020	< 0.031	< 0.043	< 0.030	< 0.025	< 0.065	< 0.086
12-19-24	279200	< 0.254	< 0.019	< 0.042	< 0.046	< 0.025	< 0.028	< 0.042	< 0.112
12-26-24	276100	< 0.231	< 0.029	< 0.031	< 0.050	< 0.030	< 0.024	< 0.053	< 0.117

Table 1A Airborne particulate sample analysis results for gamma emitters

Collection: Weekly Units: pCi/m3

		BE-7	CO-58	CO-60	ZR-95	CS-134	CS-137	BALA140	CE-144
Project LLDs		-	-	-	-	0.050	0.060	-	-
Collect Date	Volume								
Sample Location: CA-APT-A10									
01-04-24	293900	< 0.308	< 0.027	< 0.026	< 0.054	< 0.032	< 0.031	< 0.059	< 0.143
01-11-24	290900	< 0.141	< 0.020	< 0.027	< 0.037	< 0.024	< 0.016	< 0.089	< 0.073
01-18-24	292300	< 0.143	< 0.015	< 0.018	< 0.029	< 0.015	< 0.013	< 0.033	< 0.061
01-25-24	292500	< 0.157	< 0.016	< 0.025	< 0.013	< 0.018	< 0.009	< 0.033	< 0.052
02-01-24	287700	< 0.206	< 0.024	< 0.028	< 0.050	< 0.029	< 0.027	< 0.044	< 0.098
02-08-24	287600	< 0.217	< 0.008	< 0.023	< 0.042	< 0.015	< 0.016	< 0.038	< 0.086
02-15-24	287200	< 0.178	< 0.022	< 0.021	< 0.020	< 0.014	< 0.017	< 0.032	< 0.067
02-22-24	277300	< 0.228	< 0.025	< 0.030	< 0.036	< 0.021	< 0.032	< 0.026	< 0.120
02-29-24	270400	< 0.213	< 0.022	< 0.028	< 0.027	< 0.027	< 0.017	< 0.031	< 0.074
03-07-24	271900	< 0.348	< 0.036	< 0.035	< 0.068	< 0.033	< 0.035	< 0.058	< 0.104
03-14-24	272700	< 0.234	< 0.017	< 0.013	< 0.039	< 0.022	< 0.019	< 0.072	< 0.054
03-21-24	271000	< 0.214	< 0.017	< 0.022	< 0.029	< 0.023	< 0.023	< 0.041	< 0.069
03-27-24	235700	< 0.337	< 0.046	< 0.027	< 0.074	< 0.050	< 0.041	< 0.022	< 0.125
04-04-24	307500	< 0.299	< 0.023	< 0.040	< 0.051	< 0.034	< 0.031	< 0.045	< 0.134
04-11-24	270800	< 0.233	< 0.025	< 0.034	< 0.042	< 0.025	< 0.027	< 0.026	< 0.107
04-18-24	269400	< 0.322	< 0.033	< 0.039	< 0.058	< 0.025	< 0.028	< 0.062	< 0.118
04-25-24	286900	< 0.259	< 0.030	< 0.029	< 0.054	< 0.033	< 0.025	< 0.064	< 0.103
05-02-24	291400	< 0.260	< 0.033	< 0.034	< 0.057	< 0.035	< 0.030	< 0.055	< 0.116
05-09-24	266400	< 0.243	< 0.023	< 0.029	< 0.048	< 0.027	< 0.024	< 0.066	< 0.090
05-16-24	272300	0.271 +/- 0.128	< 0.020	< 0.034	< 0.052	< 0.027	< 0.026	< 0.051	< 0.080
05-23-24	271300	< 0.233	< 0.022	< 0.027	< 0.040	< 0.022	< 0.022	< 0.053	< 0.093
05-30-24	272700	< 0.328	< 0.033	< 0.042	< 0.039	< 0.036	< 0.032	< 0.082	< 0.149
06-06-24	272000	< 0.268	< 0.034	< 0.036	< 0.049	< 0.032	< 0.031	< 0.032	< 0.097
06-13-24	271500	0.300 +/- 0.102	< 0.027	< 0.025	< 0.052	< 0.032	< 0.024	< 0.048	< 0.093
06-20-24	268700	0.305 +/- 0.093	< 0.019	< 0.023	< 0.023	< 0.018	< 0.017	< 0.039	< 0.074
06-27-24	270000	< 0.402	< 0.041	< 0.048	< 0.070	< 0.041	< 0.045	< 0.091	< 0.146
07-03-24	231400	< 0.423	< 0.041	< 0.049	< 0.070	< 0.047	< 0.045	< 0.075	< 0.143
07-11-24	309500	< 0.447	< 0.040	< 0.064	< 0.076	< 0.047	< 0.034	< 0.202	< 0.218
07-18-24	268700	< 0.368	< 0.037	< 0.036	< 0.061	< 0.035	< 0.030	< 0.065	< 0.173
07-25-24	269900	< 0.396	< 0.049	< 0.059	< 0.084	< 0.045	< 0.042	< 0.077	< 0.144
08-01-24	268900	< 0.361	< 0.050	< 0.046	< 0.085	< 0.047	< 0.045	< 0.103	< 0.153
08-08-24	268200	< 0.294	< 0.029	< 0.038	< 0.049	< 0.038	< 0.027	< 0.077	< 0.101
08-15-24	270400	< 0.256	< 0.019	< 0.027	< 0.036	< 0.032	< 0.017	< 0.071	< 0.083
08-22-24	279200	< 0.236	< 0.023	< 0.028	< 0.040	< 0.021	< 0.019	< 0.017	< 0.081
08-29-24	279200	< 0.194	< 0.022	< 0.021	< 0.034	< 0.024	< 0.024	< 0.042	< 0.072
09-05-24	283900	< 0.218	< 0.017	< 0.022	< 0.023	< 0.018	< 0.016	< 0.029	< 0.078
09-12-24	287300	< 0.231	< 0.022	< 0.017	< 0.037	< 0.029	< 0.021	< 0.034	< 0.088
09-19-24	281900	< 0.228	< 0.017	< 0.023	< 0.046	< 0.022	< 0.021	< 0.052	< 0.088
09-26-24	284900	< 0.155	< 0.011	< 0.013	< 0.019	< 0.017	< 0.016	< 0.019	< 0.064
10-03-24	287100	< 0.242	< 0.021	< 0.046	< 0.036	< 0.019	< 0.026	< 0.056	< 0.083
10-10-24	288600	< 0.247	< 0.018	< 0.027	< 0.024	< 0.023	< 0.016	< 0.030	< 0.053
10-17-24	292300	0.139 +/- 0.068	< 0.011	< 0.014	< 0.020	< 0.012	< 0.010	< 0.023	< 0.044
10-24-24	293100	0.239 +/- 0.128	< 0.028	< 0.022	< 0.044	< 0.024	< 0.027	< 0.080	< 0.098
10-31-24	290800	< 0.219	< 0.017	< 0.023	< 0.025	< 0.017	< 0.015	< 0.045	< 0.082
11-07-24	283700	< 0.308	< 0.033	< 0.041	< 0.060	< 0.031	< 0.029	< 0.038	< 0.132
11-14-24	288100	< 0.167	< 0.022	< 0.022	< 0.035	< 0.012	< 0.019	< 0.065	< 0.085
11-21-24	283000	< 0.278	< 0.033	< 0.037	< 0.056	< 0.031	< 0.031	< 0.051	< 0.106
11-27-24	244400	< 0.280	< 0.034	< 0.033	< 0.072	< 0.038	< 0.034	< 0.112	< 0.129
12-05-24	342000	< 0.223	< 0.019	< 0.024	< 0.046	< 0.024	< 0.028	< 0.052	< 0.098
12-12-24	295600	< 0.250	< 0.034	< 0.041	< 0.066	< 0.041	< 0.036	< 0.054	< 0.117
12-19-24	298300	< 0.213	< 0.015	< 0.030	< 0.039	< 0.033	< 0.022	< 0.053	< 0.090
12-26-24	295800	< 0.278	< 0.037	< 0.046	< 0.062	< 0.037	< 0.034	< 0.051	< 0.102

Table 1A Airborne particulate sample analysis results for gamma emitters

Collection: Weekly Units: pCi/m3

		BE-7	CO-58	CO-60	ZR-95	CS-134	CS-137	BALA140	CE-144
Project LLDs		-	-	-	-	0.050	0.060	-	-
Collect Date	Volume								
Sample Location: CA-APT-A11									
01-04-24	273000	< 0.260	< 0.028	< 0.033	< 0.047	< 0.028	< 0.030	< 0.072	< 0.116
01-11-24	272800	< 0.156	< 0.019	< 0.019	< 0.023	< 0.018	< 0.015	< 0.046	< 0.058
01-18-24	274700	< 0.163	< 0.020	< 0.024	< 0.032	< 0.014	< 0.016	< 0.035	< 0.060
01-25-24	31820	< 0.633	< 0.094	< 0.087	< 0.152	< 0.098	< 0.097	< 0.177	< 0.306
02-01-24	266400	< 0.139	< 0.016	< 0.022	< 0.032	< 0.018	< 0.017	< 0.040	< 0.077
02-08-24	265700	< 0.222	< 0.017	< 0.017	< 0.011	< 0.011	< 0.016	< 0.021	< 0.059
02-15-24	267000	< 0.200	< 0.026	< 0.023	< 0.031	< 0.012	< 0.018	< 0.026	< 0.076
02-22-24	269800	< 0.250	< 0.020	< 0.026	< 0.044	< 0.024	< 0.027	< 0.051	< 0.062
02-29-24	266100	0.184 +/- 0.138	< 0.009	< 0.019	< 0.035	< 0.021	< 0.020	< 0.047	< 0.081
03-07-24	266300	< 0.225	< 0.014	< 0.025	< 0.041	< 0.022	< 0.023	< 0.048	< 0.084
03-14-24	263100	< 0.199	< 0.024	< 0.014	< 0.018	< 0.014	< 0.020	< 0.059	< 0.077
03-21-24	261600	< 0.227	< 0.023	< 0.023	< 0.038	< 0.028	< 0.019	< 0.043	< 0.084
03-27-24	223900	0.277 +/- 0.157	< 0.023	< 0.030	< 0.052	< 0.038	< 0.022	< 0.027	< 0.129
04-04-24	291300	< 0.247	< 0.022	< 0.029	< 0.036	< 0.027	< 0.021	< 0.048	< 0.090
04-11-24	256200	< 0.349	< 0.037	< 0.034	< 0.074	< 0.038	< 0.037	< 0.069	< 0.160
04-18-24	265700	< 0.317	< 0.035	< 0.035	< 0.061	< 0.036	< 0.036	< 0.032	< 0.141
04-25-24	346900	< 0.258	< 0.024	< 0.040	< 0.052	< 0.028	< 0.027	< 0.039	< 0.119
05-02-24	287000	< 0.259	< 0.025	< 0.040	< 0.041	< 0.024	< 0.023	< 0.034	< 0.083
05-09-24	287600	< 0.288	< 0.032	< 0.043	< 0.055	< 0.049	< 0.046	< 0.056	< 0.136
05-16-24	283700	< 0.235	< 0.028	< 0.030	< 0.044	< 0.026	< 0.026	< 0.048	< 0.102
05-23-24	282300	< 0.273	< 0.036	< 0.039	< 0.057	< 0.034	< 0.028	< 0.062	< 0.106
05-30-24	282600	< 0.255	< 0.031	< 0.042	< 0.057	< 0.033	< 0.029	< 0.058	< 0.102
06-06-24	283100	< 0.299	< 0.036	< 0.037	< 0.046	< 0.030	< 0.030	< 0.075	< 0.154
06-13-24	283000	< 0.270	< 0.034	< 0.035	< 0.044	< 0.031	< 0.027	< 0.069	< 0.111
06-20-24	280100	< 0.210	< 0.021	< 0.022	< 0.030	< 0.021	< 0.019	< 0.041	< 0.081
06-27-24	279700	< 0.314	< 0.027	< 0.014	< 0.055	< 0.026	< 0.027	< 0.037	< 0.108
07-03-24	237100	< 0.391	< 0.047	< 0.052	< 0.086	< 0.043	< 0.036	< 0.091	< 0.157
07-11-24	322700	< 0.456	< 0.039	< 0.059	< 0.081	< 0.035	< 0.040	< 0.118	< 0.216
07-18-24	277700	< 0.333	< 0.033	< 0.038	< 0.053	< 0.032	< 0.026	< 0.049	< 0.102
07-25-24	281500	0.223 +/- 0.121	< 0.022	< 0.026	< 0.030	< 0.026	< 0.018	< 0.037	< 0.081
08-01-24	279300	< 0.274	< 0.028	< 0.028	< 0.038	< 0.027	< 0.026	< 0.048	< 0.088
08-08-24	278300	< 0.399	< 0.047	< 0.061	< 0.077	< 0.043	< 0.045	< 0.071	< 0.134
08-15-24	282000	< 0.316	< 0.036	< 0.042	< 0.063	< 0.039	< 0.039	< 0.058	< 0.133
08-22-24	280900	< 0.197	< 0.022	< 0.033	< 0.028	< 0.016	< 0.022	< 0.025	< 0.059
08-29-24	279500	0.250 +/- 0.112	< 0.016	< 0.022	< 0.038	< 0.017	< 0.016	< 0.037	< 0.083
09-05-24	282500	< 0.192	< 0.015	< 0.028	< 0.033	< 0.020	< 0.013	< 0.045	< 0.057
09-12-24	283600	< 0.275	< 0.030	< 0.035	< 0.047	< 0.032	< 0.030	< 0.059	< 0.095
09-19-24	278900	< 0.242	< 0.022	< 0.025	< 0.043	< 0.019	< 0.027	< 0.041	< 0.090
09-26-24	280700	< 0.279	< 0.035	< 0.044	< 0.042	< 0.029	< 0.028	< 0.048	< 0.120
10-03-24	280900	< 0.239	< 0.021	< 0.033	< 0.028	< 0.031	< 0.015	< 0.042	< 0.073
10-10-24	284800	< 0.307	< 0.021	< 0.022	< 0.039	< 0.027	< 0.027	< 0.055	< 0.098
10-17-24	282800	< 0.252	< 0.017	< 0.019	< 0.033	< 0.024	< 0.021	< 0.040	< 0.084
10-24-24	284600	< 0.327	< 0.034	< 0.032	< 0.064	< 0.035	< 0.032	< 0.043	< 0.150
10-31-24	284400	< 0.254	< 0.014	< 0.026	< 0.030	< 0.020	< 0.025	< 0.034	< 0.070
11-07-24	278900	< 0.274	< 0.036	< 0.044	< 0.062	< 0.029	< 0.039	< 0.070	< 0.105
11-14-24	282800	< 0.297	< 0.038	< 0.023	< 0.051	< 0.042	< 0.025	< 0.045	< 0.117
11-21-24	277100	< 0.134	< 0.014	< 0.019	< 0.020	< 0.015	< 0.010	< 0.018	< 0.044
11-27-24	237900	< 0.247	< 0.028	< 0.031	< 0.048	< 0.037	< 0.028	< 0.118	< 0.116
12-05-24	320400	< 0.232	< 0.021	< 0.028	< 0.051	< 0.030	< 0.021	< 0.055	< 0.119
12-12-24	279400	< 0.256	< 0.028	< 0.021	< 0.048	< 0.025	< 0.030	< 0.063	< 0.109
12-19-24	278700	< 0.233	< 0.022	< 0.027	< 0.050	< 0.036	< 0.026	< 0.051	< 0.108
12-26-24	277800	< 0.242	< 0.028	< 0.033	< 0.049	< 0.027	< 0.024	< 0.081	< 0.109

Table 1B Charcoal sample analysis results I-131

Collection: Weekly Units: pCi/m3

All charcoal samples were below the client's Lower Limit of Detection for I-131 of 0.070 pCi/m3

Table 2 Milk sample analysis results for iodine 131 and gamma emitters

Collection: Semi-monthly during grazing season, monthly otherwise Units: pCi/L

	I-131 (LOW LVL)	K-40	ZN-65	CO-58	CO-60	BALA140
Project LLDs	1	-	-	15	18	15
Collect Date						
Sample Location M9						
10-08-24	< 0.888	1398 +/- 164.3	< 18.3	< 7.2	< 6.3	< 9.1
10-22-24	< 0.572	1173 +/- 147.7	< 17.9	< 7.9	< 6.4	< 11.7
11-26-24	< 0.933	918.9 +/- 131.4	< 15.3	< 7.4	< 7.1	< 10.3
12-23-24	< 0.903	1021 +/- 167.8	< 15.7	< 9.7	< 7.5	< 13.1

Table 3 Vegetation sample analysis results for gamma emitters

Collection: Monthly during growing season

Units: pCi/kg wet

Collect Date	Sample Type	K-40	MN-54	CO-58	CO-60	I-131	CS-134	CS-137
Project LLDs		-	-	-	-	60	60	80
Sample Location:	CA-FPL-V16							
07-MAY-24	Kale 3lbs	4492 +/- 592.3	< 27.0	< 26.0	< 34.4	< 42.1	< 30.9	< 28.5
07-MAY-24	Collards 3lbs	4070 +/- 568.0	< 31.5	< 27.0	< 30.2	< 45.8	< 34.3	< 29.1
07-MAY-24	Lettuce 3lbs	4197 +/- 578.3	< 27.4	< 29.5	< 32.1	< 44.9	< 31.0	< 30.3
04-JUN-24	Kale 3lbs	1644 +/- 296.1	< 14.9	< 18.0	< 17.6	< 25.3	< 18.6	< 17.9
04-JUN-24	Collards 3lbs	3533 +/- 544.3	< 23.9	< 27.2	< 33.2	< 50.1	< 31.5	< 34.5
08-JUL-24	Swiss Chard 3lbs	5744 +/- 722.6	< 32.6	< 24.0	< 39.2	< 35.1	< 32.8	< 31.3
08-JUL-24	Collard Greens 3lbs	3311 +/- 407.7	< 18.3	< 18.4	< 18.0	< 22.5	< 19.4	< 17.4
08-JUL-24	Kale 3lbs	5323 +/- 652.1	< 28.1	< 25.0	< 37.0	< 33.3	< 25.8	< 24.1
05-AUG-24	Swiss Chard 3 lbs	5151 +/- 588.0	< 23.2	< 23.3	< 25.9	< 51.9	< 28.4	< 25.4
05-AUG-24	Collards 3 lbs	3086 +/- 482.0	< 27.7	< 28.2	< 28.4	< 49.9	< 25.8	< 27.9
05-AUG-24	Kale 3 lbs	4182 +/- 833.5	< 44.3	< 40.2	< 34.1	< 54.6	< 39.0	< 37.9
08-SEP-24	Swiss Chard 3lbs	6376 +/- 934.4	< 40.5	< 44.5	< 40.7	< 48.3	< 38.6	< 38.9
07-OCT-24	Swiss Chard 3lbs	5592 +/- 652.6	< 29.5	< 32.4	< 40.6	< 49.2	< 34.9	< 33.2
Sample Location:	CA-FPL-V19							
06-MAY-24	Lettuce 3 lbs	3652 +/- 596.0	< 33.0	< 31.1	< 39.2	< 52.8	< 34.1	< 37.6
04-JUN-24	Cabbage 3 lbs	3590 +/- 648.4	< 33.4	< 25.3	< 40.7	< 50.8	< 33.3	< 28.3
08-JUL-24	Cabbage 3 lbs	4890 +/- 409.3	< 13.0	< 11.8	< 16.1	< 16.9	< 15.3	< 14.6
05-AUG-24	Cabbage 3lbs	4878 +/- 735.5	< 25.7	< 33.4	< 39.8	< 47.0	< 32.4	< 30.9
04-SEP-24	Turnip Greens 3lbs	4840 +/- 645.7	< 28.9	< 24.7	< 30.0	< 40.6	< 29.3	< 25.6
07-OCT-24	Turnip Tops 3lbs	7147 +/- 689.0	< 28.0	< 25.3	< 37.7	< 51.2	< 32.9	< 28.5
Sample Location:	CA-FPL-V20							
06-MAY-24	Mustard Greens 3lbs	1692 +/- 326.4	< 16.6	< 16.7	< 18.9	< 26.8	< 18.4	< 20.4
04-JUN-24	Kale 3lbs	2818 +/- 414.6	< 19.7	< 15.9	< 22.5	< 30.3	< 22.9	< 23.6
04-JUN-24	Mustard Greens 3lbs	4917 +/- 630.8	< 30.8	< 24.4	< 29.6	< 38.7	< 32.8	< 28.2
04-JUN-24	Poke 3lbs	6090 +/- 671.3	< 23.9	< 28.8	< 27.7	< 36.3	< 26.6	< 28.3
08-JUL-24	Collard Greens 3lbs	2329 +/- 382.5	< 16.0	< 19.2	< 23.4	< 23.0	< 23.2	< 20.1
08-JUL-24	Lettuce 3 lbs	5051 +/- 738.0	< 27.6	< 28.1	< 31.1	< 40.0	< 30.8	< 32.9
08-JUL-24	Mustard Greens 3lbs	2040 +/- 503.0	< 23.9	< 20.9	< 29.2	< 37.8	< 26.5	< 26.6
05-AUG-24	Collards 3lbs	3141 +/- 482.2	< 25.8	< 28.4	< 24.9	< 50.6	< 32.3	< 26.5
05-AUG-24	Cabbage 3lbs	3503 +/- 457.5	< 23.7	< 25.2	< 28.8	< 48.2	< 28.2	< 27.3
05-AUG-24	Poke 3lbs	8211 +/- 656.3	< 23.6	< 20.2	< 29.3	< 47.9	< 29.3	< 25.4
09-SEP-24	Poke Weed 3lbs	8545 +/- 818.4	< 34.5	< 35.2	< 41.1	< 40.7	< 39.4	< 38.1
09-SEP-24	Collard Greens 3 lbs	4634 +/- 570.1	< 25.1	< 25.9	< 38.0	< 28.8	< 34.1	< 28.6
07-OCT-24	Kale 3 lbs	3796 +/- 439.5	< 16.5	< 21.7	< 21.8	< 42.1	< 20.2	< 19.4
07-OCT-24	Mustard Greens 3 lbs	4108 +/- 610.9	< 22.3	< 23.8	< 25.8	< 36.0	< 23.5	< 21.3
07-OCT-24	Collard Greens 3 lbs	3569 +/- 466.5	< 20.0	< 21.0	< 30.9	< 35.3	< 23.5	< 24.1
Sample Location:	CA-FPL-V9							
07-MAY-24	Cabbage 3 lbs	2335 +/- 462.4	< 22.3	< 27.2	< 24.3	< 35.6	< 26.5	< 25.4
07-MAY-24	Turnip Greens 3lbs	2613 +/- 455.0	< 28.8	< 26.2	< 23.6	< 34.1	< 25.8	< 24.6
07-MAY-24	Collards 3lbs	2044 +/- 420.0	< 19.3	< 19.3	< 18.9	< 34.0	< 21.7	< 22.4
07-MAY-24	Kale 3 lbs	2648 +/- 363.5	< 17.3	< 19.0	< 24.2	< 35.5	< 19.5	< 21.2
07-MAY-24	Mustard Greens 3lbs	2430 +/- 380.3	< 18.2	< 17.3	< 18.5	< 30.5	< 18.3	< 18.9
07-MAY-24	Lettuce 3 lbs	2436 +/- 445.9	< 20.8	< 19.9	< 24.8	< 31.4	< 23.8	< 23.0
05-JUN-24	Collards 3 lbs	3217 +/- 381.1	< 15.1	< 15.0	< 21.5	< 22.2	< 15.2	< 13.9
05-JUN-24	Kale 3lbs	3118 +/- 393.3	< 20.4	< 19.3	< 21.0	< 30.5	< 23.3	< 20.2
05-JUN-24	Cabbage 3 lbs	3457 +/- 433.0	< 17.7	< 19.0	< 22.8	< 25.5	< 21.3	< 18.8
05-JUN-24	Turnip 3 lbs	3985 +/- 522.8	< 17.2	< 19.5	< 30.0	< 26.2	< 21.2	< 21.5
09-JUL-24	Cabbage 3 lbs	2343 +/- 358.1	< 14.5	< 15.0	< 21.9	< 19.7	< 17.1	< 21.1
09-JUL-24	Kale 3 lbs	3590 +/- 683.2	< 24.7	< 25.2	< 28.8	< 32.9	< 31.1	< 32.9
09-JUL-24	Collard Greens 3 lbs	3562 +/- 634.0	< 28.2	< 30.7	< 30.8	< 27.2	< 32.3	< 30.9
09-SEP-24	Lettuce 3lbs	3894 +/- 455.7	< 19.4	< 18.9	< 23.0	< 20.9	< 23.0	< 17.9
09-SEP-24	Turnip Greens 3 lbs	3650 +/- 387.7	< 17.2	< 19.2	< 22.7	< 20.1	< 19.3	< 19.0
09-SEP-24	Collard Greens 3 lbs	3646 +/- 589.1	< 27.5	< 30.2	< 38.9	< 29.2	< 33.0	< 35.4
09-SEP-24	Bok Choy 3 lbs	4132 +/- 426.6	< 16.6	< 18.3	< 19.6	< 20.7	< 18.1	< 13.6
08-OCT-24	Lettuce 3 lbs	3133 +/- 417.1	< 20.4	< 18.3	< 22.3	< 30.3	< 19.9	< 21.5
08-OCT-24	Turnip 3 lbs	3996 +/- 415.6	< 15.5	< 20.6	< 16.4	< 26.5	< 17.8	< 14.9
08-OCT-24	Mustard Greens 3lbs	4561 +/- 477.5	< 20.9	< 19.1	< 26.1	< 31.7	< 23.7	< 21.2
08-OCT-24	Collard Greens 3lbs	3931 +/- 442.0	< 17.3	< 16.8	< 19.5	< 25.4	< 22.8	< 18.5
08-OCT-24	Napa Cabbage 3 lbs	2800 +/- 385.7	< 20.9	< 21.7	< 20.0	< 29.1	< 19.0	< 19.4

Table 4 Soil sample analysis results for gamma emitters

Collection: Annually

Units: pCi/kg dry

Collect Date	K-40	MN-54	FE-59	CO-58	CO-60	ZRNB-95	CS-134	CS-137	BALA140
Project LLDs	-	-	-	-	-	-	150	180	-
Sample Location: F2 02-DEC-24	11210 +/- 1618	< 118.3	< 221.5	< 91.8	< 106.2	< 116.8	< 130.0	< 236.5	< 193.0
Sample Location: F6 02-DEC-24	8726 +/- 1686	< 85.7	< 182.1	< 77.7	< 65.4	< 109.4	< 94.9	352.9 +/- 122.1	< 180.1
Sample Location: M9 04-DEC-24	13480 +/- 1876	< 90.5	< 180.6	< 81.9	< 92.9	< 108.4	< 102.1	< 129.4	< 92.3
Sample Location: PR3 02-DEC-24	7893 +/- 1616	< 88.6	< 165.7	< 81.0	< 98.9	< 102.3	< 87.7	< 133.8	< 141.1
Sample Location: PR7 02-DEC-24	10090 +/- 1641	< 105.0	< 197.3	< 95.2	< 112.9	< 110.9	< 121.4	< 162.0	< 145.7
Sample Location: W1 04-DEC-24	5913 +/- 1400	< 44.2	< 132.5	< 57.0	< 84.8	< 71.6	< 72.8	< 67.3	< 98.4
Sample Location: W2 04-DEC-24	6419 +/- 1402	< 95.0	< 189.9	< 95.7	< 105.0	< 89.6	< 100.6	< 87.2	< 110.8
Sample Location: W5 04-DEC-24	8322 +/- 1361	< 69.7	< 124.7	< 65.8	< 67.6	< 76.1	< 101.4	< 82.7	< 99.0
Sample Location: W6 04-DEC-24	9874 +/- 1703	< 90.3	< 180.2	< 89.3	< 116.0	< 101.4	< 110.5	< 93.5	< 131.6

Table 5 Surface water analysis results for tritium and gamma emitters

Collection: Monthly

Units: pCi/L

	H-3 (DIST)	MN-54	FE-59	CO-58	CO-60	ZN-65	ZRNB-95	ZRNB-95	CS-137	BALA140	I-131
Project LLDs	200	15	30	15	15	30	15	15	18	15	1000
Collect Date											
Sample Location:	CA-SWA-S01										
02-01-24	< 187.0	< 1.8	< 5.2	< 2.2	< 2.0	< 3.8	< 2.4	< 2.0	< 1.9	< 7.9	< 13.8
02-27-24	< 182.0	< 3.3	< 6.8	< 2.9	< 3.8	< 5.8	< 4.5	< 3.0	< 3.4	< 12.8	< 18.9
03-26-24	< 190.0	< 2.4	< 6.8	< 3.2	< 3.4	< 5.9	< 3.1	< 2.6	< 2.5	< 9.3	< 11.1
04-30-24	< 194.0	< 5.9	< 15.1	< 7.4	< 7.0	< 13.0	< 7.6	< 6.8	< 5.7	< 11.3	< 42.8
05-28-24	< 193.0	< 5.2	< 12.4	< 5.5	< 5.0	< 8.5	< 5.8	< 4.7	< 4.9	< 12.1	< 24.7
06-25-24	< 176.0	< 1.7	< 4.4	< 2.0	< 1.9	< 3.5	< 1.9	< 1.8	< 1.7	< 5.8	< 9.6
07-30-24	< 190.0	< 1.7	< 4.7	< 2.0	< 1.7	< 3.4	< 2.0	< 1.8	< 1.8	< 6.4	< 12.6
08-27-24	< 184.0	< 3.5	< 12.0	< 4.6	< 5.1	< 10.2	< 5.4	< 3.6	< 3.9	< 14.1	< 28.9
09-24-24	< 187.0	< 2.5	< 6.3	< 2.5	< 2.7	< 4.6	< 2.6	< 2.8	< 2.4	< 6.5	< 8.8
10-28-24	< 187.0	< 1.6	< 4.4	< 1.8	< 1.7	< 3.2	< 2.0	< 1.8	< 1.6	< 6.6	< 11.9
11-26-24	< 188.0	< 3.7	< 11.3	< 5.3	< 4.3	< 9.1	< 4.7	< 4.1	< 5.2	< 14.0	< 23.7
12-31-24	< 181.0	< 1.6	< 4.7	< 1.9	< 1.8	< 3.3	< 2.1	< 1.9	< 1.6	< 7.4	< 13.2
Sample Location:	CA-SWA-S02										
02-01-24	< 196.0	< 1.7	< 4.7	< 2.1	< 1.7	< 3.9	< 2.0	< 1.8	< 1.7	< 6.6	< 12.1
02-27-24	< 180.0	< 3.3	< 8.8	< 4.3	< 4.3	< 7.2	< 4.5	< 3.8	< 3.4	< 10.3	< 17.2
03-26-24	326.0 +/- 130.0	< 2.4	< 5.9	< 2.7	< 2.5	< 4.8	< 2.7	< 2.8	< 2.6	< 7.6	< 10.0
04-30-24	< 199.0	< 4.1	< 10.5	< 4.5	< 4.7	< 8.2	< 4.6	< 4.3	< 3.2	< 14.6	< 23.5
05-28-24	< 199.0	< 3.4	< 8.2	< 3.8	< 4.5	< 7.8	< 4.4	< 3.8	< 3.2	< 14.3	< 18.8
06-25-24	< 178.0	< 1.8	< 4.5	< 2.1	< 2.2	< 4.0	< 2.1	< 1.9	< 1.9	< 6.3	< 9.3
07-30-24	< 191.0	< 2.0	< 5.1	< 2.3	< 2.1	< 3.9	< 2.4	< 2.2	< 1.9	< 7.9	< 14.5
08-27-24	< 199.0	< 1.8	< 4.5	< 2.1	< 2.1	< 4.0	< 2.1	< 2.1	< 1.9	< 8.7	< 12.4
09-24-24	< 186.0	< 2.0	< 4.4	< 1.9	< 2.6	< 4.4	< 2.1	< 1.9	< 1.9	< 5.9	< 7.7
10-29-24	241.0 +/- 123.0	< 2.0	< 5.4	< 2.3	< 2.2	< 4.6	< 2.3	< 2.1	< 2.0	< 8.1	< 14.5
11-26-24	< 189.0	< 3.4	< 10.3	< 4.0	< 4.4	< 6.7	< 4.4	< 3.4	< 4.0	< 10.5	< 24.0
12-31-24	285.0 +/- 123.0	< 1.5	< 4.0	< 1.8	< 1.6	< 3.2	< 1.9	< 1.7	< 1.6	< 6.8	< 12.2

Table 6 Pond water analysis results for tritium and gamma emitters

Units: pCi/L

	H-3 (DIST)	MN-54	FE-59	CO-58	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140	I-131
Project LLDs	200	15	30	15	15	30	15	15	18	15	15
Collect Date											
Sample Location:	OUTFALL 010										
18-MAR-24	< 176.0	< 6.0	< 15.0	< 7.4	< 9.6	< 13.7	< 7.8	< 8.6	< 7.1	< 12.5	< 8.0
10-SEP-24	< 189.0	< 8.0	< 11.1	< 6.1	< 7.1	< 13.1	< 7.8	< 7.6	< 7.1	< 10.5	< 11.2
Sample Location:	POND 01										
18-MAR-24	< 179.0	< 4.6	< 11.4	< 4.5	< 6.7	< 10.9	< 5.9	< 5.1	< 7.0	< 11.0	< 7.8
10-SEP-24	< 189.0	< 8.2	< 17.3	< 7.7	< 8.0	< 16.9	< 7.3	< 8.6	< 7.8	< 12.6	< 11.0
Sample Location:	POND 02										
18-MAR-24	< 181.0	< 6.2	< 10.5	< 6.2	< 7.2	< 13.6	< 5.8	< 7.7	< 6.4	< 6.6	< 8.9
10-SEP-24	< 190.0	< 8.8	< 17.2	< 6.0	< 8.8	< 17.8	< 10.8	< 10.4	< 5.7	< 11.4	< 14.5
Sample Location:	SLUDGE LAGOON										
18-MAR-24	< 183.0	< 4.4	< 10.7	< 5.6	< 6.9	< 10.4	< 5.0	< 6.6	< 5.8	< 8.4	< 8.0
10-SEP-24	< 190.0	< 6.6	< 18.8	< 7.0	< 9.1	< 15.2	< 9.1	< 9.7	< 7.0	< 9.9	< 10.3
Sample Location:	WETLANDS 01										
18-MAR-24	< 185.0	< 6.2	< 6.4	< 6.1	< 10.0	< 9.7	< 6.7	< 6.7	< 7.2	< 9.6	< 9.0
10-SEP-24	< 192.0	< 2.3	< 5.4	< 2.7	< 2.5	< 5.3	< 2.6	< 2.8	< 2.7	< 4.1	< 5.6
Sample Location:	WETLANDS 02										
18-MAR-24	< 179.0	< 5.0	< 12.5	< 5.9	< 6.5	< 11.3	< 6.5	< 6.6	< 6.4	< 9.4	< 7.4
09-SEP-24	< 195.0	< 7.5	< 16.8	< 6.6	< 8.7	< 17.6	< 7.2	< 7.4	< 5.9	< 14.0	< 11.4

Table 7 Well water (drinking) analysis results for tritium and gamma emitters

Units: pCi/L

	H-3 (DIST)	I-131 (LOW LVL)	MN-54	FE-59	CO-58	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140	I-131
Project LLDs	200	1	15	30	15	15	30	15	15	18	15	15
Collect Date												
Sample Location:	CA-DWA-10 DILLON, TOM											
02-14-24	< 194.0	< 0.919	< 6.3	< 12.9	< 6.6	< 7.6	< 15.4	< 8.6	< 8.4	< 7.4	< 14.1	< 12.0
05-08-24	< 189.0	< 0.967	< 6.7	< 10.7	< 6.3	< 5.5	< 14.6	< 6.0	< 7.4	< 6.5	< 10.6	< 11.2
08-05-24	< 171.0	< 0.973	< 6.2	< 10.9	< 5.2	< 3.8	< 11.7	< 6.6	< 6.3	< 4.9	< 10.7	< 12.9
11-08-24	< 176.0	< 0.881	< 5.4	< 11.9	< 4.9	< 5.9	< 11.9	< 5.7	< 5.3	< 5.2	< 8.2	< 8.2
Sample Location:	CA-DWA-12 DILLON, JOE											
02-09-24	< 190.0	< 0.970	< 4.1	< 10.1	< 4.1	< 4.5	< 8.8	< 4.5	< 4.4	< 3.7	< 9.7	< 9.9
05-08-24	< 186.0	< 0.842	< 7.3	< 14.9	< 6.4	< 7.7	< 14.8	< 8.4	< 7.7	< 5.5	< 9.2	< 11.8
08-05-24	< 173.0	< 0.902	< 5.9	< 13.6	< 5.6	< 6.8	< 10.3	< 5.9	< 5.3	< 6.5	< 14.3	< 13.1
11-08-24	< 174.0	< 0.686	< 4.7	< 11.9	< 3.6	< 5.8	< 10.0	< 4.8	< 5.0	< 4.7	< 8.8	< 8.2
Sample Location:	CA-DWA-21 BAUMGARTH											
02-09-24	< 191.0	< 0.938	< 3.8	< 8.0	< 3.9	< 4.1	< 8.1	< 4.3	< 4.0	< 3.8	< 7.5	< 12.0
05-08-24	< 195.0	< 0.778	< 7.8	< 12.5	< 7.2	< 7.8	< 16.4	< 8.1	< 5.5	< 7.7	< 12.7	< 11.6
08-05-24	< 174.0	< 0.874	< 5.2	< 11.2	< 4.8	< 7.2	< 10.7	< 4.8	< 5.7	< 4.1	< 8.5	< 10.2
11-06-24	< 177.0	< 0.951	< 5.1	< 10.7	< 5.3	< 7.2	< 10.1	< 6.8	< 6.3	< 5.6	< 11.3	< 11.8
Sample Location:	CA-DWA-22 PLUMMER											
02-09-24	< 195.0	< 0.942	< 3.3	< 8.8	< 3.7	< 3.4	< 6.8	< 3.8	< 3.2	< 3.5	< 8.1	< 9.3
05-08-24	< 187.0	< 0.879	< 4.6	< 8.7	< 6.5	< 3.4	< 14.2	< 4.8	< 5.8	< 4.3	< 11.9	< 7.4
08-05-24	< 173.0	< 0.884	< 7.2	< 12.9	< 6.0	< 6.3	< 7.9	< 5.7	< 6.2	< 5.9	< 7.4	< 12.9
11-07-24	< 173.0	< 0.917	< 7.2	< 16.2	< 6.8	< 8.3	< 17.3	< 6.5	< 9.0	< 8.0	< 13.5	< 14.7
Sample Location:	CA-DWA-23 CURDT											
02-09-24	< 193.0	< 0.983	< 3.9	< 8.1	< 3.9	< 4.4	< 7.6	< 3.9	< 3.9	< 4.2	< 8.4	< 10.8
05-08-24	< 188.0	< 0.909	< 6.3	< 13.1	< 7.5	< 7.2	< 14.5	< 7.8	< 5.9	< 6.4	< 9.5	< 10.8
08-05-24	< 172.0	< 0.817	< 6.6	< 11.2	< 6.4	< 3.5	< 9.5	< 8.1	< 7.2	< 6.5	< 11.0	< 13.0
11-07-24	< 177.0	< 0.827	< 7.8	< 14.5	< 6.8	< 7.2	< 14.0	< 6.6	< 6.4	< 6.3	< 10.2	< 12.8
Sample Location:	CA-DWA-24 FARLEY											
02-14-24	< 191.0	< 0.950	< 6.9	< 15.4	< 7.4	< 6.9	< 13.0	< 6.3	< 6.5	< 7.8	< 9.8	< 12.3
05-08-24	< 187.0	< 0.898	< 5.3	< 14.0	< 6.4	< 6.5	< 15.0	< 6.4	< 8.0	< 6.3	< 12.3	< 8.8
08-05-24	< 173.0	< 0.906	< 5.3	< 12.6	< 5.5	< 5.6	< 9.9	< 6.6	< 6.7	< 6.2	< 11.2	< 11.6
11-08-24	< 174.0	< 0.854	< 4.0	< 7.7	< 4.3	< 4.7	< 8.7	< 4.2	< 4.9	< 4.4	< 7.3	< 7.3
Sample Location:	CA-DWA-25 KRIETE, MARIO											
02-09-24	< 195.0	< 0.894	< 3.0	< 6.7	< 3.6	< 4.4	< 6.5	< 3.3	< 2.8	< 3.3	< 6.8	< 10.1
05-08-24	< 193.0	< 0.704	< 5.8	< 14.2	< 7.0	< 6.4	< 13.3	< 6.1	< 6.6	< 6.0	< 12.0	< 11.5
08-05-24	< 173.0	< 0.889	< 5.8	< 14.8	< 4.6	< 6.0	< 12.4	< 7.3	< 5.4	< 7.1	< 13.0	< 13.3
11-07-24	< 175.0	< 0.825	< 5.4	< 11.2	< 7.5	< 8.2	< 17.9	< 7.6	< 7.6	< 6.4	< 12.1	< 13.5
Sample Location:	CA-DWA-3 WARD											
02-09-24	< 191.0	< 0.907	< 3.2	< 7.5	< 3.6	< 4.0	< 6.5	< 3.4	< 3.5	< 3.5	< 6.5	< 10.7
05-08-24	< 196.0	< 0.914	< 7.1	< 19.1	< 7.6	< 7.9	< 13.8	< 7.2	< 6.4	< 7.1	< 10.8	< 11.4
08-05-24	< 173.0	< 0.862	< 5.5	< 11.2	< 5.7	< 5.4	< 11.4	< 5.8	< 6.9	< 6.6	< 14.0	< 13.4
11-06-24	< 174.0	< 0.855	< 6.7	< 16.9	< 6.9	< 4.8	< 11.2	< 7.5	< 6.1	< 7.0	< 9.2	< 14.0
Sample Location:	CA-DWA-4 MILLER											
02-14-24	< 192.0	< 0.893	< 3.4	< 8.1	< 3.9	< 4.3	< 8.5	< 4.0	< 4.4	< 4.1	< 5.6	< 7.0
11-08-24	< 174.0	< 0.735	< 6.9	< 14.5	< 8.4	< 9.9	< 12.9	< 8.2	< 9.4	< 8.7	< 12.3	< 13.3
Sample Location:	CA-DWA-5 BRUCKER BROTHERS											
02-09-24	< 194.0	< 0.976	< 2.5	< 5.7	< 2.8	< 3.4	< 5.6	< 3.0	< 2.7	< 2.6	< 6.9	< 8.8
05-06-24	< 195.0	< 0.922	< 4.8	< 12.3	< 5.0	< 5.4	< 11.6	< 5.6	< 5.2	< 6.2	< 12.0	< 11.0
08-05-24	< 174.0	< 0.881	< 4.2	< 9.2	< 4.1	< 3.6	< 9.8	< 4.5	< 4.6	< 4.2	< 10.5	< 9.4
11-06-24	< 175.0	< 0.886	< 3.8	< 11.3	< 4.1	< 5.8	< 9.3	< 5.3	< 5.2	< 4.3	< 9.7	< 8.5
Sample Location:	CA-DWA-7 KRIETE, STAN											
02-09-24	< 194.0	< 0.912	< 3.4	< 8.7	< 3.9	< 4.4	< 7.5	< 4.3	< 3.5	< 4.0	< 9.5	< 10.1
05-08-24	< 191.0	< 0.649	< 5.8	< 12.3	< 6.2	< 6.3	< 13.7	< 5.4	< 6.5	< 6.9	< 13.2	< 10.6
08-05-24	< 175.0	< 0.903	< 6.1	< 13.8	< 5.9	< 7.9	< 10.7	< 6.1	< 6.5	< 7.0	< 13.4	< 14.1
11-07-24	< 175.0	< 0.833	< 4.6	< 8.3	< 4.5	< 4.3	< 8.9	< 4.7	< 5.0	< 4.1	< 8.4	< 7.7
Sample Location:	CA-DWA-8 CURRY											
02-14-24	< 191.0	< 0.883	< 4.0	< 7.3	< 3.6	< 4.2	< 7.4	< 4.4	< 3.8	< 4.6	< 6.1	< 8.6
05-06-24	< 193.0	< 0.853	< 5.4	< 11.5	< 6.5	< 6.6	< 12.0	< 8.1	< 9.1	< 6.9	< 6.6	< 10.8
08-08-24	< 177.0	< 0.884	< 7.4	< 13.2	< 8.5	< 8.3	< 14.2	< 5.6	< 6.9	< 8.5	< 8.1	< 13.3
11-08-24	< 176.0	< 0.796	< 5.0	< 10.8	< 4.4	< 6.0	< 12.4	< 5.4	< 5.0	< 5.0	< 8.8	< 8.7
Sample Location:	CA-DWA-9 CLARDY											
02-14-24	< 195.0	< 0.876	< 6.7	< 15.2	< 6.8	< 8.5	< 14.0	< 7.7	< 6.1	< 7.1	< 13.3	< 12.5
05-08-24	< 189.0	< 0.836	< 6.2	< 13.3	< 6.0	< 5.5	< 15.6	< 7.3	< 7.9	< 7.3	< 13.5	< 11.5
08-05-24	< 173.0	< 0.870	< 6.6	< 12.1	< 5.9	< 5.9	< 13.5	< 7.5	< 5.8	< 6.3	< 13.8	< 14.6
11-08-24	< 176.0	< 0.854	< 4.3	< 7.9	< 5.3	< 6.8	< 8.0	< 3.8	< 4.5	< 4.6	< 9.1	< 7.9
Sample Location:	CA-DWA-PW1 UNIT 1 WELL											
02-14-24	< 198.0	< 0.886	< 5.7	< 14.3	< 6.6	< 5.9	< 13.3	< 7.8	< 6.0	< 7.1	< 11.9	< 10.4
05-07-24	< 193.0	< 0.875	< 6.5	< 16.3	< 6.4	< 6.9	< 13.7	< 7.2	< 6.7	< 6.8	< 10.6	< 11.9
08-05-24	< 170.0	< 0.848	< 5.7	< 12.9	< 6.1	< 5.0	< 11.0	< 5.6	< 5.6	< 5.7	< 10.9	< 14.1
11-08-24	< 176.0	< 0.859	< 6.9	< 13.9	< 7.1	< 7.1	< 11.7	< 6.8	< 6.3	< 6.7	< 10.2	< 10.5
Sample Location:	CA-DWA-V16 WALLENDORF											
02-14-24	< 194.0	< 0.952	< 5.4	< 10.6	< 5.6	< 7.2	< 13.5	< 7.0	< 6.1	< 5.9	< 10.9	< 12.4
05-07-24	< 198.0	< 0.897	< 5.7	< 16.4	< 6.7	< 8.1	< 13.9	< 7.0	< 8.2	< 7.3	< 8.9	< 11.2
08-05-24	< 175.0	< 0.869	< 4.8	< 11.3	< 5.1	< 4.8	< 12.4	< 5.8	< 5.6	< 4.8	< 11.1	< 12.4
11-08-24	< 177.0	< 0.907	< 4.0	< 7.7	< 3.1	< 4.4	< 8.5	< 4.0	< 4.1	< 4.2	< 7.4	< 6.4
Sample Location:	CA-DWA-V-19 DILLON, RICHARD											
02-14-24	< 194.0	< 0.967	< 6.4	< 14.4	< 6.9	< 7.4	< 12.8	< 5.9	< 7.6	< 6.7	< 9.2	< 13.6
05-08-24	< 191.0	< 0.888	< 7.3	< 12.6	< 6.3	< 8.6	< 13.0	< 5.5	< 7.5	< 7.2	< 8.4	< 10.0
08-05-24	< 170.0	< 0.908	< 4.3	< 12.1	< 3.8	< 5.4	< 8.8	< 6.2	< 6.0	< 5.5	< 11.1	< 13.4
11-08-24	< 177.0	< 0.759	< 6.3	< 15.0	< 5.8	< 8.8	< 15.4	< 7.0	< 5.7	< 8.0	< 8.6	< 12.9

Table 8 Well water (non-potable) analysis for tritium and gamma emitters

Units: pCi/L

Collect Date / Sample Location:	H-3 (DIST)	I-131 (LOW LVL	MN-54	FE-59	CO-58	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140	I-131
Project LLDs	200	1	15	30	15	15	30	15	15	18	15	15
Sample Location:	F05											
17-JAN-24	< 183.0	< 0.982	< 6.5	< 13.2	< 7.6	< 7.9	< 11.6	< 9.6	< 8.9	< 7.9	< 13.4	< 13.8
08-APR-24	< 192.0	< 0.844	< 5.1	< 10.2	< 5.3	< 6.0	< 9.8	< 5.5	< 6.2	< 5.7	< 7.8	< 7.5
11-JUL-24	< 193.0	< 0.963	< 4.1	< 11.7	< 4.0	< 6.1	< 8.4	< 4.7	< 5.4	< 3.7	< 6.5	< 7.6
15-OCT-24	< 179.0	< 0.843	< 8.1	< 10.8	< 6.9	< 7.7	< 15.4	< 8.8	< 7.9	< 7.5	< 13.3	< 13.0
Sample Location:	F15											
16-JAN-24	< 190.0	< 0.927	< 5.7	< 15.3	< 7.5	< 7.4	< 13.2	< 9.2	< 6.0	< 5.8	< 12.3	< 14.2
08-APR-24	< 191.0	< 0.745	< 4.4	< 10.3	< 5.3	< 5.2	< 10.8	< 5.5	< 4.6	< 4.6	< 7.2	< 7.7
11-JUL-24	< 194.0	< 0.942	< 5.5	< 8.0	< 4.8	< 6.0	< 9.6	< 6.2	< 4.7	< 5.4	< 10.0	< 8.8
15-OCT-24	< 179.0	< 0.897	< 5.6	< 12.5	< 5.7	< 4.7	< 13.6	< 6.9	< 5.3	< 5.1	< 9.0	< 10.5
Sample Location:	U1MW-004											
07-FEB-24	< 188.0	< 0.792	< 2.3	< 6.7	< 2.7	< 2.7	< 5.1	< 2.7	< 2.5	< 2.5	< 7.9	< 12.2
15-MAY-24	< 193.0	< 0.914	< 5.0	< 9.0	< 4.6	< 4.2	< 10.1	< 4.2	< 4.9	< 4.5	< 13.1	< 13.1
07-AUG-24	< 188.0	< 0.909	< 3.9	< 7.8	< 3.8	< 4.0	< 7.3	< 4.4	< 4.5	< 4.0	< 11.6	< 12.6
Sample Location:	U1MW-005											
21-FEB-24	No Sample*											
15-MAY-24	< 197.0	< 0.928	< 3.9	< 10.7	< 5.5	< 5.1	< 10.1	< 4.8	< 5.6	< 4.9	< 10.9	< 14.2
07-AUG-24	< 189.0	< 0.945	< 4.1	< 8.9	< 4.5	< 5.0	< 9.3	< 5.1	< 4.7	< 4.2	< 10.1	< 13.1
20-NOV-24	< 182.0	< 0.816	< 3.9	< 8.3	< 4.5	< 4.8	< 10.1	< 5.3	< 4.4	< 4.5	< 7.6	< 11.5
Sample Location:	U1MW-006											
07-FEB-24	< 188.0	< 0.930	< 2.2	< 5.9	< 2.6	< 2.7	< 4.8	< 2.8	< 2.4	< 2.3	< 7.7	< 12.0
17-MAY-24	< 193.0	< 0.911	< 5.7	< 12.2	< 5.6	< 5.6	< 12.4	< 6.7	< 5.9	< 4.8	< 12.9	< 14.7
14-AUG-24	< 190.0	< 0.870	< 8.0	< 17.4	< 7.6	< 8.1	< 15.2	< 8.6	< 9.2	< 9.0	< 13.7	< 14.5
19-NOV-24	< 180.0	< 0.921	< 5.3	< 13.3	< 6.0	< 6.3	< 11.2	< 6.0	< 6.6	< 4.8	< 14.4	< 14.1
Sample Location:	U1MW-010											
07-FEB-24	< 185.0	< 0.875	< 1.8	< 4.7	< 2.0	< 1.8	< 3.6	< 2.1	< 2.0	< 1.8	< 5.4	< 10.9
17-MAY-24	< 194.0	< 0.849	< 4.5	< 10.6	< 4.9	< 4.9	< 9.4	< 5.9	< 5.0	< 4.3	< 8.6	< 14.0
29-JUL-24	< 185.0	< 0.866	< 1.1	< 3.0	< 1.3	< 1.3	< 2.3	< 1.3	< 1.3	< 1.2	< 4.5	< 8.7
19-NOV-24	< 186.0	< 0.920	< 4.3	< 10.2	< 5.8	< 4.1	< 10.7	< 5.9	< 5.2	< 5.0	< 11.2	< 14.5
Sample Location:	U1MW-013											
07-FEB-24	< 187.0	< 0.880	< 2.2	< 6.0	< 2.5	< 2.3	< 4.7	< 2.6	< 2.4	< 2.3	< 6.9	< 11.8
22-MAY-24	< 192.0	< 0.523	< 7.5	< 18.5	< 7.9	< 8.7	< 15.0	< 8.3	< 8.0	< 6.9	< 12.4	< 12.5
30-JUL-24	< 189.0	< 0.728	< 1.6	< 4.4	< 1.9	< 1.7	< 3.6	< 2.0	< 1.9	< 1.6	< 6.8	< 11.4
26-NOV-24	< 187.0	< 0.800	< 6.1	< 11.6	< 6.3	< 6.4	< 17.0	< 8.3	< 6.3	< 6.7	< 10.3	< 12.0
Sample Location:	U1MW-014											
06-FEB-24	< 186.0	< 0.979	< 1.7	< 4.2	< 1.8	< 1.7	< 3.3	< 2.1	< 1.7	< 1.7	< 6.1	< 10.2
21-MAY-24	< 194.0	< 0.646	< 5.3	< 13.3	< 6.3	< 7.5	< 13.1	< 6.5	< 5.9	< 6.4	< 11.2	< 11.7
31-JUL-24	< 188.0	< 0.897	< 2.0	< 5.7	< 2.4	< 2.2	< 4.4	< 2.5	< 2.4	< 2.2	< 7.9	< 12.7
15-NOV-24	< 188.0	< 0.940	< 1.7	< 4.1	< 1.9	< 1.7	< 3.3	< 2.0	< 1.9	< 1.7	< 4.5	< 8.1
Sample Location:	U1MW-015											
06-FEB-24	< 184.0	< 0.855	< 1.8	< 4.5	< 1.8	< 2.0	< 3.7	< 2.0	< 2.0	< 1.7	< 5.8	< 9.9
22-MAY-24	< 192.0	< 0.488	< 5.0	< 11.4	< 4.7	< 4.8	< 10.8	< 4.6	< 5.4	< 4.8	< 8.3	< 8.1
15-AUG-24	< 188.0	< 0.647	< 6.6	< 16.0	< 8.8	< 7.9	< 19.8	< 7.9	< 7.1	< 7.7	< 11.8	< 13.9
20-NOV-24	< 192.0	< 0.907	< 4.4	< 11.3	< 6.0	< 5.4	< 11.8	< 6.0	< 5.4	< 5.2	< 10.7	< 14.6
Sample Location:	U1MW-016											
06-FEB-24	< 181.0	< 0.933	< 1.7	< 4.6	< 1.9	< 1.7	< 3.3	< 1.9	< 1.8	< 1.8	< 6.1	< 9.6
15-MAY-24	< 192.0	< 0.996	< 4.5	< 9.9	< 4.3	< 4.5	< 8.7	< 5.0	< 4.1	< 3.2	< 7.8	< 13.6
15-AUG-24	< 190.0	< 0.843	< 6.9	< 13.4	< 8.6	< 6.2	< 17.2	< 8.1	< 8.4	< 8.0	< 11.5	< 12.9
15-NOV-24	< 195.0	< 0.929	< 1.9	< 5.0	< 2.1	< 2.0	< 3.8	< 2.3	< 2.2	< 2.0	< 6.4	< 9.5
Sample Location:	U1MW-017											
06-FEB-24	< 184.0	< 0.779	< 1.8	< 4.7	< 1.9	< 1.8	< 4.0	< 2.1	< 1.9	< 1.9	< 6.4	< 10.0
21-MAY-24	< 191.0	< 0.552	< 7.0	< 14.8	< 5.3	< 5.6	< 13.4	< 6.3	< 5.9	< 6.9	< 11.8	< 11.9
31-JUL-24	< 194.0	< 0.749	< 1.8	< 4.9	< 2.0	< 1.9	< 4.0	< 2.2	< 1.9	< 1.9	< 6.9	< 11.9
15-NOV-24	< 197.0	< 0.822	< 1.2	< 3.2	< 1.4	< 1.4	< 2.7	< 1.5	< 1.2	< 1.2	< 6.4	< 12.2
Sample Location:	U1MW-018											
06-FEB-24	< 185.0											
17-MAY-24	< 195.0											
31-JUL-24	< 186.0											
15-NOV-24	< 188.0											
Sample Location:	U1MW-019											
06-FEB-24	< 192.0											
21-MAY-24	< 193.0											
31-JUL-24	< 188.0											
15-NOV-24	< 185.0											
Sample Location:	U1MW-020											
06-FEB-24	< 190.0											
21-MAY-24	< 191.0											
09-AUG-24	< 200.0											
15-NOV-24	< 189.0											

Table 8 Well water (non-potable) analysis for tritium and gamma emitters

Units: pCi/L

Collect Date	H-3 (DIST)	I-131 (LOW LVL	MN-54	FE-59	CO-58	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140	I-131
Project LLDs	200	1	15	30	15	15	30	15	15	18	15	15
Sample Location:	U1MW-031											
20-FEB-24	< 188.0											
10-MAY-24	321.0 +/- 133.0											
29-JUL-24	< 188.0											
25-NOV-24	< 188.0											
Sample Location:	U1MW-034											
20-FEB-24	< 189.0											
23-MAY-24	< 191.0											
29-JUL-24	< 199.0											
25-NOV-24	< 185.0											
Sample Location:	U1MW-036											
20-FEB-24	< 190.0											
23-MAY-24	< 195.0											
16-AUG-24	< 196.0											
25-NOV-24	< 185.0											
Sample Location:	U1MW-039											
07-FEB-24	< 187.0											
22-MAY-24	< 195.0											
07-AUG-24	< 192.0											
19-NOV-24	< 185.0											
Sample Location:	U1MW-047											
21-FEB-24	No Sample*											
15-MAY-24	< 194.0											
16-AUG-24	No Sample*											
Sample Location:	U1MW-058											
20-FEB-24	< 187.0											
10-MAY-24	< 191.0											
07-AUG-24	< 189.0											
25-NOV-24	< 189.0											
Sample Location:	U1MW-059											
07-FEB-24	< 187.0											
22-MAY-24	< 191.0											
07-AUG-24	< 190.0											
19-NOV-24	< 189.0											
Sample Location:	U1MW-937B											
17-JAN-24	< 189.0	< 0.872	< 5.2	< 15.8	< 7.5	< 6.0	< 17.5	< 9.4	< 8.5	< 8.8	< 13.8	< 12.3
14-FEB-24	< 199.0	< 0.967	< 4.7	< 11.9	< 5.4	< 5.8	< 10.6	< 5.2	< 5.2	< 5.2	< 9.0	< 11.6
11-MAR-24	< 192.0	< 0.831	< 5.8	< 12.3	< 6.2	< 7.0	< 9.9	< 5.8	< 5.3	< 4.8	< 10.5	< 8.1
15-APR-24	< 193.0	< 0.854	< 6.0	< 12.6	< 5.7	< 6.6	< 10.8	< 5.4	< 6.9	< 4.8	< 9.2	< 8.2
14-MAY-24	< 193.0	< 0.782	< 6.9	< 14.2	< 7.0	< 6.3	< 13.3	< 7.3	< 7.1	< 6.5	< 12.7	< 10.2
10-JUN-24	< 188.0	< 0.897	< 8.4	< 14.7	< 8.5	< 8.8	< 14.2	< 9.3	< 8.4	< 6.7	< 9.6	< 13.6
17-JUL-24	< 185.0	< 0.931	< 6.3	< 15.9	< 7.8	< 6.4	< 13.0	< 7.6	< 7.8	< 6.3	< 10.3	< 11.5
13-AUG-24	< 187.0	< 0.850	< 6.7	< 13.8	< 6.6	< 6.5	< 15.8	< 6.4	< 6.9	< 6.4	< 14.0	< 9.0
17-SEP-24	< 189.0	< 0.945	< 4.6	< 9.9	< 3.7	< 5.0	< 11.6	< 5.1	< 4.4	< 4.9	< 9.2	< 10.5
14-OCT-24	< 188.0	< 0.870	< 7.3	< 12.5	< 6.8	< 7.3	< 16.7	< 9.2	< 9.2	< 7.3	< 10.9	< 9.8
12-NOV-24	< 191.0	< 0.895	< 5.4	< 11.4	< 5.2	< 5.7	< 10.3	< 6.6	< 6.4	< 4.9	< 10.7	< 8.7
16-DEC-24	< 176.0	< 0.881	< 10.3	< 23.1	< 9.1	< 11.6	< 19.9	< 10.4	< 10.3	< 11.8	< 13.6	< 12.6
Sample Location:	U1MW-937D											
17-JAN-24	248.0 +/- 129.0	< 0.784	< 6.1	< 14.0	< 7.6	< 7.1	< 19.8	< 7.6	< 7.9	< 7.1	< 14.5	< 12.4
14-FEB-24	< 193.0	< 0.918	< 4.3	< 10.7	< 5.7	< 4.8	< 9.2	< 5.0	< 5.4	< 4.6	< 9.1	< 7.4
11-MAR-24	< 190.0	< 0.861	< 7.9	< 15.1	< 6.1	< 7.1	< 14.5	< 7.9	< 6.9	< 6.4	< 10.9	< 12.6
16-APR-24	< 193.0	< 0.894	< 6.6	< 17.2	< 8.0	< 9.8	< 15.9	< 8.5	< 7.7	< 7.2	< 10.4	< 11.3
14-MAY-24	< 195.0	< 0.946	< 6.5	< 12.3	< 6.8	< 6.3	< 9.8	< 7.5	< 6.9	< 6.5	< 8.8	< 11.2
10-JUN-24	< 186.0	< 0.854	< 7.8	< 15.8	< 8.2	< 7.9	< 15.5	< 8.0	< 6.8	< 5.5	< 11.0	< 13.9
18-JUL-24	< 191.0	< 0.745	< 6.7	< 10.8	< 8.2	< 7.4	< 14.2	< 6.6	< 7.1	< 5.4	< 8.8	< 11.6
13-AUG-24	< 190.0	< 0.773	< 5.2	< 11.3	< 6.4	< 7.9	< 13.5	< 6.6	< 7.3	< 6.5	< 9.9	< 8.2
17-SEP-24	< 186.0	< 0.902	< 6.6	< 12.4	< 6.3	< 7.8	< 12.3	< 6.4	< 5.9	< 6.0	< 11.5	< 11.2
14-OCT-24	< 191.0	< 0.835	< 6.8	< 11.8	< 5.5	< 8.7	< 15.2	< 8.2	< 7.0	< 6.6	< 9.2	< 8.8
12-NOV-24	< 187.0	< 0.891	< 4.7	< 11.4	< 4.8	< 5.3	< 11.0	< 5.0	< 3.9	< 3.9	< 6.9	< 5.8
16-DEC-24	< 179.0	< 0.926	< 8.8	< 17.1	< 9.5	< 10.8	< 18.1	< 11.6	< 9.6	< 8.7	< 14.1	< 13.2
Sample Location:	U1MW-939R											
17-JAN-24	919.0 +/- 169.0	< 0.716	< 8.0	< 15.7	< 7.0	< 6.6	< 19.0	< 6.9	< 8.8	< 7.1	< 12.7	< 14.3
14-FEB-24	919.0 +/- 174.0	< 0.933	< 7.3	< 15.2	< 5.7	< 8.6	< 13.5	< 7.3	< 7.6	< 6.3	< 11.1	< 11.5
11-MAR-24	747.0 +/- 160.0	< 0.845	< 4.5	< 11.9	< 6.4	< 6.4	< 12.0	< 6.2	< 5.2	< 6.5	< 11.7	< 9.8
16-APR-24	819.0 +/- 165.0	< 0.842	< 6.7	< 14.1	< 4.8	< 7.6	< 12.8	< 6.1	< 6.8	< 6.6	< 11.2	< 13.1
14-MAY-24	688.0 +/- 159.0	< 0.833	< 6.3	< 12.5	< 7.4	< 6.2	< 12.4	< 6.0	< 8.1	< 6.7	< 10.2	< 11.0
10-JUN-24	629.0 +/- 148.0	< 0.858	< 6.7	< 12.4	< 7.7	< 4.7	< 14.9	< 8.7	< 7.1	< 7.6	< 13.7	< 11.6
18-JUL-24	647.0 +/- 149.0	< 0.745	< 8.8	< 13.0	< 5.6	< 4.8	< 16.3	< 9.2	< 7.8	< 7.7	< 11.6	< 12.1
13-AUG-24	718.0 +/- 154.0	< 0.922	< 4.9	< 13.1	< 6.5	< 7.6	< 13.9	< 6.4	< 7.3	< 6.8	< 7.8	< 8.7
17-SEP-24	605.0 +/- 142.0	< 0.835	< 5.9	< 14.8	< 6.8	< 6.2	< 11.0	< 6.7	< 6.5	< 6.2	< 13.4	< 10.7
14-OCT-24	584.0 +/- 143.0	< 0.878	< 6.1	< 15.1	< 7.0	< 6.9	< 20.3	< 9.2	< 8.0	< 8.0	< 10.7	< 9.4
12-NOV-24	573.0 +/- 148.0	< 0.952	< 5.4	< 9.6	< 5.3	< 6.6	< 14.4	< 5.9	< 5.6	< 6.5	< 9.9	< 8.0
16-DEC-24	315.0 +/- 124.0	< 0.941	< 11.5	< 17.8	< 8.3	< 8.2	< 16.8	< 9.7	< 7.9	< 7.1	< 11.5	< 10.6

Table 8 Well water (non-potable) analysis for tritium and gamma emitters

Units: pCi/L

	H-3 (DIST)	I-131 (LOW LVL	MN-54	FE-59	CO-58	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140	I-131
Project LLDs	200	1	15	30	15	15	30	15	15	18	15	15
Collect Date / Sample Location:	U1MW-940											
16-JAN-24	212.0 +/- 125.0	< 0.882	< 6.6	< 12.0	< 7.1	< 8.3	< 12.4	< 7.5	< 8.3	< 7.7	< 6.8	< 11.9
14-FEB-24	< 194.0	< 0.983	< 6.1	< 13.8	< 6.5	< 6.3	< 17.8	< 8.1	< 6.9	< 7.2	< 8.5	< 14.2
11-MAR-24	< 188.0	< 0.860	< 5.5	< 13.9	< 5.8	< 5.5	< 15.5	< 6.5	< 6.9	< 7.4	< 10.8	< 10.4
15-APR-24	< 194.0	< 0.735	< 6.4	< 14.3	< 7.9	< 7.4	< 13.9	< 7.3	< 7.2	< 6.9	< 10.3	< 11.3
14-MAY-24	< 188.0	< 0.825	< 5.4	< 10.9	< 6.0	< 4.6	< 11.2	< 5.2	< 4.8	< 4.6	< 7.0	< 6.9
10-JUN-24	< 186.0	< 0.965	< 7.1	< 12.3	< 9.0	< 6.1	< 14.8	< 8.4	< 8.0	< 8.4	< 10.3	< 11.4
17-JUL-24	< 185.0	< 0.845	< 5.6	< 8.3	< 5.9	< 4.7	< 11.4	< 7.1	< 6.7	< 5.8	< 8.7	< 9.3
13-AUG-24	< 190.0	< 0.754	< 8.1	< 14.8	< 6.1	< 6.9	< 14.3	< 5.5	< 6.0	< 7.3	< 11.5	< 10.8
17-SEP-24	< 191.0	< 0.891	< 5.3	< 11.9	< 4.7	< 6.4	< 12.9	< 5.8	< 5.9	< 6.3	< 10.7	< 10.7
14-OCT-24	< 187.0	< 0.793	< 6.9	< 12.3	< 6.9	< 7.4	< 20.6	< 8.9	< 7.8	< 7.8	< 11.3	< 10.0
13-NOV-24	189.0 +/- 123.0	< 0.939	< 4.9	< 11.4	< 5.6	< 5.8	< 13.1	< 6.1	< 6.5	< 6.0	< 10.0	< 8.2
16-DEC-24	181.0 +/- 117.0	< 0.912	< 8.6	< 12.3	< 7.3	< 8.7	< 12.7	< 7.7	< 8.3	< 6.7	< 8.1	< 10.3
Sample Location:	U1MW-941											
16-JAN-24	< 192.0	< 0.835	< 6.4	< 13.6	< 6.9	< 5.2	< 14.7	< 9.3	< 8.0	< 7.0	< 13.9	< 13.7
14-FEB-24	< 194.0	< 0.901	< 7.8	< 14.9	< 6.8	< 7.1	< 11.1	< 10.8	< 9.7	< 7.9	< 11.2	< 13.5
11-MAR-24	< 194.0	< 0.831	< 7.1	< 15.8	< 6.9	< 8.9	< 18.0	< 8.1	< 6.8	< 7.1	< 11.5	< 9.7
15-APR-24	< 196.0	< 0.825	< 6.9	< 15.3	< 6.3	< 9.4	< 14.7	< 8.6	< 6.4	< 6.3	< 13.0	< 12.4
14-MAY-24	< 193.0	< 0.854	< 7.0	< 15.8	< 6.0	< 7.4	< 13.2	< 8.0	< 7.1	< 6.8	< 10.0	< 9.3
11-JUN-24	< 188.0	< 0.795	< 7.6	< 15.4	< 7.3	< 8.7	< 17.9	< 10.8	< 9.5	< 8.6	< 14.3	< 13.0
18-JUL-24	< 193.0	< 0.818	< 7.5	< 11.4	< 8.0	< 6.7	< 13.2	< 7.9	< 7.4	< 7.2	< 14.3	< 12.0
13-AUG-24	< 187.0	< 0.842	< 6.2	< 13.1	< 6.4	< 8.2	< 12.1	< 7.6	< 7.2	< 6.8	< 11.4	< 10.8
17-SEP-24	< 188.0	< 0.816	< 6.0	< 13.3	< 4.0	< 6.1	< 12.9	< 7.7	< 7.2	< 5.8	< 13.7	< 13.5
14-OCT-24	< 191.0	< 0.832	< 8.4	< 13.4	< 7.3	< 9.0	< 16.3	< 10.1	< 7.5	< 8.1	< 11.0	< 10.4
13-NOV-24	< 190.0	< 0.397	< 5.1	< 12.9	< 4.2	< 6.6	< 13.5	< 6.4	< 6.2	< 5.1	< 9.9	< 9.6
16-DEC-24	< 186.0	< 0.868	< 7.0	< 16.5	< 7.5	< 8.4	< 22.7	< 11.5	< 10.1	< 7.7	< 14.1	< 11.8
Sample Location:	U1MW-GWS											
17-JAN-24	217.0 +/- 129.0	< 0.796	< 7.2	< 9.3	< 4.6	< 5.5	< 15.5	< 8.3	< 8.4	< 8.0	< 12.6	< 10.4
14-FEB-24	217.0 +/- 129.0	< 0.929	< 4.3	< 11.0	< 4.1	< 4.8	< 10.4	< 5.0	< 5.5	< 4.4	< 6.5	< 9.2
11-MAR-24	< 193.0	< 0.846	< 6.2	< 9.7	< 5.4	< 6.7	< 15.0	< 7.1	< 5.8	< 7.1	< 9.8	< 10.0
16-APR-24	244.0 +/- 128.0	< 0.597	< 6.9	< 17.2	< 8.2	< 7.7	< 15.0	< 6.6	< 8.3	< 8.0	< 11.0	< 12.0
14-MAY-24	531.0 +/- 142.0	< 0.871	< 6.7	< 11.9	< 7.0	< 6.3	< 15.2	< 6.5	< 5.6	< 6.0	< 12.0	< 8.5
10-JUN-24	902.0 +/- 170.0	< 0.797	< 5.8	< 12.8	< 5.8	< 7.5	< 11.9	< 6.5	< 6.2	< 6.4	< 14.3	< 12.1
17-JUL-24	756.0 +/- 158.0	< 0.870	< 4.9	< 9.9	< 4.3	< 6.2	< 11.0	< 5.5	< 4.4	< 4.1	< 8.2	< 7.6
13-AUG-24	220.0 +/- 124.0	< 0.820	< 6.1	< 15.0	< 10.1	< 6.8	< 13.6	< 6.6	< 8.9	< 6.7	< 9.2	< 11.3
17-SEP-24	< 181.0	< 0.952	< 4.9	< 10.8	< 4.9	< 5.5	< 12.1	< 6.0	< 5.2	< 5.0	< 12.5	< 9.5
14-OCT-24	< 195.0	< 0.877	< 7.3	< 18.1	< 8.6	< 8.8	< 18.8	< 11.2	< 9.0	< 8.3	< 10.8	< 10.2
12-NOV-24	574.0 +/- 139.0	< 0.681	< 4.2	< 7.2	< 4.9	< 5.0	< 8.2	< 5.2	< 4.3	< 4.4	< 7.9	< 7.5
16-DEC-24	< 178.0	< 0.839	< 8.2	< 16.7	< 8.4	< 10.1	< 17.2	< 9.9	< 10.5	< 8.7	< 13.6	< 11.2
Sample Location:	U1MW-ISFSI											
20-FEB-24	< 188.0											
23-MAY-24	< 193.0											
16-AUG-24	< 184.0											
26-NOV-24	< 188.0											
Sample Location:	U2MW-16											
21-FEB-24	< 190.0											
15-MAY-24	< 194.0											
15-AUG-24	< 194.0											
20-NOV-24	< 187.0											
Sample Location:	U2MW-2S											
21-FEB-24	< 186.0											
23-MAY-24	< 193.0											
15-AUG-24	< 200.0											
20-NOV-24	< 183.0											
Sample Location:	U2MW-5S											
21-FEB-24	< 187.0											
15-MAY-24	< 195.0											
15-AUG-24	< 192.0											
20-NOV-24	< 189.0											
Sample Location:	U2MW-8											
20-FEB-24	< 186.0											
23-MAY-24	< 195.0											
16-AUG-24	< 194.0											
25-NOV-24	< 187.0											

*No Sample - Please refer to Section 1.0 List of Missing Sample

Table 9 Shoreline sediment analysis for gamma emitters

Collection: Semiannually Units: pCi/kg dry

	K-40	MN-54	FE-59	CO-58	CO-60	ZRNB-95	CS-134	CS-137	BALA140
Project LLDs	-	-	-	-	-	-	150	180	-
Collect Date									
Sample Location	CA-AQS-A-SHORELINE								
03-19-24	12170 +/- 1909	< 106.7	< 283.9	< 109.7	< 119.9	< 129.5	< 122.9	< 124.9	< 231.7
10-16-24	15090 +/- 1494	< 56.2	< 160.5	< 61.4	< 62.8	< 64.6	< 76.9	< 55.2	< 150.0
Sample Location	CA-AQS-C-SHORELINE								
03-19-24	13030 +/- 1794	< 72.3	< 153.7	< 54.2	< 78.7	< 91.3	< 76.0	< 74.2	< 185.1
10-16-24	13520 +/- 1800	< 88.6	< 214.5	< 105.0	< 114.5	< 118.8	< 112.5	< 103.1	< 220.1

Table 10 Fish analysis results for gamma emitters

Collection: Semiannually Units: pCi/kg wet

Collect Date	Sample Type	K-40	MN-54	FE-59	CO-58	CO-60	ZN-65	CS-134	CS-137
Project LLDs		-	130	260	130	130	260	130	150
Sample Location: CA-AQF-A-CC									
03-19-24	Common Carp CC	3079 +/- 1015	< 71.8	< 220.5	< 68.8	< 82.1	< 192.2	< 100.1	< 86.8
10-16-24	Common Carp CC	2697 +/- 1134	< 74.8	< 153.2	< 77.2	< 68.7	< 136.2	< 60.8	< 63.6
Sample Location: CA-AQF-A-FD									
03-19-24	Freshwater Drum FD	2797 +/- 937.9	< 55.1	< 148.3	< 59.4	< 24.3	< 121.9	< 70.2	< 53.5
10-16-24	Freshwater Drum FD	2750 +/- 921.2	< 79.8	< 179.2	< 87.9	< 88.2	< 193.0	< 57.9	< 76.8
Sample Location: CA-AQF-A-RC									
03-19-24	River Carpsucker RC	3410 +/- 1062	< 47.1	< 140.1	< 74.7	< 112.0	< 130.2	< 62.1	< 51.7
10-16-24	River Carpsucker RC	3210 +/- 780.1	< 48.5	< 127.7	< 45.4	< 77.8	< 105.2	< 57.2	< 49.7
Sample Location: CA-AQF-A-SB									
03-19-24	Smallmouth Buffalo SB	2487 +/- 926.0	< 89.1	< 224.5	< 100.5	< 74.0	< 161.9	< 86.1	< 71.3
10-16-24	Smallmouth Buffalo SB	2938 +/- 922.0	< 43.2	< 180.0	< 51.1	< 76.9	< 129.2	< 48.5	< 51.7
Sample Location: CA-AQF-A-SC									
03-19-24	Silver Carp SC	4058 +/- 1070	< 58.7	< 154.4	< 66.8	< 43.6	< 169.2	< 49.0	< 60.6
10-16-24	Silver Carp SC	4121 +/- 1024	< 52.2	< 120.6	< 64.0	< 81.5	< 128.7	< 44.3	< 51.0
Sample Location: CA-AQF-C-CC									
03-19-24	Common Carp CC	3220 +/- 1101	< 47.3	< 150.6	< 64.7	< 69.9	< 124.5	< 66.1	< 52.7
10-16-24	Common Carp CC	2537 +/- 607.6	< 37.6	< 82.3	< 45.8	< 42.0	< 82.4	< 44.8	< 42.0
Sample Location: CA-AQF-C-FD									
03-19-24	Freshwater Drum FD	2590 +/- 725.1	< 50.2	< 156.6	< 58.7	< 65.7	< 144.0	< 43.6	< 52.8
10-16-24	Freshwater Drum FD	3029 +/- 865.7	< 64.1	< 138.7	< 66.0	< 67.8	< 161.9	< 62.9	< 63.5
Sample Location: CA-AQF-C-RC									
03-19-24	River Carpsucker RC	2761 +/- 757.6	< 61.7	< 132.5	< 61.2	< 52.4	< 121.2	< 67.1	< 58.1
10-16-24	River Carpsucker RC	3063 +/- 740.5	< 40.4	< 104.0	< 52.9	< 64.9	< 107.7	< 41.9	< 40.6
Sample Location: CA-AQF-C-SB									
03-19-24	Smallmouth Buffalo SB	2983 +/- 949.1	< 92.4	< 176.4	< 68.3	< 73.1	< 183.8	< 80.2	< 74.0
10-16-24	Smallmouth Buffalo SB	2996 +/- 892.4	< 42.3	< 99.7	< 45.9	< 46.8	< 125.1	< 44.8	< 39.8
Sample Location: CA-AQF-C-SC									
03-19-24	Silver Carp SC	3439 +/- 1260	< 71.7	< 191.2	< 90.1	< 77.5	< 196.3	< 84.5	< 80.1
10-16-24	Silver Carp SC	1518 +/- 941.7	< 58.1	< 121.6	< 52.4	< 45.8	< 129.4	< 58.0	< 59.2

Table 11a. Direct Radiation (quarterly exposure)

Location	Gamma Dose (mrem/90 days)			
	QTR 1	QTR 2	QTR 3	QTR 4
CA-IDM-1A	15.68	15.88	14.39	15.15
CA-IDM-3*	15.68	15.01	15.24	14.88
CA-IDM-5	13.31	12.99	12.71	12.85
CA-IDM-6	14.65	13.76	15.11	14.79
CA-IDM-7	15.19	14.90	15.10	14.67
CA-IDM-9	14.39	13.76	13.92	13.42
CA-IDM-10	16.53	15.87	15.79	15.52
CA-IDM-11A	15.81	15.70	15.62	15.64
CA-IDM-14	14.94	15.37	14.98	14.76
CA-IDM-17	14.29	14.07	13.75	14.20
CA-IDM-18A	14.75	14.70	14.93	14.50
CA-IDM-20	15.30	15.00	14.58	14.92
CA-IDM-21	14.94	14.62	14.77	14.57
CA-IDM-22A*	12.59	11.97	11.68	11.83
CA-IDM-23	16.18	15.37	16.25	15.60
CA-IDM-26(C)	10.28	10.26	10.34	10.01
CA-IDM-27(C)	16.65	15.83	16.09	15.56
CA-IDM-30A	14.89	14.72	15.19	13.75
CA-IDM-31A	16.07	15.66	15.71	15.41
CA-IDM-32	16.28	15.66	15.83	15.65
CA-IDM-32A	14.68	14.28	14.63	14.45
CA-IDM-33	15.08	15.00	15.17	14.73
CA-IDM-34	14.10	14.63	14.99	14.75
CA-IDM-35	12.78	14.01	14.07	13.65
CA-IDM-36	13.58	14.57	13.71	13.23
CA-IDM-37	14.70	15.04	15.15	13.74
CA-IDM-38	10.38	10.56	10.07	10.44
CA-IDM-39	14.82	14.80	14.20	14.10
CA-IDM-39A	14.28	14.97	14.29	14.36
CA-IDM-40	15.19	15.15	14.90	15.52
CA-IDM-41	14.22	14.37	13.87	13.44
CA-IDM-42	12.75	13.29	12.97	12.10
CA-IDM-43	14.69	15.04	14.87	14.10
CA-IDM-44	14.57	15.51	15.07	14.29
CA-IDM-45*	14.08	13.52	14.44	12.57
CA-IDM-46*	15.51	15.82	14.97	14.31
CA-IDM-47	14.45	15.26	13.98	15.27
CA-IDM-48	15.38	15.88	16.02	15.44
CA-IDM-49	14.04	13.99	14.49	13.42
CA-IDM-50	14.54	14.55	15.01	14.27
CA-IDM-51A	16.52	14.93	16.87	14.81
CA-IDM-52	15.82	14.68	16.91	14.38
CA-IDM-60(C)*	15.01	14.63	15.82	14.65
CA-IDM-61*	14.72	13.22	13.72	12.97

* ISFSI monitoring

(C) Controls

Table 11b. Direct Radiation Neutron (quarterly exposure)

Location	Neutron Dose (mrem/90 days)			
	QTR 1	QTR 2	QTR 3	QTR 4
CA-IDM-60N (C)	0.0 ± 1.0	0.0 ± 1.0	0.0 ± 2.2	0.0 ± 1.2
CA-IDM-61N	0.0 ± 0.9	0.0 ± 0.7	0.0 ± 1.1	0.0 ± 1.0
CA-IDM-62N	0.0 ± 1.8	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.7
CA-IDM-63N	0.0 ± 0.8	0.0 ± 0.8	0.0 ± 0.9	0.0 ± 0.7
CA-IDM-64N	0.0 ± 1.7	0.0 ± 0.6	0.0 ± 1.1	0.0 ± 3.7

(C) Controls