APPENDIX I
SITE SOIL BACKGROUND ANAYSIS

APPENDIX I: SITE SOIL BACKGROUND ANALYSIS

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I.1 INTRODUCTION

This appendix presents the results of a statistical comparison of metals and radionuclides in OU-1 soils with respect to background concentrations. Ramboll originally prepared a Soil Background Evaluation Report to summarize the results of the soil background concentration study undertaken as part of the Remedial Investigation (RI) and to evaluate Site soils using this new background data set. That report was submitted to the Nevada Division of Environmental Protection (NDEP) on August 30, 2019. NDEP issued a comment letter on October 24, 2019 that recommended splitting the report into two deliverables. A meeting was held on December 10, 2019 with the Trust, NDEP, and consultants to the Trust and NDEP to discuss the comments, during which it was agreed that the report would be split in two deliverables. The first of the revised deliverables was the Soil Background Data Set Summary Report, Revision 2 ("Data Set Summary Report"; Ramboll 2021b)[1]. That report summarized the various background data sets for use in the RI and associated risk assessments and detailed the incorporation of results from the soil background concentration study (Ramboll Environ 2017) into the Upper Muddy Creek formation (UMCf) background data set. This appendix comprises the second of the revised deliverables.

The Site soil background analysis is part of the secondary soil COPC screening process detailed in Section 7.1.2 of the main report. As such, a background analysis is required only for those metals and radionuclides that were not screened out during the initial screening process detailed in Section 7.1.1. These metals and radionuclides are respectively detailed in Sections 7.1.1.2 and 7.1.1.3. Background data sets, which are summarized in the Data Set Summary Report, exist for all these metals and radionuclides except for thorium-234. This background analysis will therefore include antimony, arsenic, barium, boron, cadmium, chromium (hexavalent), cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, molybdenum, nickel, niobium, palladium, selenium, silver, strontium, thallium, tungsten, uranium (total), zirconium, radium-226, radium-228, thorium-228, thorium-230, thorium-232, uranium-235, and uranium-238.

[1] The original version of the Soil Background Dataset Summary Report was submitted on February 27, 2020 (Ramboll 2020). NDEP issued a comment letter on December 2, 2020. These comments were addressed in Revision 1, dated February 9, 2021 (Ramboll 2021a). NDEP issued a second comment letter on March 2, 2021. These comments were addressed in Revision 2, dated March 24, 2021 (Ramboll 2021b).

I.2 COMPARISON OF SITE SOIL DATA TO BACKGROUND DATA SETS

In this section, unsaturated OU-1 soil data is compared to the appropriate background data sets to determine whether the OU-1 data exceed background levels.

I.2.1 Background Data Set Applicability

Within the top ten feet of alluvial soil, data from the northern portion of the Site are compared to the BRC/TIMET data set and data from the southern portion of the Site are compared to the RZ-A background data set, as noted in the Data Set Summary Report.` Figure I-1a shows the soil sample locations within the top ten feet of alluvial soil and which portion of the Site each location is in. For the analytes lithium, niobium, palladium, zirconium, radium-226, radium-228, thorium-228, thorium-230, and thorium-232, data from the entire Site are compared to the BRC/TIMET data set due to a lack of background data in the RZ-A data set. Statistical summaries of the applicable Site data to be compared to the BRC/TIMET data set and the RZ-A data set are presented in Tables I-1a and I-1b, respectively.

Geologic contact information and the groundwater elevations presented in the 2018 Annual Performance Report (Ramboll 2018) were used to determine which soil samples were in the vadose zone, and whether the soil samples were part of the alluvium or UMCf if a specific UMCf contact depth was not available. This approach was used because of incomplete interpretations of lithology at some locations. Data from the vadose zone alluvium below ten feet are compared to the BRC deep McCullough Alluvium data set and data from the vadose zone UMCf-fg1 are compared to the 70-sample combined UMCf background data set (including 24 samples from BRC in 2008 and 46 samples from the NERT soil background concentration study), as noted in the Data Set Summary Report. Figures I-1b and I-1c show the vadose zone soil sample locations within the alluvium below ten feet and the UMCf-fg1 lithologic units, respectively. Statistical summaries of the applicable Site data to be compared to the BRC deep McCullough Alluvium data set and the UMCf background data set are presented in Tables I-1c and I-1d, respectively.

Statistical summaries of the BRC/TIMET, RZ-A, BRC deep McCullough Alluvium, and UMCf background data sets are presented in the Data Set Summary Report but are reproduced here as Tables I-1e, I-1f, I-1g, and I-1h, respectively.

I.2.2 Statistical Approach

The primary purpose of the background comparison is to evaluate whether metals and radionuclides are present on-Site at concentrations above naturally occurring levels. To determine whether a Site data set exceeds the applicable background data set, the suite of statistical tests known as Gilbert's Toolbox was used (NDEP 2009). The tests that comprise Gilbert's Toolbox are the *t*-test, the Gehan test, the quantile test, and the slippage test.

- The t-test tests for equality of the means of two data sets ("reference data set" and "tested data set"), though it requires that the data be distributed normally in both data sets. To accommodate multiply-censored data, the Shapiro-Francia goodness-of-fit test was used to determine normality or log-normality. Data were determined to be normal or log-normal only if both the reference data set and the tested data set were determined to be normal or log-normal. If data were determined to be non-parametric, the t-test results were not used to evaluate consistency between data sets. A substitution method for censored data is required for t-test evaluation, and therefore a value of half the detection limit was used for censored metals data.

The Gehan test is a modification of the Wilcoxon Rank Sum test that incorporates arbitrary censoring via a ranking scheme called Gehan ranking. It is a non-parametric test that uses the detection limit for censored metals data, and tests for a shift between the data sets using the entire set.

The quantile test is a non-parametric test that tests for the equality of a given quantile of the two data sets. The quantile test statistically compares the values in each data set above the specified quantile. Any quantile can be used if sufficient data are available; for this study, the 80th percentile was used. The Gehan ranking scheme was used to accommodate censored metals data.

The slippage test is a non-parametric test that compares the extreme tails of the two data sets. This test statistic relies on the maximum concentration of the reference data set and is therefore not robust to outliers in that data set. Censored metals data are accommodated by removing censored data in the tested data set with detection limits greater than the maximum detected concentration in the reference data set and substituting the detection limit for all other censored metals data.

One-sided versions of these tests were used with the Site data set as the tested data set and the background data as the reference data set. The null hypothesis for each of the tests was that the concentrations in the tested data set do not exceed those in the reference data set.

This hypothesis was rejected if the *p*-value of the test was less than the specified significance level. Usually these tests are evaluated against a default significance level of 0.05. However, because these tests are being performed simultaneously, a lower significance level of 0.025 is used for each individual test to approximate a significance level of 0.05 for the full suite of tests, as recommended by NDEP (2009). If any individual test resulted in a *p*-value less than 0.025, the tested data set was determined to be inconsistent with the reference data set. Because these are one-sided tests, a *p*-value less than 0.025 indicates that the hypothesis that the tested data set does not exceed the reference data set is rejected.

All Site and background samples, whether normal samples or field duplicates, are treated as statistically independent, consistent with the methodology recommended by NDEP (NDEP 2008).

Table I-2a presents the results of the Gilbert’s Toolbox statistical evaluations between the Site and background data sets for each analyte.

I.2.3 Statistical Comparison Evaluation and Results

This section presents the results of the statistical comparison evaluation of the four soil units (Top Ten Feet OU-1 South, Top Ten Feet OU-1 North, Deep Alluvium, and UMCf) to their respective background data sets for each metal and radionuclide. The results of the statistical tests for each analyte are presented in Table I-2a. These results are the starting point for the evaluations of each metal and radionuclide. The results of the statistical tests are generally supported by boxplots and quantile-quantile plots of the data sets used for the Gilbert’s Toolbox evaluation. These plots are introduced in the individual evaluations below.

For a small subset of comparisons, the figures show that the results of the statistical tests may be anomalous. When this is the case, professional judgement is used to determine whether the result of the statistical test should be overruled. This may be because a pattern of outlier concentrations indicates a true exceedance of background even though the statistical tests indicate consistency with the background data set. It may also be because the similarity between the Site and background data set indicates true consistency with background even if the statistical tests indicate exceedance of the background data set. Additional figures are introduced in the individual evaluations below, if necessary, to support these conclusions.

For an analyte to be excluded as a COPC as a result of comparison to background, Site concentrations in all three vadose zone lithologies (Top Ten Feet, Deep Alluvium, and UMCf) must be consistent with background. For the top ten feet of alluvium to be consistent with background, concentrations in both the northern and southern portions of OU-1 must be independently consistent with the respective background data sets, with the exceptions of lithium, niobium, palladium, zirconium, and all radionuclides. These analytes use a combined data set across OU-1 in the top ten feet and are compared only to the BRC/TIMET data set due to a lack of background data from RZ-A.

Antimony

The statistical test results for antimony show that the Deep Alluvium and UMCf comparisons exceed background. The statistical test results for the Top Ten Feet comparisons were inconclusive due to a small proportion of detections in the RZ-A background data set and a small proportion of detections in the northern portion of OU-1. Figure I-2 shows OU-1 data with low detected concentrations and a high proportion of non-detects, some of which have detection limits higher than all detects in the respective data sets. This is likely due to variances in analytical conditions as the OU-1 soil data were collected over a 12-year timeframe. It is therefore difficult to conclusively determine that OU-1 antimony exceeds background in all vadose zone lithologies or that it is consistent with any vadose zone lithology. However, outlier detected concentrations are clearly seen in the top ten feet of soil in the northern portion of OU-1. Based on these results, antimony cannot be excluded as a COPC as a result of comparison to background.

Arsenic

The statistical test results for arsenic show that the Top Ten Feet OU-1 North, Top Ten Feet OU-1 South, and Deep Alluvium comparisons exceed background. The statistical test results show that the UMCf comparison is consistent with background. Figure I-3a shows OU-1 data with a clear pattern of significant outlier concentrations in the top ten feet of soil, especially in the northern portion of OU-1, supporting the results of the statistical comparisons. The pattern shown in the deeper alluvium appears to be more consistent with a dual population than with outlier concentrations. Figure I-3b shows arsenic concentrations in OU-1 vs. sample depth. This figure shows a clear pattern of the highest concentrations outside of the top ten feet and the UMCf occurring in the deepest samples within the alluvium, at concentrations that are consistent with the concentrations seen in the UMCf. These deep alluvial samples may be influenced by the concentrations in the UMCf, perhaps due to the presence of the transitional UMCf unit. One theory of increased arsenic results with depth is that it may be due to releases of natural arsenic from the soil matrix into groundwater due to Site activities (NDEP 2018). While releases of arsenic and other metals from the soil matrix in some areas is plausible and may contribute to some higher concentrations of arsenic in groundwater or at greater depths in soil, it seems unlikely that this argument can fully explain the widespread high arsenic concentrations observed on-Site in the UMCf and the lower part of the alluvium. Based on the observed concentrations in the combined UMCf background data set and the dual-population pattern observed in the deeper alluvium, it is likely that the natural variability of the UMCf can account for most of the observed high concentrations. However, even though the high concentrations in the deep alluvium appear to be a natural population, arsenic concentrations in the deeper alluvium do exceed the BRC deep McCullough Alluvium data set. In addition, arsenic clearly exceeds background in the top ten feet of soil and therefore arsenic cannot be excluded as a COPC as a result of comparison to background.

Barium

The statistical test results for barium show that the Top Ten Feet OU-1 North, Deep Alluvium, and UMCf comparisons are consistent with background. The statistical test results show that the Top Ten Feet OU-1 South comparison exceeds background. Figure I-4 shows OU-1 data with a pattern of outlier concentrations in the top ten feet of soil across OU-1, supporting the results of the Top Ten Feet OU-1 South statistical comparison. While the outliers in the Top Ten Feet OU-1 North data set were not significant enough to result in a statistical exceedance of the BRC/TIMET background data set, the concentrations of these outliers are higher than the maximum concentrations in the southern portion of OU-1. Based on these results, barium cannot be excluded as a COPC as a result of comparison to background.

Boron

The statistical test results for boron show that the Top Ten Feet OU-1 North, Deep Alluvium and UMCf comparisons exceed background. The statistical test results for the Top Ten Feet OU-1 South comparison were inconclusive due to a small proportion of detections in the RZ-A background data set. Figure I-5 generally supports these conclusions and shows detected concentrations in the top ten feet of soil within the southern portion of OU-1 above the detection limits in the RZ-A background data set. Based on these results, boron cannot be excluded as a COPC as a result of comparison to background.

Cadmium

The statistical test results for cadmium show that the Top Ten Feel OU-1 South, Deep Alluvium and UMCf comparisons exceed background. The BRC/TIMET background data set has no detections for cadmium so the Top Ten Feet OU-1 North statistical comparison could not be conducted. Figure I-6 shows OU-1 data with some detected concentrations in the top ten feet of soil within the northern portion of OU-1 above the detection limits in the BRC/TIMET background data set. Based on these results, cadmium cannot be excluded as a COPC as a result of comparison to background.

Chromium (hexavalent)

All background data sets have fewer than 25% detections of hexavalent chromium and therefore all statistical comparisons have inconclusive results. In addition, the BRC/TIMET background data set has no detections of hexavalent chromium and the statistical comparison could not be conducted. However, Figure I-7 shows concentrations of hexavalent chromium in OU-1 significantly above the detection limits of all background data sets. Based on these results, hexavalent chromium cannot be excluded as a COPC as a result of comparison to background.

Cobalt

The statistical test results for cobalt show that the Top Ten Feet OU-1 North and Top Ten Feet OU-1 South comparisons exceed background. The statistical test results show that the Deep Alluvium and UMCf are consistent with background. Figure I-8 generally supports these conclusions. Based on these results, cobalt cannot be excluded as a COPC as a result of comparison to background.

Copper

The statistical test results for copper show that all vadose zone lithology comparisons exceed background. Figure I-9 generally supports these conclusions. Based on these results, copper cannot be excluded as a COPC as a result of comparison to background.

Iron

The statistical test results for iron show that the Deep Alluvium and UMCf comparisons are consistent with background. The statistical test results show that the Top Ten Feet OU-1 South and Top Ten Feet OU-1 North comparisons exceed background. Figure I-10a shows that the OU-1 data in the top ten feet in the southern and northern portions of the site are very close to the RZ-A and BRC/TIMET background data set. In addition, Figure I-10b shows that iron concentrations in OU-1 have very little variability with respect to sample depth and that the RZ-A and BRC/TIMET background data set ranges are only slightly below the deeper alluvial background data set, indicating that the statistical exceedance of background in the top ten feet of soil in OU-1 is likely not reflective of reality. Based on these results, iron can be excluded as a COPC as a result of comparison to background.

Lead

The statistical test results for lead show that the Top Ten Feet OU-1 South and Top Ten Feet OU-1 North comparisons exceed background. The statistical test results show the that Deep Alluvium and UMCf comparisons are consistent with background. Figure I-11 generally supports these conclusions. Based on these results, lead cannot be excluded as a COPC as a result of comparison to background.

Lithium

The statistical test results for lithium show that the Top Ten Feet OU-1 (as described in Section 2.1, data from the entire Site are compared only to the BRC/TIMET background data set due to a lack of lithium background data in RZ-A) and Deep Alluvium comparisons are consistent with background. Very few samples of lithium are available in the UMCf, so a statistical comparison could not be conducted. However, Figure I-12 shows that none of the observed concentrations of lithium in the UMCf exceed the maximum background concentrations. Because concentrations of lithium were found to be consistent with background in the alluvium, it is unlikely that a larger Site data set in the UMCf would be inconsistent with background. Based on these results, lithium can be excluded as a COPC as a result of comparison to background.

Magnesium

The statistical test results for magnesium show that all vadose zone lithology comparisons exceed background. Figure I-13 generally supports these conclusions. Based on these results, magnesium cannot be excluded as a COPC as a result of comparison to background.

Manganese

The statistical test results for manganese show that the Top Ten Feet OU-1 South, Top Ten Feet OU-1 North, and Deep Alluvium comparisons exceed background. The statistical test results show that the UMCf comparison is consistent with background. Figure I-14 generally supports these conclusions. Based on these results, manganese cannot be excluded as a COPC as a result of comparison to background.

Mercury

The statistical test results for mercury show that the Top Ten Feet OU-1 North comparison is consistent with background. The statistical test results show that the Top Ten Feet OU-1 South and Deep Alluvium comparisons exceed background. Fewer than 25% detections exist in the combined UMCf background data set and the results of the UMCf comparison are therefore inconclusive. Figure I-15 generally supports these conclusions, though all alluvial distributions appear similar to each other. The Top Ten Feel OU-1 North comparison therefore likely also exceeds background. Based on these results, mercury cannot be excluded as a COPC as a result of comparison to background.

Molybdenum

The statistical test results for molybdenum show that all vadose zone lithology comparisons exceed background. Figure I-16 shows a significant number of non-detects with high detection limits in several of the data sets and may indicate that the exceedance in the UMCf is a statistical anomaly; however, outlier detected concentrations are seen in alluvial soil in support of the statistical test results. Based on these results, molybdenum cannot be excluded as a COPC as a result of comparison to background.

Nickel

The statistical test results for nickel show that the Top Ten Feet OU-1 South comparison exceeds background. The statistical test results show that the Top Ten Feet OU-1 North, Deep Alluvium, and UMCf comparisons are consistent with background. Figure I-17 generally supports these conclusions. Based on these results, nickel cannot be excluded as a COPC as a result of comparison to background.

Niobium

All Site data sets have fewer than 25% detections of niobium and the results of all statistical comparisons are therefore inconclusive. In addition, there are no detections in the BRC/TIMET background data set or the Site UMCf data set, so the Top Ten Feet OU-1 (over the entire Site as described in Section 2.1) and UMCf statistical comparisons could not be conducted. However, Figure I-18 shows some detected concentrations in the alluvium Site data sets above the detection limits or maximum detections of the background data sets. Based on these results, niobium cannot be excluded as a COPC as a result of comparison to background.

Palladium

The statistical test results for palladium show that the Top Ten Feet OU-1 (from the entire Site as described in Section 2.1) and Deep Alluvium comparisons are consistent with background. Very few samples of palladium are available in the UMCf, so a statistical comparison could not be conducted. However, Figure I-19 shows that none of the observed concentrations of palladium in the UMCf exceed the maximum background concentrations. Because concentrations of palladium were found to be consistent with background in the alluvium, it is unlikely that a larger Site data set in the UMCf would be inconsistent with background. Based on these results, palladium can be excluded as a COPC as a result of comparison to background.

Selenium

All Site data sets have fewer than 25% detections of selenium and the results of all statistical comparisons are therefore inconclusive. In addition, the BRC Deep McCullough Alluvium background data set has no detections of selenium and the statistical comparison could not be conducted. However, Figure I-20 shows detected concentrations of selenium in the alluvium above the range of the background data sets. Based on these results, selenium cannot be excluded as a COPC as a result of comparison to background.

Silver

All Site data sets have fewer than 25% detections of silver and the results of all statistical comparisons are therefore inconclusive. In addition, the RZ-A and BRC/TIMET background data sets have no detections of silver and the statistical comparisons could not be conducted. However, Figure I-21 shows detected concentrations of silver in all lithologies above the range of the background data sets. Based on these results, silver cannot be excluded as a COPC as a result of comparison to background.

Strontium

The statistical test results for strontium show that the Top Ten Feet OU-1 North and UMCf comparisons are consistent with background. The statistical test results show that the Top Ten Feet OU-1 South and Deep Alluvium comparisons exceed background. The distribution observed in Figure I-22 for the Top Ten Feet OU-1 South data set indicates that the statistical results may be anomalous; in addition, the maximum strontium concentration in this data set is significantly below the other site data sets and similar to the maximum concentration in the RZ-A background data set. Though the UMCf data set was found to be consistent with background, the p-value of the slippage test was low and Figure I-22 shows that the highest concentrations in the UMCf are above the background range. Based on these results, strontium cannot be excluded as a COPC as a result of comparison to background.

Thallium

The statistical test results for thallium show that the Top Ten Feet OU-1 South comparison exceeds background. All other background data sets have fewer than 25% detections and the results of the statistical comparisons are therefore inconclusive. Figure I-23 shows detected concentrations of thallium in all lithologies above the range of the background data sets. Based on these results, thallium cannot be excluded as a COPC as a result of comparison to background.

Tungsten

The statistical test results for tungsten show that the Top Ten Feet OU-1 South and Deep Alluvium comparisons exceed background. All other background data sets have fewer than 25% detections and therefore the statistical comparisons could either not be conducted or have inconclusive results. Figure I-24 shows OU-1 data with detected concentrations significantly above the detection limits of the background range in the northern portion of OU-1. Based on these results, tungsten cannot be excluded as a COPC as a result of comparison to background.

Uranium (total)

The statistical test results for total uranium show that all vadose zone lithology comparisons exceed background. Figure I-25 generally supports these conclusions for soil below the top ten feet. Visually the data sets in the top ten feet of soil appear similar to the background data sets, especially in the southern portion of OU-1. The statistical results for these comparisons may be anomalous. Based on these results, total uranium cannot be excluded as a COPC as a result of comparison to background.

Zirconium

The statistical test results for zirconium show that the Top Ten Feet OU-1 (from the entire Site as described in Section 2.1) and Deep Alluvium comparisons are consistent with background. The statistical test results show that the UMCf comparison exceeds background. Figure I-26a shows that the OU-1 data in the UMCf is very close to the combined UMCf-fg1 background data set and shows no evidence of statistical outliers. In addition, Figure I-26b shows that while zirconium concentrations in OU-1 have a slightly increasing trend with respect to sample depth, the UMCf background data set range has a very high variance compared to the alluvial background data sets. This high variance in the observed UMCf background indicates that the statistical exceedance of background in the UMCf may not be reflective of reality but of additional variance within the UMCf-fg1 lithologic unit. Based on these results, zirconium can be excluded as a COPC as a result of comparison to background.

Radionuclides

The RZ-A background data set contains no radionuclide information, so all data for radionuclides in the top ten feet of soil across OU-1 were compared only to the BRC/TIMET background data set as described in Section 2.1. Apart from uranium-235, the radionuclides can be organized by decay chain. The uranium-238 decay chain includes uranium-238, uranium-234, thorium-230, and radium-226. Scatter plots showing secular equilibrium for this decay chain are shown in Figure I-27a. The thorium-232 decay chain includes thorium-232, thorium-228, and radium-228. Scatter plots showing secular equilibrium for this decay chain are shown in Figure I-27b. Results of statistical equivalence testing to determine secular equilibrium for both decay chains in each Site data set are presented in Table I-2b and show that all Site data sets are in secular equilibrium for each decay chain.

Radium-226

The statistical test results for radium-226 show that the Top Ten Feet OU-1 comparison is consistent with background and that the Deep Alluvium and UMCf comparisons exceed background. Figure I-28 shows that while the populations of radium-226 in soil below the top ten feet are above the background populations, there are no significant outliers in the OU-1 data sets, and Figure I-27a and Table I-2b show that the radium-226 data are in approximate secular equilibrium with the rest of the uranium-238 decay chain in all lithologies. However, due to the generally higher concentrations in soil below the top ten feet relative to the background populations, radium-226 cannot be excluded as a COPC as a result of comparison to background.

Radium-228

The statistical test results for radium-228 show that all comparisons are consistent with background. Figure I-29 generally supports these conclusions. Figure I-27b and Table I-2b show that the radium-228 data are in approximate secular equilibrium with the rest of the thorium-232 decay chain. Based on these results, radium-228 can be excluded as a COPC as a result of comparison to background.

Thorium-228

The statistical test results for thorium-228 show that the Top Ten Feet OU-1 comparison exceeds background and that the Deep Alluvium and UMCf comparisons are consistent with background. Figure I-30 shows only a few outliers in the top ten feet of soil, and the determination of exceedance in the top ten feet of soil is based solely on the slippage test with a p-value close to the testing threshold of 0.025. Figure I-27b and Table I-2b show that the thorium-228 data are in approximate secular equilibrium with the rest of the thorium-232 decay chain, and that the highest concentrations of thorium-228 in the top ten feet of soil are in nearly exact secular equilibrium with radium-228 and thorium-232. Both radium-228 and thorium-232 were statistically found to be consistent with background as discussed above and below, respectively. It is therefore likely that the slippage test result is a statistical false positive. Based on these results, thorium-228 can be excluded as a COPC as a result of comparison to background.

Thorium-230

The statistical test results for thorium-230 show that the Top Ten Feet OU-1 comparison is consistent with background and that the Deep Alluvium and UMCf comparisons exceed background. Figure I-31 shows that while the populations of thorium-230 in soil below the top ten feet are above the background populations, there are no significant outliers in the OU-1 data sets. This pattern is consistent with the radium-226 data in Figure I-28. Figure I-27a and Table I-2b show that the thorium-230 data are in approximate secular equilibrium with the rest of the uranium-238 decay chain in all lithologies. However, due to the generally higher concentrations in soil below the top ten feet relative to the background populations, thorium-230 cannot be excluded as a COPC as a result of comparison to background.

Thorium-232

The statistical test results for thorium-232 show that all comparisons are consistent with background. Figure I-32 generally supports these conclusions. Figure I-27b and Table I-2b show that the thorium-232 data are in approximate secular equilibrium with the rest of the thorium-232 decay chain. Based on these results, thorium-232 can be excluded as a COPC as a result of comparison to background.

Uranium-235

The statistical test results for uranium-235 show that the Deep Alluvium and UMCf comparisons exceed background. The statistical test results show that the Top Ten Feet OU-1 comparison is consistent with background. Figure I-33 generally supports these conclusions, and the results are consistent with the results for total uranium. Based on these results, uranium-235 cannot be excluded as a COPC as a result of comparison to background.

Uranium-238

The statistical test results for uranium-238 show that the Deep Alluvium and UMCf comparisons exceed background. The statistical test results show that the Top Ten Feet OU-1 comparison is consistent with background. Figure I-34 generally supports these conclusions, and the results are consistent with the results for total uranium. However, Figure I-27a and Table I-2b show that the uranium-238 data are in approximate secular equilibrium with the rest of the uranium-238 decay chain. The excess total uranium, uranium-235, and uranium-238 in the deeper lithologic zones are therefore likely naturally occurring; however, based solely on the results of the background data sets and the statistical comparisons, uranium-238 cannot be excluded as a COPC as a result of comparison to background.

I.2.4 Summary

The following metals are found to have concentrations in OU-1 that exceed background levels in all vadose zone lithologies:

Antimony	Chromium (hexavalent)	Mercury*
Boron	Copper	Molybdenum
Cadmium	Magnesium	Tungsten*

* Mercury and Tungsten have inconclusive results in the UMCf but cannot be excluded as COPCs as a result of comparison to background due to high quantitation limits.

The following metals are found to have concentrations in OU-1 that exceed background levels in the top ten feet of soil but are consistent with background in the deep alluvium and UMCf-fg1 lithologic units.

Barium	Lead
Cobalt	Nickel

The following metals are found to have concentrations in OU-1 that exceed background levels in the alluvium but are consistent with background concentrations in the UMCf-fg1 lithologic unit.

Arsenic	Manganese	Selenium*

* Selenium has inconclusive results in the UMCf but the maximum detections from the Site data set are below the maximum detections in the background data set.

The following metals and radionuclides are found to have concentrations in OU-1 that are consistent with background in the top ten feet of soil but exceed background levels in the deep alluvium and UMCf-fg1 lithologic units.

Strontium	Radium-226	Uranium-235
Uranium (total)	Thorium-230	Uranium-238

The following metals have a low proportion of detections and have inconclusive results but cannot be excluded as COPCs as a result of comparisons to background.

Niobium	Silver	Thallium

The following metals and radionuclides are found to be consistent with background levels in all vadose zone lithologies and can be excluded as COPCs as a result of comparisons to background.

Iron

Lithium

Palladium

Zirconium

Radium-228

Thorium-228

Thorium-232

I.3 SUMMARY AND CONCLUSIONS

A summary of conclusions for all metals and radionuclides is presented in Table I-3. These conclusions are based on the results of statistical testing from Tables I-2a and I-2b, visual exploratory data analysis from Figures I-2 through I-34, and professional judgement as described in Section I.2.3. Site data for seven metals and radionuclides (iron, lithium, palladium, zirconium, radium-228, thorium-228, and thorium-232) were found to be consistent with background in all lithologies. In general, chemicals present at a site at concentrations that are consistent with background concentrations are not considered site COPCs that would require further investigation or remediation. The results of this background evaluation are incorporated into the COPC screening and selection process described in Section 7.1.2.

I.4 REFERENCES

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Ramboll. 2021b. Soil Background Data Set Summary Report, Revision 2; Nevada Environmental Response Trust Site; Henderson, Nevada. March 24. Approved by NDEP on April 13, 2021.

TABLES

TABLE I-1a. STATISTICAL SUMMARY OF OU-1 SOIL SAMPLING RESULTS FROM UPPER TEN FEET, NORTHERN PORTION OF OU-1
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	TIMET/BRC Background[1]		No. of Samples	No. of Detects	% Detects	Nondetects		Detects					
			Minimum	Maximum				Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation
Metals	Antimony	mg/kg	0.12 J-	0.5 J-	437	106	24.3	0.1046 UJ	4.9 UJ	0.11 J-	30.3	0.18	1	3.8	3.7
	Arsenic	mg/kg	2.5	7.2 J	875	862	98.5	<0.88	<9.9	0.58	2,000	3.4	17	120	7.3
	Barium	mg/kg	73	445 J	441	440	99.8	<3.8	<3.8	4.6 J	6,760	170	200	350	1.7
	Boron	mg/kg	<3.2	11.6 J+	441	417	94.6	<1.1	<13	1.5 J	1,510	7.4	18	100	5.7
	Cadmium	mg/kg	<0.129	<0.129	441	189	42.9	<0.04	<1.3	0.04 J	2.74	0.12	0.2	0.28	1.4
	Chromium VI	mg/kg	<0.25	<0.32	388	60	15.5	<0.101	<0.47	0.12 J	96.3	0.6	4.6	15	3.3
	Cobalt	mg/kg	3.7 J	16.3 J	498	484	97.2	<2.5	<2.6	1.6	284	7.3	11	25	2.2
	Copper	mg/kg	10.2	25.9 J	440	430	97.7	<5.0	<5.2	5.5 J	171	18	21	16	0.74
	Iron	mg/kg	5,410	19,700	441	441	100	--	--	220	33,000	15,000	15,000	4,300	0.28
	Lead	mg/kg	3 J	35.1	514	499	97.1	5.0 UJ	<5.4	3.6 J-	5,280	9	37	310	8.3
	Lithium*	mg/kg	7.5	26.5	95	76	80	<1.4628	<13.14	3.2 J	24 J	12	12	3.6	0.29
	Magnesium	mg/kg	4,690 J	17,500 J	502	502	100	--	--	1,600	189,000	9,800	15,000	24,000	1.6
	Manganese	mg/kg	151	863 J	640	640	100	--	--	46	204,000 J	390	2,000	11,000	5.4
	Mercury	mg/kg	<0.0072	0.11	442	350	79.2	<0.002	<0.028	0.003 J	1.9	0.018	0.04	0.12	3
	Molybdenum	mg/kg	0.3 J	2	440	268	60.9	<0.1	<5.4	0.15 J	82.2	0.51	1.5	6.6	4.4
	Nickel	mg/kg	7.9 J	30 J	440	426	96.8	<5.0	<5.2	2.5	164	15	16	9.1	0.57
	Niobium*	mg/kg	1.01 UJ-	1.01 UJ-	240	19	7.9	0.7559 UJ	<30	1.7 J	9.9 J+	3.1	4.4	2.8	0.63
	Palladium*	mg/kg	0.16	1.5	151	93	61.6	<0.048	<0.955	0.09 J	2.1	0.33	0.36	0.21	0.59
	Platinum	mg/kg	<0.0435	0.099 J	242	148	61.2	<0.007	<0.048	0.004 J	0.16	0.011	0.015	0.016	1.1
	Selenium	mg/kg	<0.158	0.6	348	38	10.9	<0.12	<40	0.11 J	3.7	1	1.3	0.9	0.68
	Silver	mg/kg	<0.261	<0.261	441	83	18.8	<0.022	<4.0	0.02	9.6	0.11	0.38	1.3	3.5
	Strontium	mg/kg	75.5	808 J	388	388	100	--	--	35	1,200	180	200	110	0.55
	Thallium	mg/kg	<0.543	1.8	440	223	50.7	<0.073	<4.9	0.054	61.8	0.1	0.5	4.2	8.4
	Tungsten	mg/kg	0.0175 UJ	0.0175 UJ	388	245	63.1	0.000011 UJ	13 UJ	0.0028 J-	69.9	0.26	0.96	5.5	5.7
	Uranium (total)	mg/kg	0.62 J	2.7	284	284	100	--	--	0.39	7.56	0.98	1.2	0.65	0.55
	Zirconium*	mg/kg	86.1 J	179 J	275	241	87.6	<5.1	<26	7.9 J	43	21	22	4.7	0.22
Radionuclides	Radium-226*	pCi/g	0.494 J	2.36	576	576	100	--	--	0.0124 U	2.53	0.94	0.93	0.33	0.35
	Radium-228*	pCi/g	0.946 U	2.92	576	576	100	--	--	-0.186 U	14.3	1.2	1.3	0.82	0.62
	Thorium-228*	pCi/g	1.15	2.28	548	548	100	--	--	-0.0733 U	3.94	1.7	1.7	0.46	0.28
	Thorium-230*	pCi/g	0.73 J	3.01	548	548	100	--	--	0.0498	4.31	1.1	1.1	0.41	0.35
	Thorium-232*	pCi/g	1.22	2.23	548	548	100	--	--	-0.0107 U	3.94	1.5	1.5	0.43	0.28

* These analytes include data across OU-1 because no background data set is available for the southern portion of OU-1.

Sources:

[1] TIMET/BRC. 2007. Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity.

TABLE I-1b. STATISTICAL SUMMARY OF OU-1 SOIL SAMPLING RESULTS FROM UPPER TEN FEET, SOUTHERN PORTION OF OU-1
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	RZ-A Background[1]		No. of Samples	No. of Detects	% Detects	Nondetects		Detects					
			Minimum	Maximum				Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation
Metals	Antimony	mg/kg	0.5 UJ	3.4	227	134	59	0.0523 UJ	0.6 UJ	0.125 J-	9.7 J-	0.49	0.82	1.1	1.3
	Arsenic	mg/kg	1.6	4.25	320	320	100	--	--	1.24	260	3.1	4.9	15	3.1
	Barium	mg/kg	111	213	229	229	100	--	--	29	2,150 J	170	200	180	0.91
	Boron	mg/kg	3.6 J	11.7	229	190	83	<2.824	<26	2.5 J-	112	8.1	11	12	1.1
	Cadmium	mg/kg	<0.04	0.48	229	153	66.8	<0.0125	<2.6	0.05 J	8.88	0.16	0.29	0.73	2.5
	Chromium VI	mg/kg	<0.18	0.29 J	492	180	36.6	<0.11	<3.2	0.11 J	62	0.97	3.8	7.9	2.1
	Cobalt	mg/kg	5.4	9.1	229	227	99.1	<1.0	<2.6	1.8 J	420	7.4	12	37	3
	Copper	mg/kg	15.8	140	225	225	100	--	--	7.1	367	18	24	30	1.3
	Iron	mg/kg	11,300	20,600	229	229	100	--	--	3,600	39,500	14,000	15,000	4,000	0.27
	Lead	mg/kg	7.1	72.8	229	229	100	--	--	4	200	10	17	23	1.4
	Magnesium	mg/kg	7,700	13,000	231	231	100	--	--	5,680	81,000	8,900	10,000	8,300	0.8
	Manganese	mg/kg	262	537	234	234	100	--	--	110	70,300 J+	380	1,400	5,700	4.2
	Mercury	mg/kg	0.006 J	0.362	229	189	82.5	<0.00668	<0.112	0.006 J	1.99	0.017	0.061	0.19	3.1
	Molybdenum	mg/kg	<0.31	32.7	229	174	76	<0.08	<10	0.16 J	32.7	0.5	0.85	2.6	3
	Nickel	mg/kg	12.7	21.4	229	228	99.6	<5.1	<5.1	4.4	180	15	17	15	0.87
	Platinum	mg/kg	0.006 J	<0.11	184	113	61.4	<0.011	<0.12	0.005 J	2.4	0.01	0.039	0.23	5.7
	Selenium	mg/kg	<0.7	<4.3	210	28	13.3	<0.11	<50.0	0.11 J	1.5 J	0.2	0.43	0.42	0.99
	Silver	mg/kg	<0.2	<0.2	229	74	32.3	<0.02	<16	0.052 J	4 J	0.11	0.25	0.54	2.2
	Strontium	mg/kg	129	339	218	218	100	--	--	38	370	180	190	55	0.3
	Thallium	mg/kg	0.071	0.193 J	227	154	67.8	<0.081	<0.75	0.063 J	4.21	0.12	0.22	0.45	2
	Tungsten	mg/kg	<0.11	0.62	217	150	69.1	<0.25	52 UJ	0.069 J	19.9 J	0.24	0.5	1.8	3.5
	Uranium (total)	mg/kg	0.655	1.94	199	199	100	--	--	0.44 J	1.9	0.92	0.97	0.26	0.27

Sources:

[1] NDEP. 2010. NDEP Response to Background Issues and Determination of Background Dataset for TRX. August 17.

TABLE I-1c. STATISTICAL SUMMARY OF OU-1 SOIL SAMPLING RESULTS FROM UNSATURATED ALLUVIUM BELOW TEN FEET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	BRC Deep Alluvium Background[1]		No. of Samples	No. of Detects	% Detects	Nondetects		Detects					
			Minimum	Maximum				Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation
Metals	Antimony	mg/kg	0.089 J-	0.22 J-	800	285	35.6	0.05 UJ	2.3 UJ	0.076 J-	2.5 J-	0.7	0.73	0.58	0.8
	Arsenic	mg/kg	2.2	13.1	857	857	100	--	--	0.57 J	78.9	4.9	8.4	8.7	1
	Barium	mg/kg	84.7 J+	539	810	810	100	--	--	23.8	1,700 J	160	160	100	0.65
	Boron	mg/kg	<2.82	7.6 J	810	770	95.1	<3.53	<35.3	1.2 J	645	10	16	36	2.3
	Cadmium	mg/kg	<0.01	0.13	810	402	49.6	<0.0125	<2.7	0.036 J	1.1	0.14	0.18	0.15	0.8
	Chromium VI	mg/kg	<0.16	1.6 J	1361	398	29.2	<0.062	<0.86	0.11 J	590	0.98	14	46	3.4
	Cobalt	mg/kg	5.3 J	10.8 J	812	812	100	--	--	1.4	110 J+	6.5	6.7	5.3	0.79
	Copper	mg/kg	8.8 J+	24	806	806	100	--	--	6	140 J	17	18	9.3	0.53
	Iron	mg/kg	11,200	22,500 J	810	810	100	--	--	4,470	45,600	14,000	14,000	3,900	0.28
	Lead	mg/kg	4.9	15.8 J	834	833	99.9	<2.3	<2.3	2.0	110	7.5	8.1	4.6	0.57
	Lithium	mg/kg	<1.46	124	70	58	82.9	<1.4628	<32.85	8.2	73.5 J-	18	20	12	0.58
	Magnesium	mg/kg	4,990 J	12,500	816	816	100	--	--	4,100 J	81,000 J	11,000	15,000	11,000	0.72
	Manganese	mg/kg	217	579 J	859	859	100	--	--	44.6	22,000 J	300	520	1,500	3
	Mercury	mg/kg	<0.00668	0.0235 J	806	561	69.6	<0.001	<0.118	0.001 J	1.0	0.011	0.025	0.066	2.7
	Molybdenum	mg/kg	<0.105	1.9	810	556	68.6	<0.1	<11	0.08 J	81	0.53	0.88	3.5	4
	Nickel	mg/kg	8.5	27.5	810	810	100	--	--	4.32	55.7	14	14	3.6	0.25
	Niobium	mg/kg	<1.51	3.8 J+	212	14	6.6	0.7559 UJ	<14	1 J	11.7 J+	1.9	3.1	3.2	1
	Palladium	mg/kg	0.2 J	2.2	83	68	81.9	<0.052	<0.059	0.071 J	5.5	0.51	0.63	0.68	1.1
	Platinum	mg/kg	<0.02	0.049 J	526	343	65.2	<0.004	<0.25	0.002 J	0.045 J	0.01	0.01	0.0043	0.41
	Selenium	mg/kg	<0.32	<0.32	677	106	15.7	<0.11	<10.0	0.11 J	3.1	0.9	0.86	0.74	0.86
	Silver	mg/kg	0.074 J	2.2	810	142	17.5	<0.02	<8.0	0.022	10	0.1	0.26	0.91	3.5
	Strontium	mg/kg	123 J	793 J	697	697	100	--	--	77.9	5,000 J	270	370	430	1.1
	Thallium	mg/kg	0.15 J+	0.34 J+	810	448	55.3	<0.073	<2.3	0.016	0.89	0.097	0.13	0.082	0.66
	Tungsten	mg/kg	0.19 J	3.6 J	695	475	68.3	0.000011 UJ	7.3 UJ	0.033	2.5 J-	0.24	0.31	0.28	0.92
	Uranium (total)	mg/kg	0.89	2.8	542	542	100	--	--	0.19	55.2	1.8	2.6	3.3	1.3
	Zirconium	mg/kg	15.9 J-	33.9 J	241	239	99.2	<5.2	5.4 UJ	8.7 J	45.1	23	23	5.6	0.25
Radionuclides	Radium-226	pCi/g	0.981 J-	2.29 J-	636	636	100	--	--	0.0472 U	11.0	1.2	1.6	1.2	0.74
	Radium-228	pCi/g	0.855 J	2.31 J-	636	636	100	--	--	-0.0994 U	4.00	1.1	1.2	0.47	0.39
	Thorium-228	pCi/g	1.11	2.3	600	600	100	--	--	0.285 U	4.94 J	1.5	1.5	0.4	0.26
	Thorium-230	pCi/g	1.05	2.72	600	600	100	--	--	0.426	14.8	1.6	2.1	1.5	0.72
	Thorium-232	pCi/g	0.908	2.01	600	600	100	--	--	0.302 U	2.36	1.4	1.4	0.35	0.25

Sources:

[1] ERM-West, Inc. 2009. 2008 Deep Soil Background Report, BMI Common Areas (Eastside), Clark County, Nevada. October.

TABLE I-1d. STATISTICAL SUMMARY OF OU-1 SOIL SAMPLING RESULTS FROM UNSATURATED MUDDY CREEK FORMATION
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	UMCf Background[1]		No. of Samples	No. of Detects	% Detects	Nondetects		Detects					
			Minimum	Maximum				Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation
Metals	Antimony	mg/kg	0.066 J-	0.34 J-	189	82	43.4	0.05 UJ	1.2 UJ	0.07 J-	2 J	0.76	0.77	0.57	0.74
	Arsenic	mg/kg	2.1	45	190	190	100	--	--	4.2	76	19	20	10	0.51
	Barium	mg/kg	24	690	190	190	100	--	--	30.5 J-	1,700 J	94	180	260	1.5
	Boron	mg/kg	<2.82	33	190	190	100	--	--	1.8 J	85.7 J	24	26	13	0.5
	Cadmium	mg/kg	<0.01	0.2	190	128	67.4	<0.04	<0.67	0.04 J	0.79	0.18	0.22	0.15	0.68
	Chromium VI	mg/kg	<0.16	1.3	396	155	39.1	<0.101	<0.767	0.13 J	170	1.3	8.4	23	2.8
	Cobalt	mg/kg	1.6	17	190	190	100	--	--	1.9 J	39.7	5.7	6	2.9	0.49
	Copper	mg/kg	4.1	27	190	190	100	--	--	8.1	105 J	16	18	9.4	0.53
	Iron	mg/kg	3,620	26,000	190	190	100	--	--	5,100	28,000	14,000	14,000	4,000	0.28
	Lead	mg/kg	4.4 J-	16.1	190	190	100	--	--	2.5 J	32.3	8.1	8.4	2.7	0.32
	Lithium	mg/kg	18.3	189	4	2	50	<32.85	<32.85	47.4 J-	133	90	90	61	0.67
	Magnesium	mg/kg	2,780 J+	31,000 J	190	190	100	--	--	6,050 J-	65,000	27,000	30,000	14,000	0.47
	Manganese	mg/kg	126	1,200 J-	199	199	100	--	--	90	3,600 J	250	330	370	1.1
	Mercury	mg/kg	<0.00668	0.12	189	127	67.2	<0.002	<0.153	0.002 J	0.21 J	0.009	0.018	0.033	1.8
	Molybdenum	mg/kg	<0.105	<6.0	190	153	80.5	<0.532	<2.7	0.27 J	4.2	0.72	0.88	0.55	0.63
	Nickel	mg/kg	4.5	33	190	190	100	--	--	6.2	30	14	15	4.5	0.29
	Niobium	mg/kg	<1.51	4 J	35	0	0	3 UJ	7.5 UJ	--	--	--	--	--	--
	Palladium	mg/kg	<0.097	1	3	3	100	--	--	0.25 J	0.48	0.32	0.35	0.12	0.34
	Platinum	mg/kg	<0.02	0.033 J	147	112	76.2	<0.007	<0.12	0.005 J	0.429	0.012	0.018	0.042	2.3
	Selenium	mg/kg	<0.32	3.0	157	27	17.2	<0.13	<1.1	0.11 J	1.2 J-	0.7	0.57	0.43	0.75
	Silver	mg/kg	0.051 J+	0.82	190	36	18.9	<0.021	<2.0	0.021 J	2.3	0.14	0.26	0.48	1.8
	Strontium	mg/kg	68.5	580 J-	184	184	100	--	--	59	5,670	160	280	520	1.9
	Thallium	mg/kg	<0.2	<0.25	190	137	72.1	<0.074	<1.5	0.072	0.477 J	0.18	0.19	0.074	0.38
	Tungsten	mg/kg	<0.2	0.58 J-	183	134	73.2	0.5 UJ	7.3 UJ	0.065 J	1.93 J	0.27	0.32	0.21	0.65
	Uranium (total)	mg/kg	0.31	5.5	147	147	100	--	--	0.761	29	3	3.7	3.3	0.88
	Zirconium	mg/kg	6.2 J	48 J+	41	41	100	--	--	17	56	34	35	10	0.29
Radionuclides	Radium-226	pCi/g	0.426	1.42	170	170	100	--	--	0.595	8.57 J-	1.6	1.9	1.2	0.63
	Radium-228	pCi/g	0.989 J-	1.55 J-	170	170	100	--	--	0.176 U	4.93	1	1.1	0.49	0.44
	Thorium-228	pCi/g	0.706	2.25	154	154	100	--	--	0.615	2.55	1.3	1.3	0.33	0.25
	Thorium-230	pCi/g	0.454	2.09	154	154	100	--	--	0.907 J	7.96	2.1	2.4	1.1	0.48
	Thorium-232	pCi/g	0.430	2.11	154	154	100	--	--	0.539 J	1.96 J	1.2	1.2	0.31	0.26

Sources:

[1] Ramboll. 2021. Soil Background Data Set Summary Report, Revision 1; Nevada Environmental Response Trust Site; Henderson Nevada. February 10.

TABLE I-1e. STATISTICAL SUMMARY OF BRC/TIMET BACKGROUND DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects					
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Interquartile Range
Metals	Aluminum	mg/kg	95	95	100	--	--	3,740 J	15,300 J	8,400	9,000	2,700	4,400
	Antimony	mg/kg	95	43	45.3	0.33 UJ-	0.33 UJ-	0.12 J-	0.5 J-	0.22	0.24	0.099	0.13
	Arsenic	mg/kg	95	95	100	--	--	2.5	7.2 J	4	4.2	1.1	1.6
	Barium	mg/kg	95	95	100	--	--	73	445 J	170	180	59	74
	Beryllium	mg/kg	95	95	100	--	--	0.16 J	0.89	0.57	0.59	0.16	0.27
	Boron	mg/kg	95	34	35.8	<3.2	<3.2	5.2 J+	11.6 J+	6.8	7.1	1.6	2.5
	Cadmium	mg/kg	95	0	0	<0.129	<0.129	--	--	--	--	--	--
	Chromium (total)	mg/kg	95	95	100	--	--	2.6	16.7	9	9.1	3.1	4.4
	Chromium VI	mg/kg	95	0	0	<0.25	<0.32	--	--	--	--	--	--
	Cobalt	mg/kg	95	95	100	--	--	3.7 J	16.3 J	9	8.8	2.3	2.8
	Copper	mg/kg	95	95	100	--	--	10.2	25.9 J	18	18	3.4	4.9
	Iron	mg/kg	95	95	100	--	--	5,410	19,700	13,000	13,000	3,400	5,000
	Lead	mg/kg	95	95	100	--	--	3 J	35.1	7.2	8.2	4.2	3.2
	Lithium	mg/kg	95	95	100	--	--	7.5	26.5	13	14	4.4	6
	Magnesium	mg/kg	95	95	100	--	--	4,690 J	17,500 J	10,000	10,000	2,800	3,900
	Manganese	mg/kg	95	95	100	--	--	151	863 J	410	410	130	170
	Mercury	mg/kg	95	73	76.8	<0.0072	<0.0072	0.0084 J	0.11	0.018	0.023	0.017	0.015
	Molybdenum	mg/kg	95	95	100	--	--	0.3 J	2	0.49	0.55	0.25	0.2
	Nickel	mg/kg	95	95	100	--	--	7.9 J	30 J	16	16	4	5
	Niobium	mg/kg	95	0	0	1.01 UJ-	1.01 UJ-	--	--	--	--	--	--
	Palladium	mg/kg	95	95	100	--	--	0.16	1.5	0.42	0.48	0.24	0.27
	Phosphorus (total)	mg/kg	95	95	100	--	--	862	2,010	1,500	1,500	280	420
	Platinum	mg/kg	95	5	5.3	<0.0435	<0.0435	0.045 J	0.099 J	0.064	0.071	0.02	0.018
	Selenium	mg/kg	95	33	34.7	<0.158	<0.158	0.23 J	0.6	0.31	0.33	0.076	0.07
	Silver	mg/kg	95	0	0	<0.261	<0.261	--	--	--	--	--	--
	Strontium	mg/kg	95	95	100	--	--	75.5	808 J	190	230	130	120
	Thallium	mg/kg	95	21	22.1	<0.543	<0.543	1.1	1.8	1.4	1.4	0.25	0.4
	Tin	mg/kg	95	95	100	--	--	0.24 J	0.8 J	0.51	0.5	0.11	0.15
	Titanium	mg/kg	95	95	100	--	--	262	1,010 J	540	560	150	190
	Tungsten	mg/kg	95	0	0	0.0175 UJ	0.0175 UJ	--	--	--	--	--	--
	Uranium (total)	mg/kg	94	94	100	--	--	0.62 J	2.7	0.97	1	0.31	0.26
	Vanadium	mg/kg	95	95	100	--	--	20.2	59.1 J	38	39	8.4	11
	Zinc	mg/kg	95	95	100	--	--	15.4	121	38	38	13	12
	Zirconium	mg/kg	95	95	100	--	--	86.1 J	179 J	130	130	22	30
Radionuclides	Radium-226	pCi/g	95	95	100	--	--	0.494 J	2.36	1.1	1.1	0.34	0.31
	Radium-228	pCi/g	81	81	100	--	--	0.946 U	2.92	1.9	1.9	0.39	0.48
	Thorium-228	pCi/g	95	95	100	--	--	1.15	2.28	1.8	1.7	0.26	0.41
	Thorium-230	pCi/g	95	95	100	--	--	0.73 J	3.01	1.2	1.3	0.4	0.45
	Thorium-232	pCi/g	95	95	100	--	--	1.22	2.23	1.7	1.7	0.26	0.43
	Uranium-234	pCi/g	95	95	100	--	--	0.63 U	2.84	1.1	1.2	0.47	0.34
	Uranium-235	pCi/g	95	95	100	--	--	0.0009	0.21 J	0.06	0.07	0.038	0.045
	Uranium-238	pCi/g	95	95	100	--	--	0.65 J	2.37	1.1	1.2	0.36	0.4

Notes:

mg/kg: milligrams per kilogram
pCi/g: picocuries per gram
<: Not detected above laboratory reporting limits
U: For radionuclides, result shown is below the minimum detectable concentration

J qualifier indicates an estimated detected concentration
J+ qualifier indicates an estimated detected concentration with a positive bias
J- qualifier indicates an estimated detected concentration with a negative bias
UJ qualifier indicates a non-detected concetration with an estimated detection limit
UJ- qualifier indicates a non-detected concetration with an estimated detection limit with a negative bias

TABLE I-1f. STATISTICAL SUMMARY OF RZ-A BACKGROUND DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Interquartile Range	Potential Outlier Threshold
Metals	Aluminum	mg/kg	31	31	100	--	--	7,340	11,400	9,000	9,000	890	880	11,000
	Antimony	mg/kg	31	3	9.7	0.5 UJ	<2.2	0.6 J-	3.4	0.9	1.6	1.5	--	--
	Arsenic	mg/kg	31	31	100	--	--	1.6	4.25	2.4	2.4	0.54	0.66	3.6
	Barium	mg/kg	31	31	100	--	--	111	213	160	170	22	28	220
	Beryllium	mg/kg	31	31	100	--	--	0.362	0.588 J	0.46	0.46	0.048	0.054	0.57
	Boron	mg/kg	31	7	22.6	<10.2	<11	3.6 J	11.7	6.2	6.7	2.7	2.6	12
	Cadmium	mg/kg	31	25	80.6	<0.04	<0.04	0.11	0.48	0.19	0.2	0.085	0.1	0.38
	Chromium (total)	mg/kg	31	31	100	--	--	5.57	10.7 J	7.5	7.7	1.2	1.2	10
	Chromium VI	mg/kg	31	1	3.2	<0.18	<0.24	0.29 J	0.29 J	0.29	0.29	--	--	--
	Cobalt	mg/kg	31	31	100	--	--	5.4	9.1	7.3	7.3	0.76	0.8	8.9
	Copper	mg/kg	31	31	100	--	--	15.8	140	19	23	22	2.3	23
	Iron	mg/kg	31	31	100	--	--	11,300	20,600	16,000	16,000	2,100	3,000	21,000
	Lead	mg/kg	31	31	100	--	--	7.1	72.8	8.9	11	12	1.7	12
	Magnesium	mg/kg	31	31	100	--	--	7,700	13,000	9,800	10,000	1,300	1,700	13,000
	Manganese	mg/kg	31	31	100	--	--	262	537	360	370	61	65	490
	Mercury	mg/kg	31	27	87.1	<0.017	<0.019	0.006 J	0.362	0.016	0.036	0.069	0.0065	0.028
	Molybdenum	mg/kg	31	30	96.8	<0.31	<0.31	0.31	32.7	0.49	1.7	5.9	0.27	1.1
	Nickel	mg/kg	31	31	100	--	--	12.7	21.4	16	16	1.8	1.6	19
	Platinum	mg/kg	31	19	61.3	<0.1	<0.11	0.006 J	0.046 J	0.01	0.012	0.0085	0.003	0.017
	Selenium	mg/kg	31	3	9.7	<0.7	<4.3	0.8 J	0.9 J	0.8	0.83	0.058	--	--
	Silver	mg/kg	31	0	0	<0.2	<0.2	--	--	--	--	--	--	--
	Strontium	mg/kg	31	31	100	--	--	129	339	210	220	57	82	380
	Thallium	mg/kg	31	31	100	--	--	0.071	0.193 J	0.092	0.11	0.033	0.028	0.16
	Tin	mg/kg	31	0	0	<10.2	<11	--	--	--	--	--	--	--
	Titanium	mg/kg	31	31	100	--	--	480	1,080	830	790	160	270	1,300
	Tungsten	mg/kg	31	30	96.8	<0.11	<0.11	0.12	0.62	0.17	0.21	0.11	0.078	0.35
	Uranium (total)	mg/kg	31	31	100	--	--	0.655	1.94	0.98	1.1	0.36	0.41	1.9
	Vanadium	mg/kg	31	31	100	--	--	28	54.9	46	44	7.6	13	69
	Zinc	mg/kg	31	31	100	--	--	25.8	254	33	40	40	5.5	44

Notes:

mg/kg: milligrams per kilogram

<: Not detected above laboratory reporting limits

J qualifier indicates an estimated detected concentration

J+ qualifier indicates an estimated detected concentration with a positive bias

J- qualifier indicates an estimated detected concentration with a negative bias

UJ qualifier indicates a non-detected concetration with an estimated detection limit

TABLE I-1g. STATISTICAL SUMMARY OF BRC DEEP MCCULLOUGH BACKGROUND DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects					
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Interquartile Range
Metals	Aluminum	mg/kg	79	79	100	--	--	5,060 J	15,100 J	8,800	8,700	1,800	2,600
	Antimony	mg/kg	79	73	92.4	0.105 UJ	0.105 UJ	0.089 J-	0.22 J-	0.15	0.15	0.026	0.03
	Arsenic	mg/kg	79	79	100	--	--	2.2	13.1	3.8	4.4	2	1.8
	Barium	mg/kg	79	79	100	--	--	84.7 J+	539	140	160	70	56
	Beryllium	mg/kg	79	79	100	--	--	0.29	0.67	0.55	0.56	0.063	0.085
	Boron	mg/kg	79	20	25.3	<2.82	<2.82	3 J	7.6 J	5.6	5.4	1.4	2.1
	Cadmium	mg/kg	79	73	92.4	<0.01	<0.01	0.05 J	0.13	0.084	0.087	0.016	0.022
	Chromium (total)	mg/kg	79	79	100	--	--	7.1	16.6	10	11	1.8	2.4
	Chromium VI	mg/kg	80	18	22.5	<0.16	<0.19	0.18 J	1.6 J	0.26	0.41	0.41	0.18
	Cobalt	mg/kg	79	79	100	--	--	5.3 J	10.8 J	7.5	7.8	1.3	1.8
	Copper	mg/kg	79	79	100	--	--	8.8 J+	24	16	16	2.1	1.9
	Iron	mg/kg	79	79	100	--	--	11,200	22,500 J	15,000	15,000	2,800	3,500
	Lead	mg/kg	79	79	100	--	--	4.9	15.8 J	7.1	7.4	1.6	1.9
	Lithium	mg/kg	79	67	84.8	<1.46	<3.66	7.5	124	17	20	14	5.2
	Magnesium	mg/kg	79	79	100	--	--	4,990 J	12,500	9,500	9,600	1,500	1,900
	Manganese	mg/kg	79	79	100	--	--	217	579 J	320	340	84	110
	Mercury	mg/kg	79	35	44.3	<0.00668	<0.00668	0.0072 J	0.0235 J	0.013	0.013	0.0042	0.0059
	Molybdenum	mg/kg	79	62	78.5	<0.105	<0.105	0.31 J	1.9	0.57	0.67	0.31	0.34
	Nickel	mg/kg	79	79	100	--	--	8.5	27.5	15	16	2.4	1.8
	Niobium	mg/kg	79	6	7.6	<1.51	<1.51	1.7 J+	3.8 J+	3.3	3.1	0.74	0.4
	Palladium	mg/kg	79	79	100	--	--	0.2 J	2.2	0.61	0.67	0.37	0.43
	Phosphorus (total)	mg/kg	79	79	100	--	--	649 J	1,930 J	1,400	1,400	210	250
	Platinum	mg/kg	79	7	8.9	<0.02	<0.02	0.022 J	0.049 J	0.025	0.032	0.011	0.017
	Selenium	mg/kg	79	0	0	<0.32	<0.32	--	--	--	--	--	--
	Silver	mg/kg	79	79	100	--	--	0.074 J	2.2	0.15	0.25	0.38	0.09
	Strontium	mg/kg	79	79	100	--	--	123 J	793 J	250	270	100	100
	Thallium	mg/kg	79	4	5.1	<0.2	<0.2	0.15 J+	0.34 J+	0.21	0.23	0.081	0.062
	Tin	mg/kg	79	76	96.2	<0.0526	<0.0526	0.25 J	0.78	0.55	0.55	0.096	0.1
	Titanium	mg/kg	79	79	100	--	--	445 J	912 J	670	680	110	150
	Tungsten	mg/kg	79	25	31.6	0.2 UJ	0.2 UJ	0.19 J	3.6 J	0.31	0.45	0.66	0.09
	Uranium (total)	mg/kg	79	79	100	--	--	0.89	2.8	1.4	1.6	0.42	0.55
	Vanadium	mg/kg	79	79	100	--	--	26.7 J+	73.3 J	43	46	10	15
	Zinc	mg/kg	79	79	100	--	--	18.1 J-	41.2	32	32	3.8	3.9
	Zirconium	mg/kg	79	79	100	--	--	15.9 J-	33.9 J	26	25	3.7	4.9
Radionuclides	Radium-226	pCi/g	65	65	100	--	--	0.981 J-	2.29 J-	1.6	1.7	0.33	0.55
	Radium-228	pCi/g	64	64	100	--	--	0.855 J	2.31 J-	1.4	1.5	0.3	0.43
	Thorium-228	pCi/g	79	79	100	--	--	1.11	2.3	1.8	1.8	0.25	0.37
	Thorium-230	pCi/g	79	79	100	--	--	1.05	2.72	1.6	1.7	0.36	0.5
	Thorium-232	pCi/g	79	79	100	--	--	0.908	2.01	1.5	1.6	0.21	0.23
	Uranium-234	pCi/g	76	76	100	--	--	0.868 J	2.63	1.6	1.6	0.37	0.38
	Uranium-235	pCi/g	76	76	100	--	--	0.0121 U	0.116 J	0.065	0.063	0.022	0.03
	Uranium-238	pCi/g	76	76	100	--	--	0.993 J	2.79	1.5	1.5	0.37	0.4

Notes:
mg/kg: milligrams per kilogram
pCi/g: picocuries per gram
<: Not detected above laboratory reporting limits
U: For radionuclides, result shown is below the minimum detectable concentration

J qualifier indicates an estimated detected concentration
J+ qualifier indicates an estimated detected concentration with a positive bias
J- qualifier indicates an estimated detected concentration with a negative bias
UJ qualifier indicates a non-detected concetration with an estimated detection limit

TABLE I-1h. STATISTICAL SUMMARY OF UMCf BACKGROUND DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects					
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Interquartile Range
Metals	Aluminum	mg/kg	70	70	100	--	--	3,190	27,000	13,000	14,000	5,400	8,200
	Antimony	mg/kg	24	23	95.8	0.105 UJ	0.105 UJ	0.066 J-	0.34 J-	0.16	0.18	0.06	0.045
	Arsenic	mg/kg	70	70	100	--	--	2.1	45	18	20	12	19
	Barium	mg/kg	70	70	100	--	--	24	690	120	210	180	190
	Beryllium	mg/kg	24	24	100	--	--	0.17	1.1	0.59	0.56	0.24	0.31
	Boron	mg/kg	70	52	74.3	<2.82	<3.53	3.0 J	33	10	12	7.2	10
	Cadmium	mg/kg	24	18	75	<0.01	<0.01	0.06	0.2	0.11	0.11	0.033	0.03
	Chromium (total)	mg/kg	70	70	100	--	--	2.9	56 J+	19	20	9.9	8.5
	Chromium VI	mg/kg	69	8	11.6	<0.16	<0.21	0.18 J	1.3	0.24	0.42	0.4	0.21
	Cobalt	mg/kg	70	70	100	--	--	1.6	17	7.5	7.3	2.6	2.6
	Copper	mg/kg	70	68	97.1	<6.5	<6.6	4.1	27	14	14	4.7	5.7
	Iron	mg/kg	70	70	100	--	--	3,620	26,000	17,000	16,000	4,800	5,100
	Lead	mg/kg	70	69	98.6	<5.9	<5.9	4.4 J-	16.1	9.3	9.5	2.8	3.2
	Lithium	mg/kg	24	24	100	--	--	18.3	189	32	53	52	23
	Magnesium	mg/kg	70	70	100	--	--	2,780 J+	31,000 J	12,000	12,000	4,800	5,700
	Manganese	mg/kg	70	70	100	--	--	126	1,200 J-	380	400	190	180
	Mercury	mg/kg	66	11	16.7	<0.00668	<0.017	0.008 J	0.12	0.015	0.025	0.032	0.011
	Molybdenum	mg/kg	70	25	35.7	<0.105	<6.0	0.12 J	2.4 J	0.52	0.65	0.5	0.33
	Nickel	mg/kg	70	70	100	--	--	4.5	33	16	17	5.5	5.9
	Niobium	mg/kg	24	1	4.2	<1.51	1.89 UJ	4 J	4 J	4	4	--	--
	Palladium	mg/kg	70	24	34.3	<0.097	<0.13	0.16	1	0.61	0.55	0.24	0.43
	Phosphorus (total)	mg/kg	70	70	100	--	--	299 J	1,400	900	870	260	350
	Platinum	mg/kg	24	2	8.3	<0.02	<0.025	0.027 J	0.033 J	0.03	0.03	0.0042	--
	Selenium	mg/kg	70	45	64.3	<0.32	<0.93	0.91 J	3.0	1.9	1.9	0.5	0.7
	Silver	mg/kg	24	24	100	--	--	0.051 J+	0.82	0.14	0.21	0.18	0.18
	Strontium	mg/kg	70	70	100	--	--	68.5	580 J-	160	180	79	72
	Thallium	mg/kg	24	0	0	<0.2	<0.25	--	--	--	--	--	--
	Tin	mg/kg	24	20	83.3	<0.0526	<0.0526	0.24	0.96	0.6	0.56	0.21	0.37
	Titanium	mg/kg	24	24	100	--	--	175 J+	1,000	560	500	200	340
	Tungsten	mg/kg	24	5	20.8	<0.2	0.25 UJ	0.26 J-	0.58 J-	0.33	0.38	0.14	0.19
	Uranium (total)	mg/kg	70	70	100	--	--	0.31	5.5	1.2	1.4	0.89	0.5
	Vanadium	mg/kg	70	70	100	--	--	10 J+	60 J+	38	36	12	16
	Zinc	mg/kg	24	24	100	--	--	16.1	61.3	34	34	12	16
	Zirconium	mg/kg	70	68	97.1	<30	<30	6.2 J	48 J+	29	29	10	16
Radionuclides	Radium-226	pCi/g	46	46	100	--	--	0.426	1.42	0.82	0.81	0.18	0.25
	Radium-228	pCi/g	18	18	100	--	--	0.989 J-	1.55 J-	1.3	1.2	0.17	0.26
	Thorium-228	pCi/g	70	70	100	--	--	0.706	2.25	1.3	1.3	0.29	0.39
	Thorium-230	pCi/g	46	46	100	--	--	0.454	1.48	0.96	0.92	0.19	0.22
	Thorium-232	pCi/g	70	70	100	--	--	0.430	2.11	1.2	1.2	0.31	0.41
	Uranium-234	pCi/g	46	46	100	--	--	0.533	3.48	0.84	0.98	0.54	0.18
	Uranium-235	pCi/g	68	68	100	--	--	-0.00539 U	0.180	0.042	0.049	0.034	0.039
	Uranium-238	pCi/g	46	46	100	--	--	0.391	1.83	0.82	0.84	0.28	0.21

Notes:

mg/kg: milligrams per kilogram
pCi/g: picocuries per gram
<: Not detected above laboratory reporting limits
U: For radionuclides, result shown is below the minimum detectable concentration

J qualifier indicates an estimated detected concentration
J+ qualifier indicates an estimated detected concentration with a positive bias
J- qualifier indicates an estimated detected concentration with a negative bias
UJ qualifier indicates a non-detected concetration with an estimated detection limit

TABLE I-2a. STATISTICAL BACKGROUND COMPARISONS FOR RI SOIL DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical	Site Dataset	Background Dataset	Distribution	Gehan Test (p-value)	Quantile Test (p-value)	Slippage Test (p-value)	t-Test (p-value)	t-Test (logged data) (p-value)	Site Dataset Consistency with Background
Antimony	Top Ten Feet OU-1 North	BRC/TIMET	NP	<0.001	1	<0.001	<0.001	<0.001	LDF
	Top Ten Feet OU-1 South	RZ-A	NP	<0.001	<0.001	<0.001	<0.001	1	LDF
	Deep Alluvium	BRC Deep McCullough Alluvium	NP	<0.001	<0.001	<0.001	<0.001	<0.001	Above
	UMCf	Combined UMCf	NP	<0.001	0.004	<0.001	<0.001	<0.001	Above
Arsenic	Top Ten Feet OU-1 North	BRC/TIMET	NP	1	0.9	0.002	0.001	0.9	Above
	Top Ten Feet OU-1 South	RZ-A	NP	<0.001	<0.001	<0.001	<0.001	<0.001	Above
	Deep Alluvium	BRC Deep McCullough Alluvium	NP	<0.001	<0.001	<0.001	<0.001	<0.001	Above
	UMCf	Combined UMCf	NP	0.3	1	0.1	0.4	0.07	Consistent
Barium	Top Ten Feet OU-1 North	BRC/TIMET	NP	0.3	1	0.5	0.1	0.8	Consistent
	Top Ten Feet OU-1 South	RZ-A	NP	<0.001	<0.001	<0.001	<0.001	0.09	Above
	Deep Alluvium	BRC Deep McCullough Alluvium	NP	0.1	0.1	0.5	0.3	0.7	Consistent
	UMCf	Combined UMCf	NP	1	1	0.1	0.8	1	Consistent
Boron	Top Ten Feet OU-1 North	BRC/TIMET	NP	<0.001	<0.001	<0.001	0.002	<0.001	Above
	Top Ten Feet OU-1 South	RZ-A	NP	<0.001	<0.001	<0.001	<0.001	<0.001	LDF
	Deep Alluvium	BRC Deep McCullough Alluvium	NP	<0.001	<0.001	<0.001	<0.001	<0.001	Above
	UMCf	Combined UMCf	NP	<0.001	<0.001	<0.001	<0.001	<0.001	Above
Cadmium	Top Ten Feet OU-1 South	RZ-A	NP	<0.001	<0.001	<0.001	<0.001	0.01	Above
	Deep Alluvium	BRC Deep McCullough Alluvium	NP	<0.001	<0.001	<0.001	<0.001	<0.001	Above
	UMCf	Combined UMCf	NP	<0.001	0.003	<0.001	<0.001	<0.001	Above
Chromium VI	Top Ten Feet OU-1 South	RZ-A	NP	<0.001	<0.001	<0.001	<0.001	<0.001	LDF
	Deep Alluvium	BRC Deep McCullough Alluvium	NP	<0.001	<0.001	<0.001	<0.001	<0.001	LDF
	UMCf	Combined UMCf	LN	<0.001	<0.001	<0.001	<0.001	<0.001	LDF
Cobalt	Top Ten Feet OU-1 North	BRC/TIMET	NP	1	1	0.004	0.02	1	Above
	Top Ten Feet OU-1 South	RZ-A	NP	<0.001	<0.001	<0.001	<0.001	0.04	Above
	Deep Alluvium	BRC Deep McCullough Alluvium	NP	1	1	0.2	1	1	Consistent
	UMCf	Combined UMCf	NP	1	1	0.7	1	1	Consistent

TABLE I-2a. STATISTICAL BACKGROUND COMPARISONS FOR RI SOIL DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical	Site Dataset	Background Dataset	Distribution	Gehan Test (p-value)	Quantile Test (p-value)	Slippage Test (p-value)	t-Test (p-value)	t-Test (logged data) (p-value)	Site Dataset Consistency with Background
Copper	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	0.3	0.2	*<0.001*	*<0.001*	0.2	Above
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.7	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	0.08	*<0.001*	*0.01*	*<0.001*	0.08	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	*0.003*	0.04	*<0.001*	*<0.001*	Above
Iron	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*0.009*	Above
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	1	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	0.9	0.3	1	1	Consistent
	UMCf	**Combined UMCf**	NP	1	1	0.7	1	1	Consistent
Lead	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	*<0.001*	*0.002*	*0.01*	*0.02*	*<0.001*	Above
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*0.005*	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	0.05	0.09	0.2	*0.004*	0.04	Consistent
	UMCf	**Combined UMCf**	NP	1	1	0.7	1	1	Consistent
Lithium	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	1	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	0.5	0.4	1	0.5	0.5	Consistent
Magnesium	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	0.7	0.8	*<0.001*	*<0.001*	*0.02*	Above
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.9	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
Manganese	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	0.3	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	0.9	*0.006*	*<0.001*	1	Above
	UMCf	**Combined UMCf**	NP	1	1	0.3	1	1	Consistent
Mercury	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	0.1	0.3	0.03	*0.004*	0.3	Consistent
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.1	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	*<0.001*	*0.002*	*<0.001*	*<0.001*	1	Above
	UMCf	**Combined UMCf**	NP	1	0.05	0.4	*0.002*	1	LDF

TABLE I-2a. STATISTICAL BACKGROUND COMPARISONS FOR RI SOIL DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical	Site Dataset	Background Dataset	Distribution	Gehan Test (*p*-value)	Quantile Test (*p*-value)	Slippage Test (*p*-value)	*t*-Test (*p*-value)	*t*-Test (logged data) (*p*-value)	Site Dataset Consistency with Background
Molybdenum	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	*<0.001*	0.8	*0.01*	*0.005*	*<0.001*	Above
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.4	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	*<0.001*	0.9	0.07	*0.01*	*<0.001*	Above
	UMCf	**Combined UMCf**	NP	1	*<0.001*	0.3	0.2	0.8	Above
Nickel	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	1	1	0.4	0.9	1	Consistent
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.7	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	0.2	0.7	1	1	Consistent
	UMCf	**Combined UMCf**	NP	1	1	1	1	0.9	Consistent
Niobium	**Deep Alluvium**	**BRC Deep McCullough Alluvium**	NP	*<0.001*	*0.005*	0.5	*<0.001*	*<0.001*	LDF
Palladium	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	0.6	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	1	0.3	1	1	Consistent
Selenium	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	*<0.001*	1	*<0.001*	*<0.001*	*<0.001*	LDF
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	1	LDF
	UMCf	**Combined UMCf**	NP	1	1	1	1	1	LDF
Silver	**Deep Alluvium**	**BRC Deep McCullough Alluvium**	NP	*<0.001*	1	0.8	0.4	*<0.001*	LDF
	UMCf	**Combined UMCf**	NP	*0.001*	1	0.7	0.2	*<0.001*	LDF
Strontium	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	1	0.9	0.8	1	1	Consistent
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	1	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	0.05	0.03	*0.004*	*<0.001*	*0.002*	Above
	UMCf	**Combined UMCf**	NP	0.3	0.2	0.03	*0.006*	*0.02*	Consistent
Thallium	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	1	0.8	0.5	0.8	1	LDF
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	0.8	*<0.001*	0.2	*<0.001*	1	LDF

TABLE I-2a. STATISTICAL BACKGROUND COMPARISONS FOR RI SOIL DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical	Site Dataset	Background Dataset	Distribution	Gehan Test (*p*-value)	Quantile Test (*p*-value)	Slippage Test (*p*-value)	*t*-Test (*p*-value)	*t*-Test (logged data) (*p*-value)	Site Dataset Consistency with Background
Tungsten	**Top Ten Feet OU-1 South**	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	*<0.001*	0.2	1	*<0.001*	0.2	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	0.09	0.2	*<0.001*	0.2	LDF
Uranium (total)	**Top Ten Feet OU-1 North**	**BRC/TIMET**	NP	0.3	*<0.001*	0.1	*0.003*	0.03	Above
	Top Ten Feet OU-1 South	**RZ-A**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.9	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
Zirconium	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	1	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	1	0.06	1	1	Consistent
	UMCf	**Combined UMCf**	N	*0.004*	*0.02*	*0.002*	*<0.001*	*<0.001*	Above
Radium-226	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	0.9	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	0.9	*<0.001*	1	1	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
Radium-228	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	0.3	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	1	0.6	1	1	Consistent
	UMCf	**Combined UMCf**	NP	1	0.5	0.1	1	1	Consistent
Thorium-228	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	0.9	0.8	*0.02*	1	1	Above
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	1	0.3	1	1	Consistent
	UMCf	**Combined UMCf**	NP	0.6	0.6	0.7	0.6	0.7	Consistent
Thorium-230	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	0.5	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	0.4	*<0.001*	*<0.001*	*<0.001*	*0.01*	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
Thorium-232	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	0.2	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	1	0.8	0.1	1	1	Consistent
	UMCf	**Combined UMCf**	N	0.9	0.8	1	0.9	0.9	Consistent

TABLE I-2a. STATISTICAL BACKGROUND COMPARISONS FOR RI SOIL DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical	Site Dataset	Background Dataset	Distribution	Gehan Test (*p*-value)	Quantile Test (*p*-value)	Slippage Test (*p*-value)	*t*-Test (*p*-value)	*t*-Test (logged data) (*p*-value)	Site Dataset Consistency with Background
Uranium-235	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	0.7	1	*<0.001*	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above
Uranium-238	**Top Ten Feet OU-1**	**BRC/TIMET**	NP	1	1	0.5	1	1	Consistent
	Deep Alluvium	**BRC Deep McCullough Alluvium**	NP	0.9	*<0.001*	*<0.001*	*<0.001*	0.2	Above
	UMCf	**Combined UMCf**	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Above

Notes:

NA = value not available

LDF = Low detection frequency (<25%) in either site or background datasets. Background comparison results may not be applicable.

p-values in italics indicate $p < 0.025$.

Background comparison tests use 1/2 the detection limit (DL) for non-detects in the parametric test (*t*-test) and the DL for non-parametric tests (Gehan Test, quantile test, and slippage test).

Site Datasets:

Top Ten Feet: Unsaturated alluvium within the top ten feet of ground surface.

Deep Alluvium: Unsaturated alluvium below the top ten feet of ground surface.

UMCf: Unsaturated Upper Muddy Creek formation.

Site Datasets include all vadose zone soil results from OU-1 taken from 2006 to 2018 exclusive of treatability studies and excavated samples.

Background Datasets:

RZ-A: Shallow background data set from RZ-A on NERT site (excluding the six borings in LOU 62).

BMI Shallow: TIMET/BRC, 2007. Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity.

BMI Deep: ERM-West, Inc. 2009. 2008 Deep Soil Background Report, BMI Common Areas (Eastside).

RI UMCf: Ramboll, 2021. Soil Background Dataset Summary Report.

Distribution:

N = Study area data and background data consistent with normal distribution.

LN = Study area data and background data conistent with log-normal distribution.

NP = Study area data or background data is not consistent with both normal distribution and log-normal distribution.

TABLE I-2b. STATISTICAL ANALYSIS[1] OF SECULAR EQUILIBRIUM FOR RI SOIL DATA SET
Nevada Environmental Response Trust Site
Henderson, Nevada

Lithology	Decay Chain	*p*-value	Conclusion[2]	Delta	Sample Size[3]	Number Missing[4]	Analyte	Mean Proportions of Radioactivity	95% Confidence Intervals		Shifts[5]
									Lower	Upper	
Upper Ten Feet	Uranium (U-238)	<0.0001	in Secular Equilibrium	0.1	443	133	Radium-226	0.2240	0.2145	0.2335	0
							Thorium-230	0.2756	0.2690	0.2823	0
							Uranium-234	0.2576	0.2516	0.2637	0
							Uranium-238	0.2428	0.2373	0.2483	0
	Thorium (Th-232)	<0.0001	in Secular Equilibrium	0.1	548	28	Radium-228	0.3125	0.3005	0.3245	0.1860
							Thorium-228	0.3665	0.3593	0.3737	0.0733
							Thorium-232	0.3210	0.3136	0.3284	0.0107
Deep Alluvium	Uranium (U-238)	<0.0001	in Secular Equilibrium	0.1	472	164	Radium-226	0.2095	0.2001	0.2189	0
							Thorium-230	0.2733	0.2653	0.2812	0
							Uranium-234	0.2730	0.2662	0.2799	0
							Uranium-238	0.2442	0.2385	0.2499	0
	Thorium (Th-232)	<0.0001	in Secular Equilibrium	0.1	600	36	Radium-228	0.2995	0.2897	0.3092	0.0994
							Thorium-228	0.3654	0.3594	0.3713	0
							Thorium-232	0.3352	0.3297	0.3406	0
UMCf	Uranium (U-238)	<0.0001	in Secular Equilibrium	0.1	121	49	Radium-226	0.2030	0.1846	0.2214	0
							Thorium-230	0.2555	0.2425	0.2685	0
							Uranium-234	0.2798	0.2695	0.2902	0
							Uranium-238	0.2616	0.2517	0.2716	0
	Thorium (Th-232)	<0.0001	in Secular Equilibrium	0.1	154	16	Radium-228	0.3047	0.2841	0.3253	0
							Thorium-228	0.3643	0.3528	0.3758	0
							Thorium-232	0.3310	0.3188	0.3431	0

Notes:

1. Analyzed using R code from Neptune and Company, Inc.
2. Decay chain is in secular equilibrium if the computed *p*-value is less than a standard significance level of 0.05.
3. Sample data set includes field duplicates.
4. Count of samples for which one or more results are unavailable.
   These samples are not counted in the sample size and are not included in the secular equilibrium calculation.
5. Data Shift: Value of the data shift utililzed by the R code in the case of negative radioactivity measurements. All measurement values for that radioisotope are shifted upwards by the shift value so that all values are non-negative. A zero shift value indicates the lack of negative measurements.

TABLE I-3. OU-1 BACKGROUND COMPARISON SUMMARY
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical	OU-1 Upper Ten Feet Consistency with Background	OU-1 Deep Alluvium (>10 feet depth) Consistency with Background	OU-1 UMCf Consistency with Background
Antimony	Above	Above	Above
Arsenic	Above	Above	Consistent
Barium	Above	Consistent	Consistent
Boron	Above	Above	Above
Cadmium	Above	Above	Above
Chromium VI	Above	Above	Above
Cobalt	Above	Consistent	Consistent
Copper	Above	Above	Above
Iron	Consistent	Consistent	Consistent
Lead	Above	Consistent	Consistent
Lithium	Consistent	Consistent	Consistent
Magnesium	Above	Above	Above
Manganese	Above	Above	Consistent
Mercury	Above	Above	Inconclusive
Molybdenum	Above	Above	Above
Nickel	Above	Consistent	Consistent
Niobium	Inconclusive	Inconclusive	Inconclusive
Palladium	Consistent	Consistent	Consistent
Selenium	Above	Above	Consistent
Silver	Inconclusive	Inconclusive	Inconclusive
Strontium	Consistent	Above	Above
Thallium	Above	Inconclusive	Inconclusive
Tungsten	Above	Above	Inconclusive
Uranium (total)	Consistent	Above	Above
Zirconium	Consistent	Consistent	Consistent
Radium-226	Consistent	Above	Above
Radium-228	Consistent	Consistent	Consistent
Thorium-228	Consistent	Consistent	Consistent
Thorium-230	Consistent	Above	Above
Thorium-232	Consistent	Consistent	Consistent
Uranium-235	Consistent	Above	Above
Uranium-238	Consistent	Above	Above

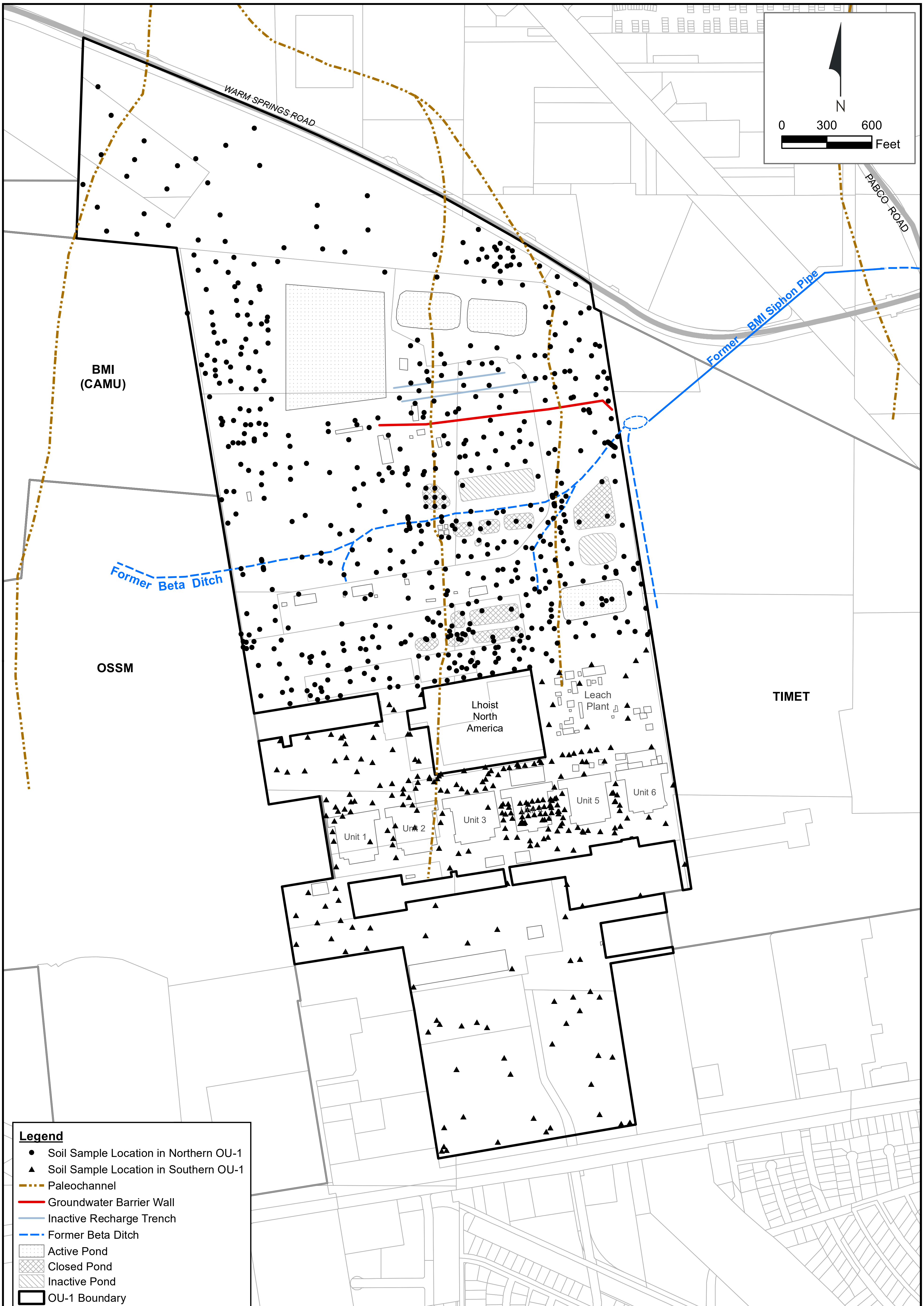
Notes:

Upper Ten Feet: Unsaturated alluvium within the top ten feet of ground surface.

Deep Alluvium: Unsaturated alluvium below the top ten feet of ground surface.

UMCf: Unsaturated Upper Muddy Creek formation.

FIGURES

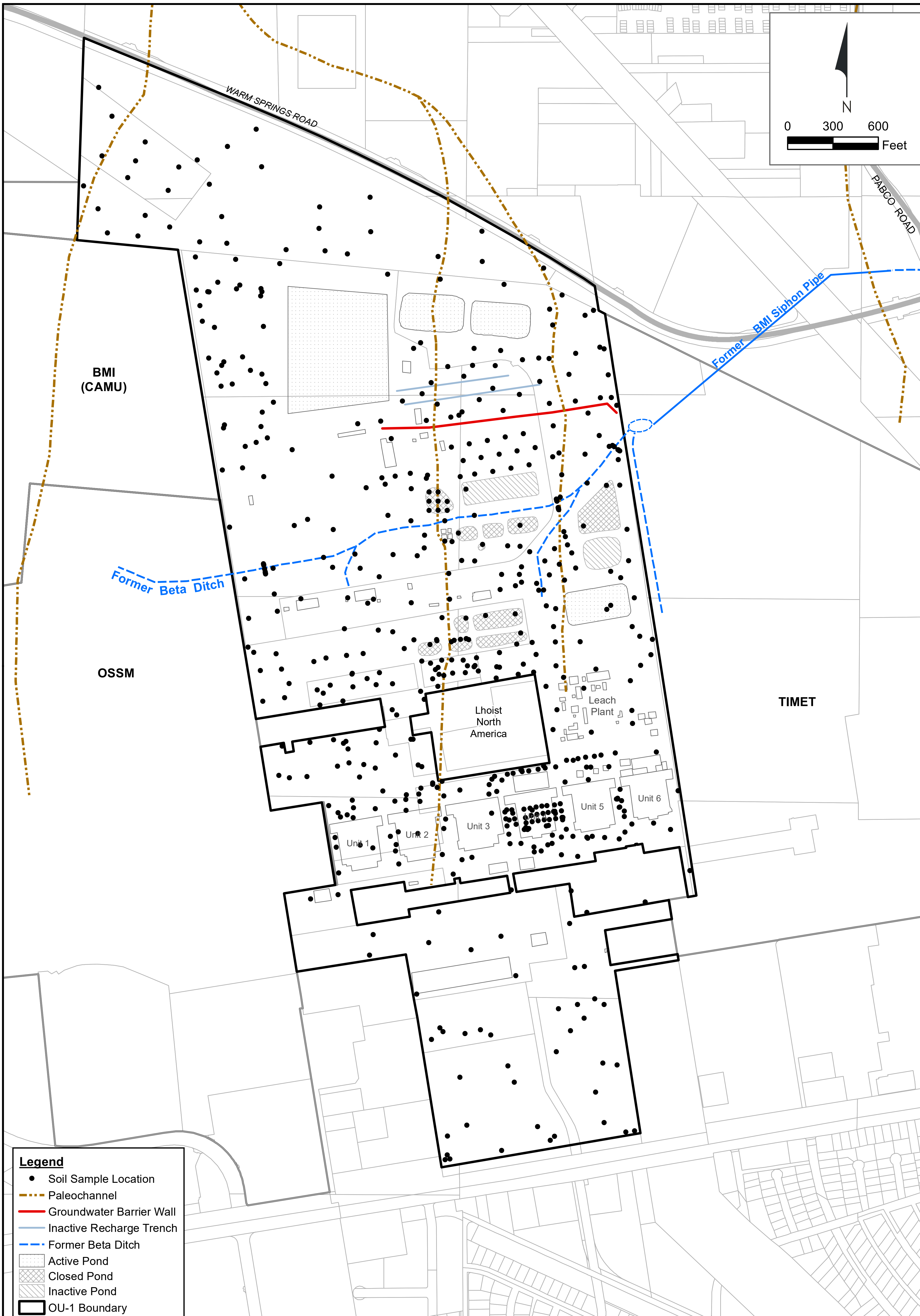


RAMBOLL

OU-1 Vadose Zone Soil Sampling Locations, Upper 10 Feet, 2006-2019
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure
I-1a

Drafter: JH | Date: 2/4/2021 | Contract Number: 169002 0169 | Approved by: | Revised:



RAMBOLL

OU-1 Vadose Zone Soil Sampling Locations, Alluvium Below 10 Feet, 2006-2019
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure
I-1b

Drafter: JH | Date: 2/4/2021 | Contract Number: 169002 0169 | Approved by: | Revised:

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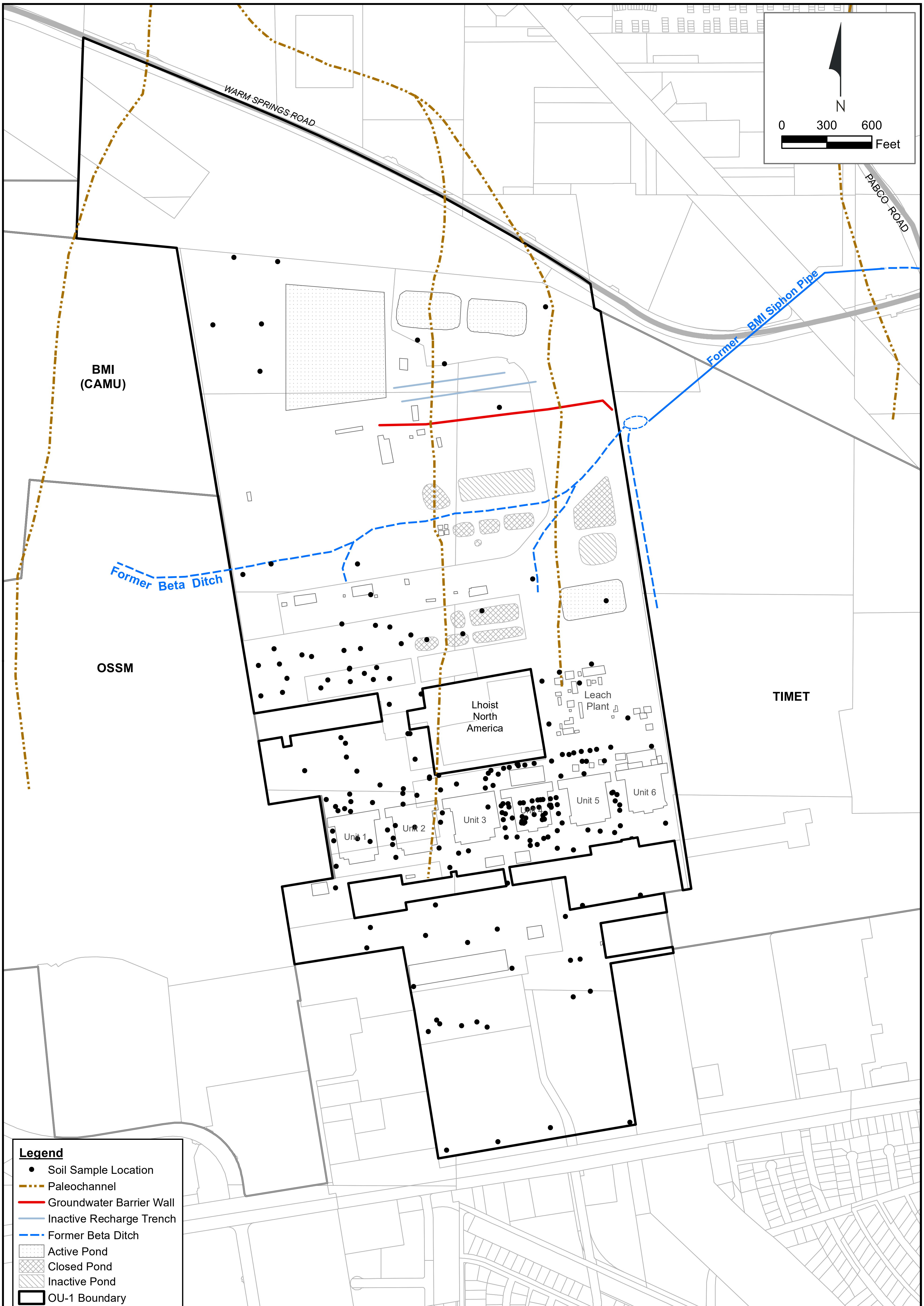
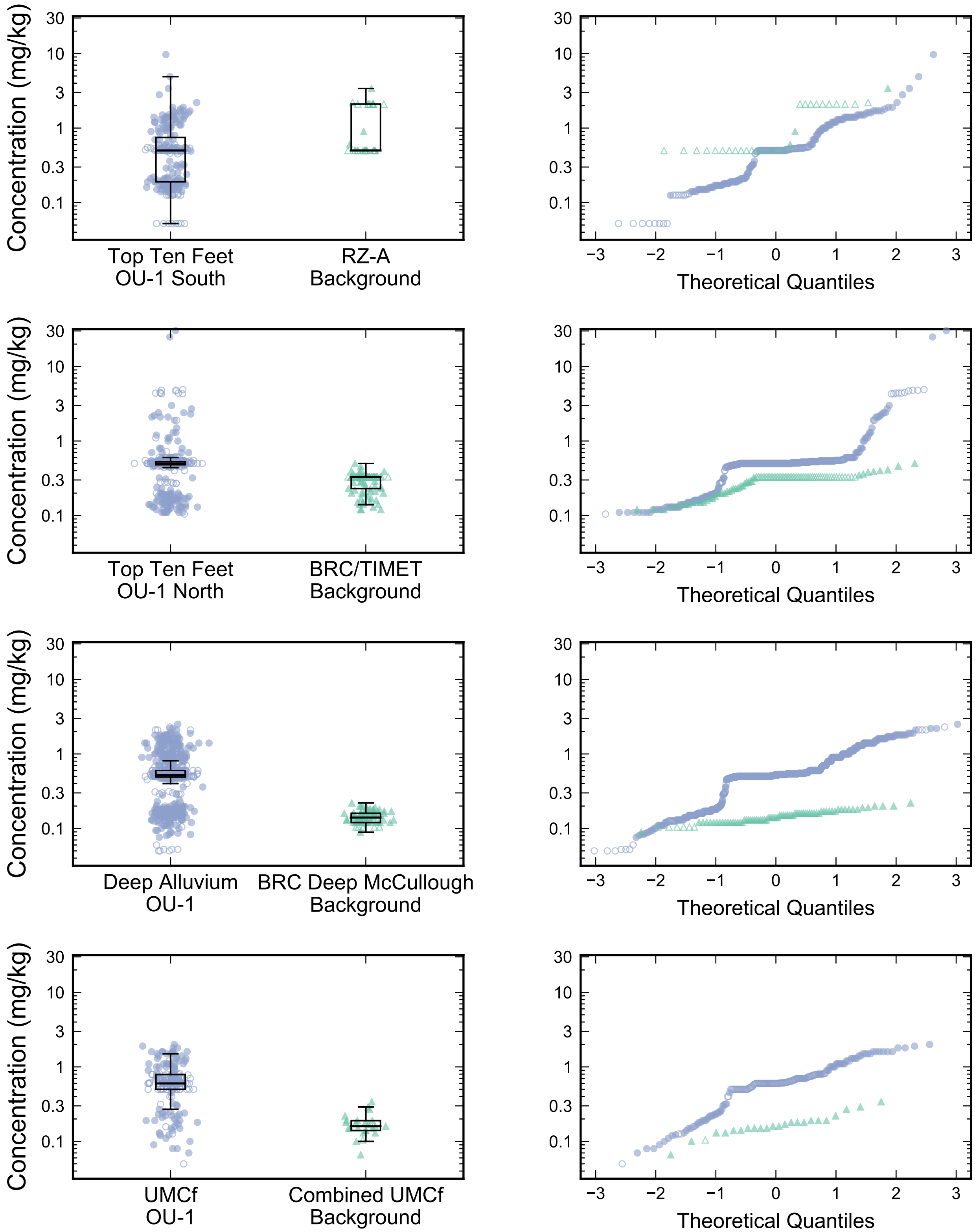


RAMBOLL

OU-1 Vadose Zone Soil Sampling Locations, UMCf, 2006-2019
Nevada Environmental Response Trust Site
Henderson, Nevada

Figure
I-1c

Drafter: JH | Date: 2/4/2021 | Contract Number: 169002 0169 | Approved by: | Revised:



Site Data
Background Data

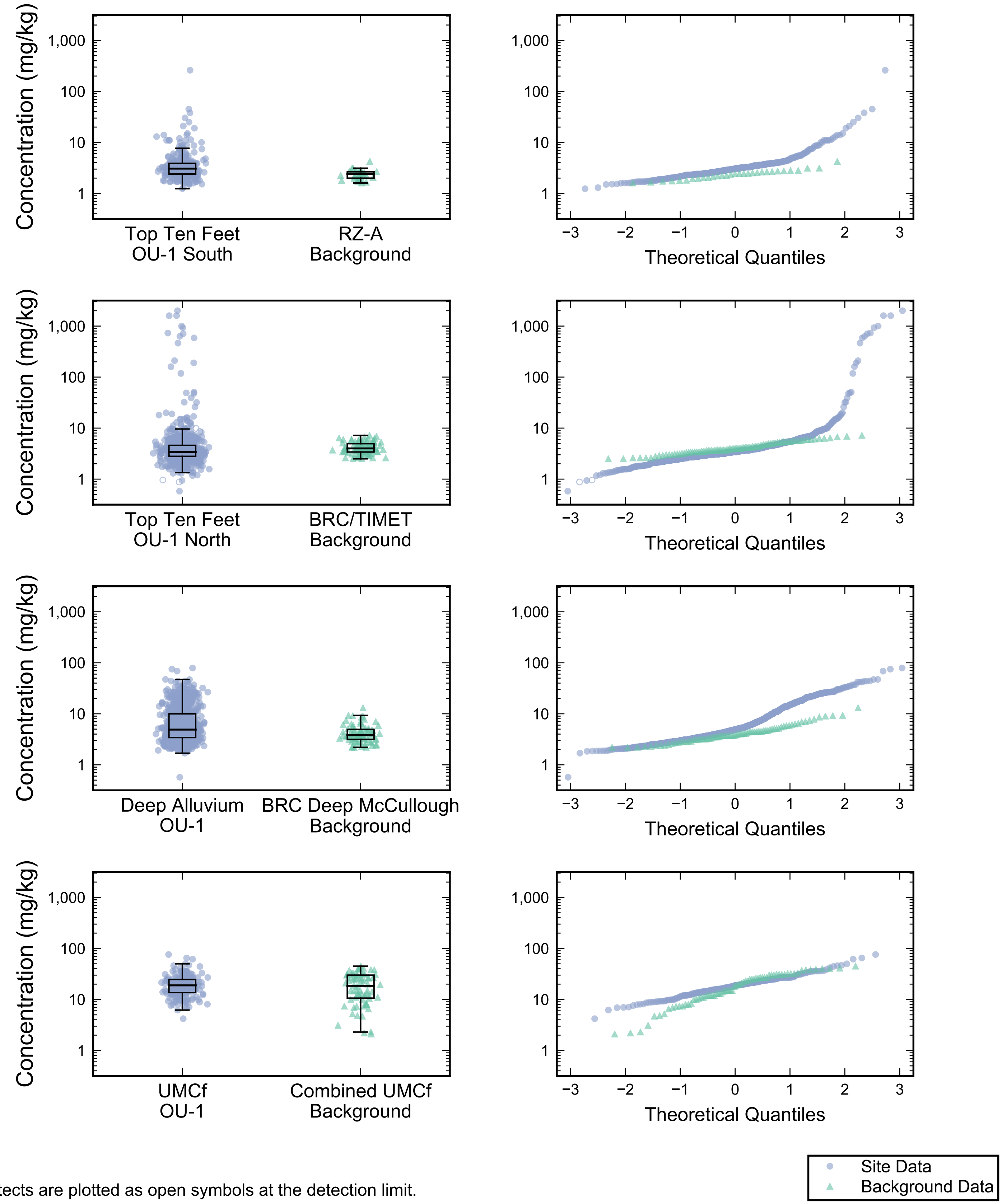
Non-detects are plotted as open symbols at the detection limit.

RAMBOLL

Statistical Background Comparison for Antimony in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-2

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Non-detects are plotted as open symbols at the detection limit.

Statistical Background Comparison for Arsenic in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-3a

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

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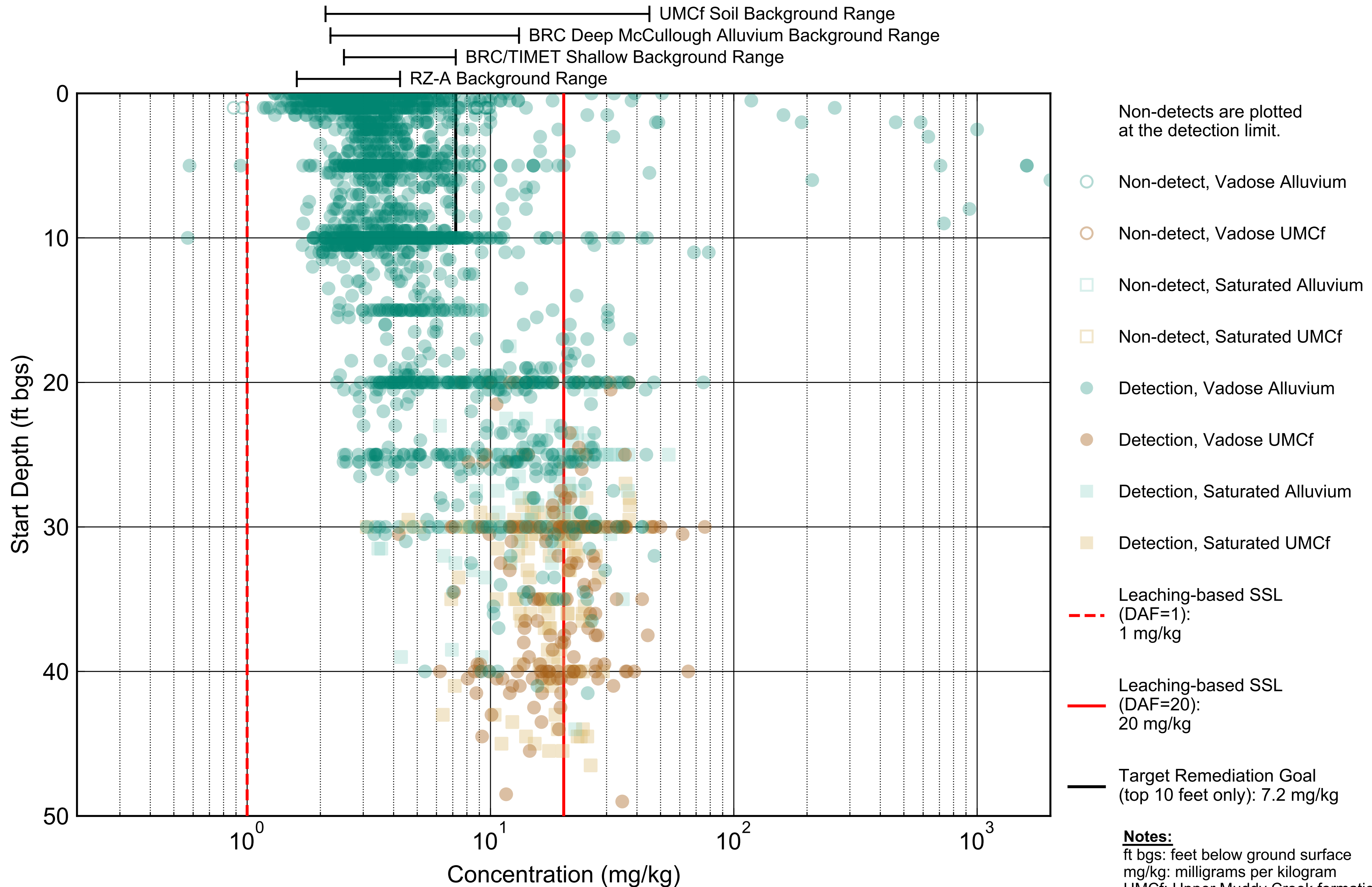


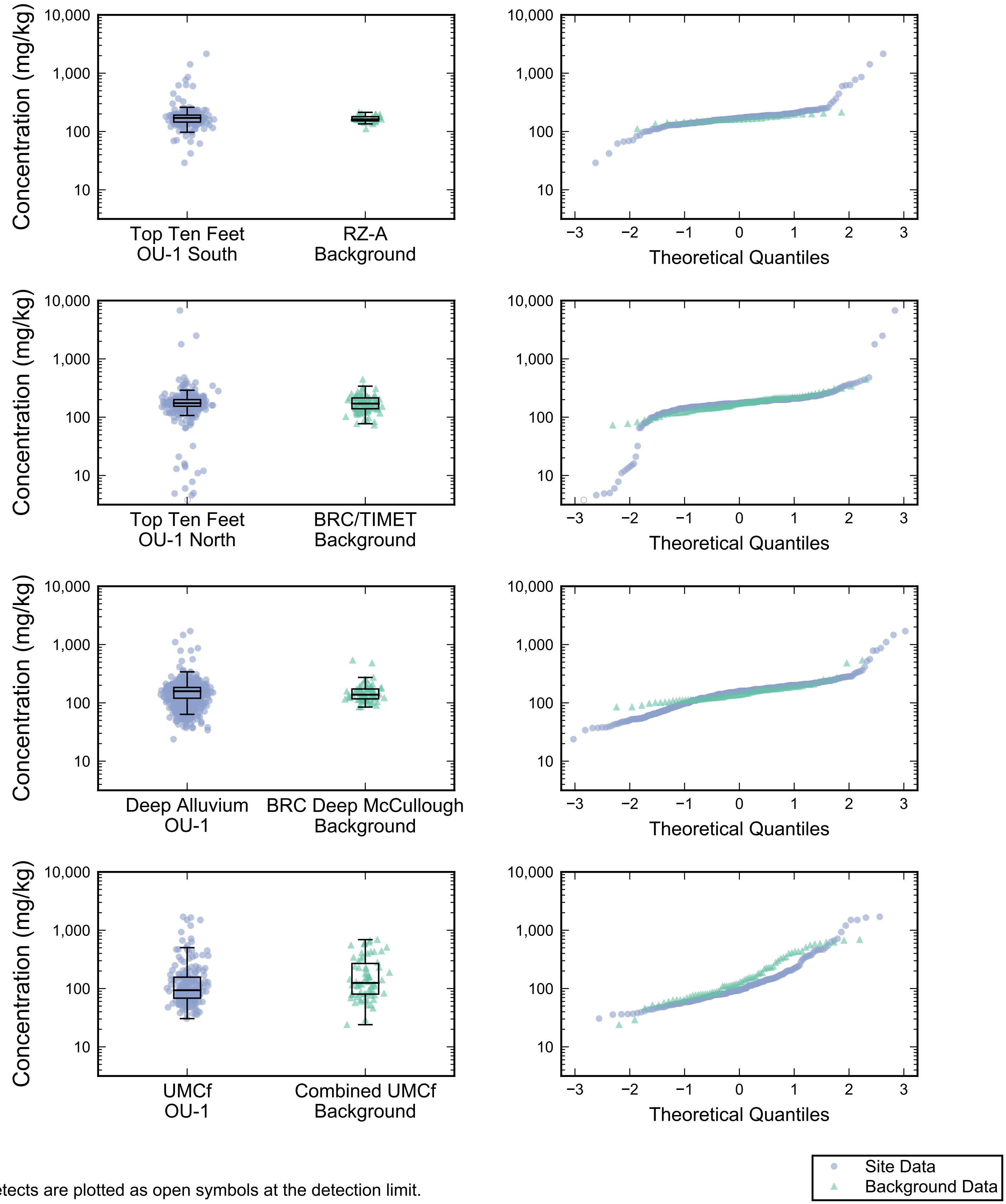
Notes:
ft bgs: feet below ground surface
mg/kg: milligrams per kilogram
UMCf: Upper Muddy Creek formation
SSL: Soil Screening Level
DAF: Dilution-Attenuation Factor

RAMBOLL

OU-1 Arsenic Soil Concentrations vs. Sample Depth
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-3b

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Non-detects are plotted as open symbols at the detection limit.

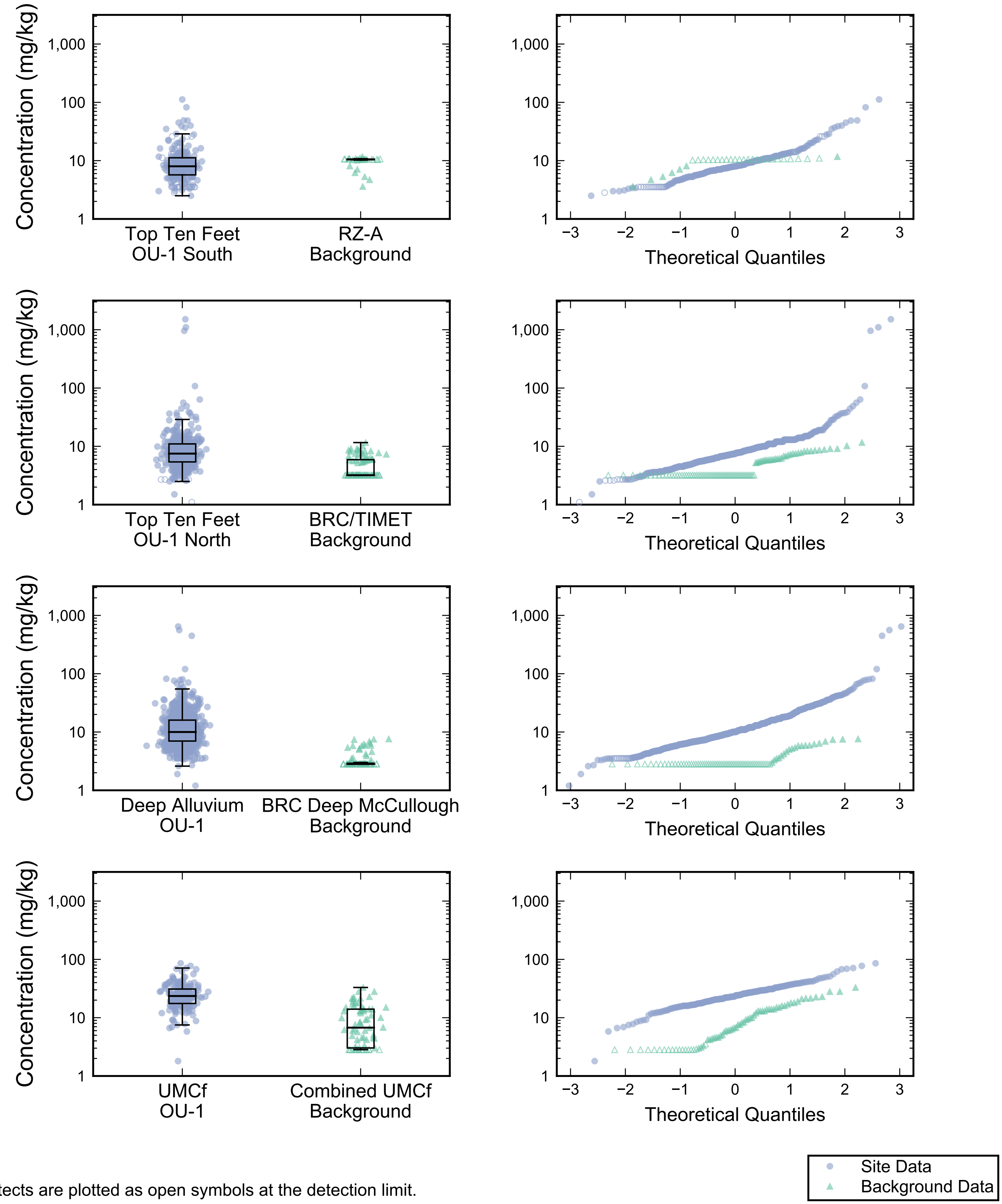
Statistical Background Comparison for Barium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure

I-4

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

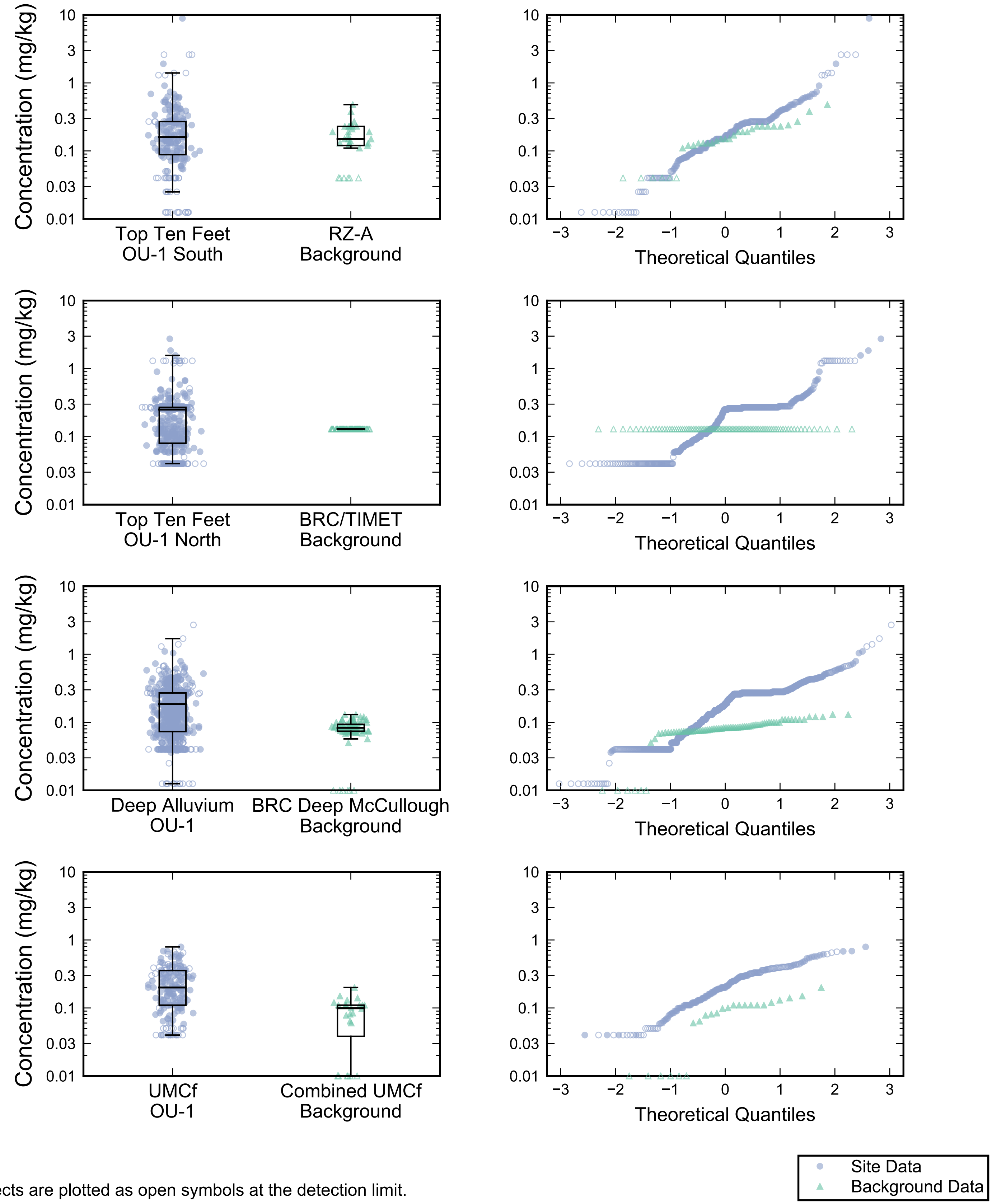
Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilStatFigures.py



Non-detects are plotted as open symbols at the detection limit.

RAMBOLL	**Statistical Background Comparison for Boron in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-5**

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

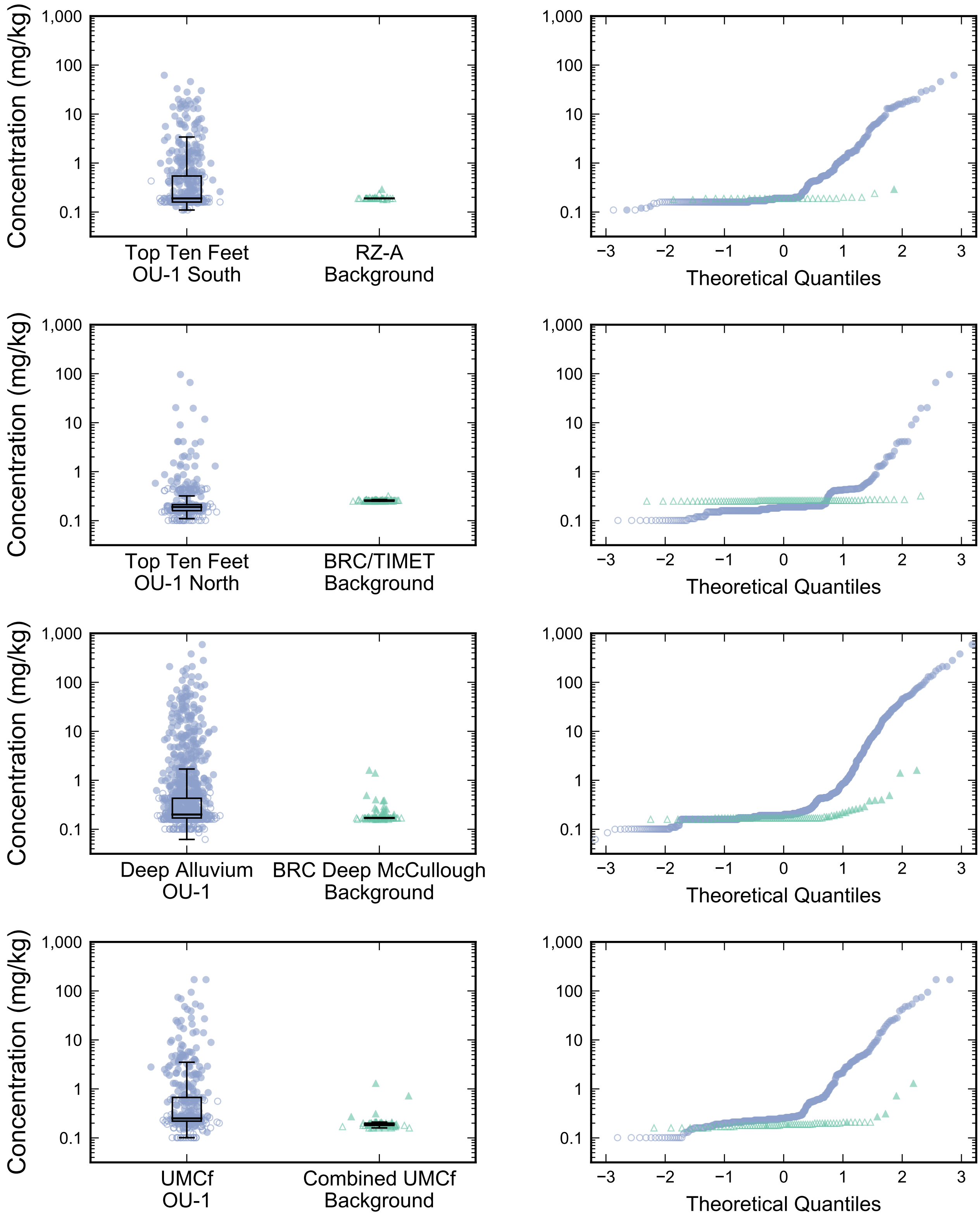


Non-detects are plotted as open symbols at the detection limit.

Statistical Background Comparison for Cadmium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-6

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Site Data
Background Data

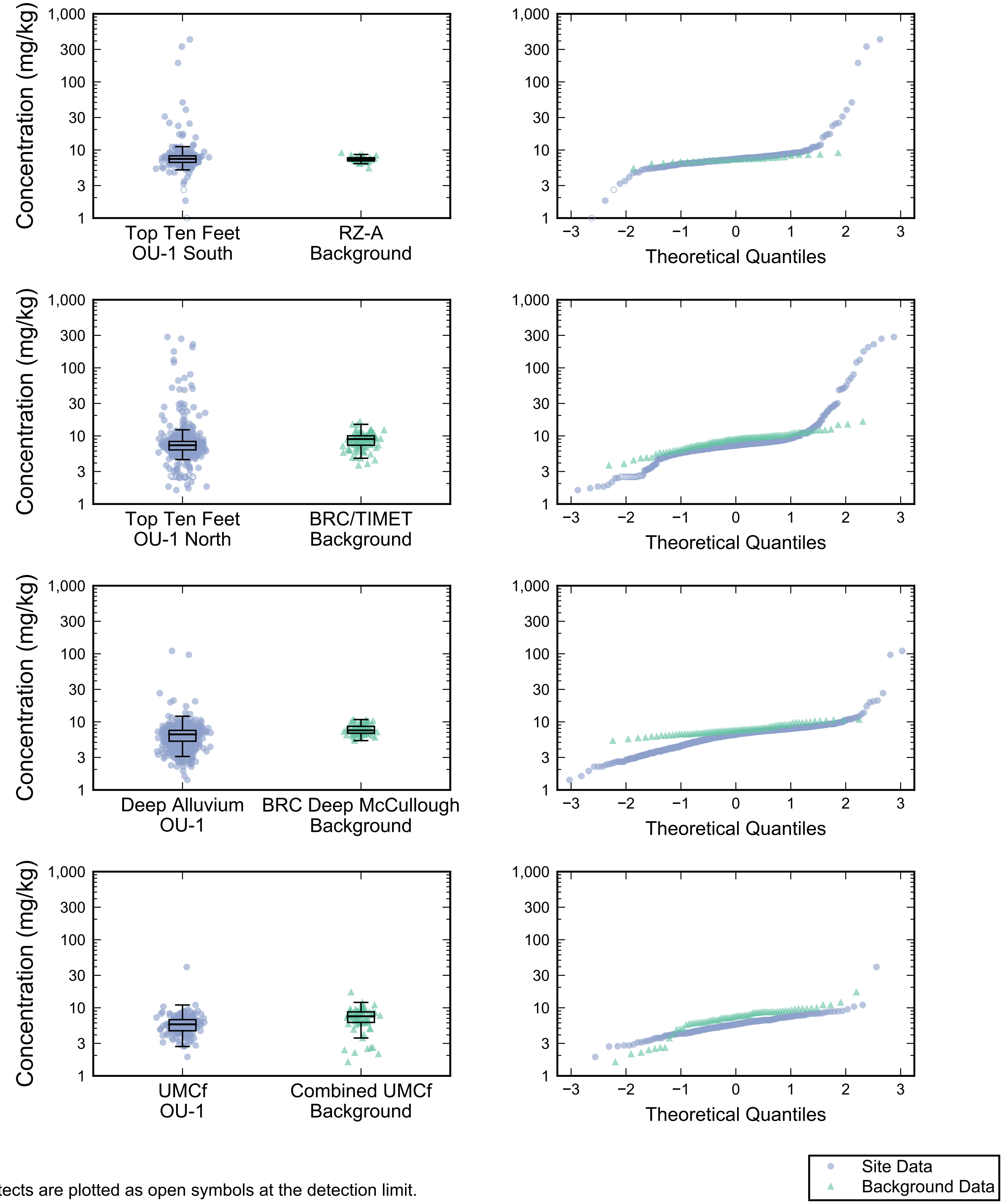
Non-detects are plotted as open symbols at the detection limit.

RAMBOLL

Statistical Background Comparison for Chromium VI in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-7

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Non-detects are plotted as open symbols at the detection limit.

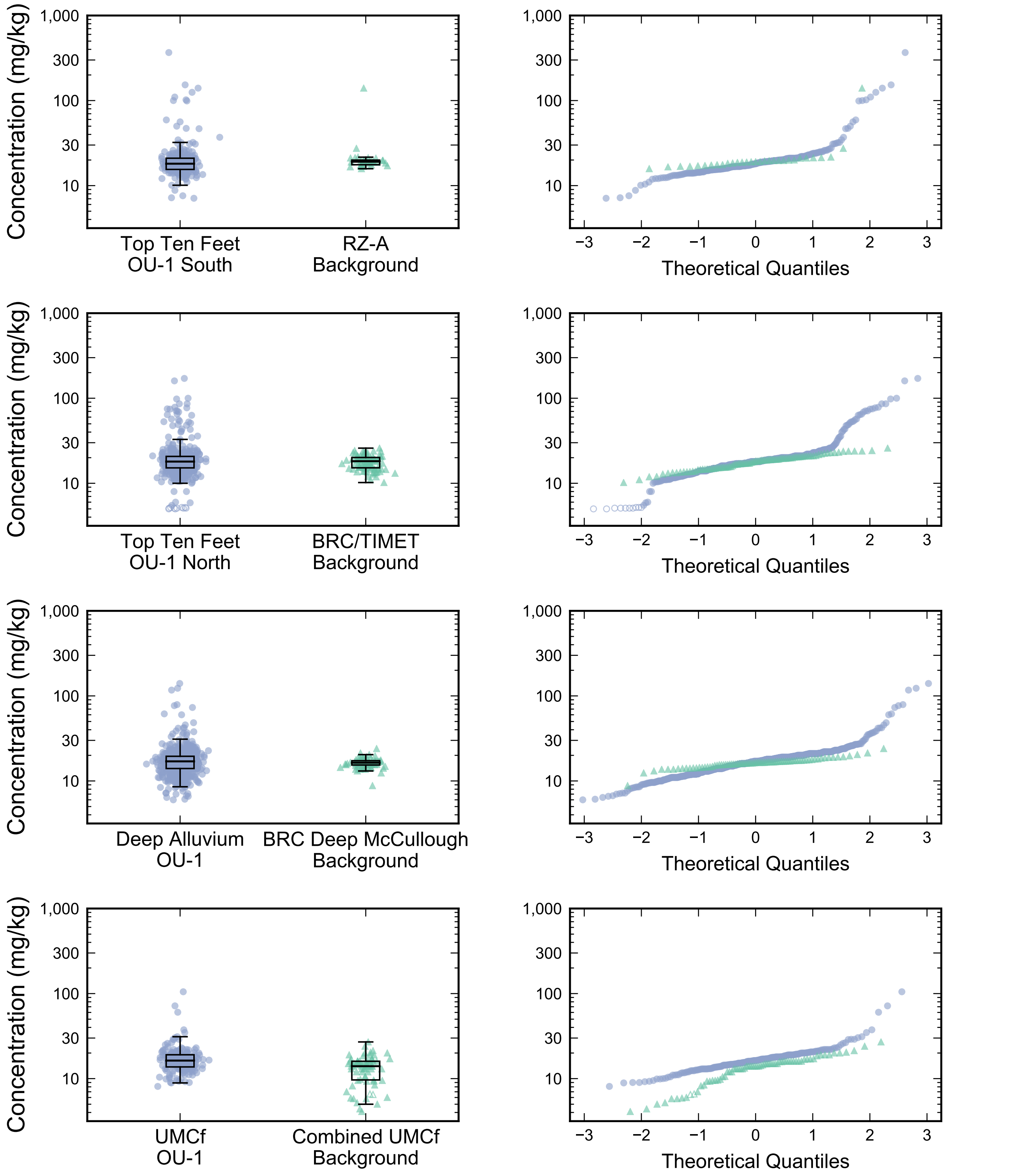
RAMBOLL

Statistical Background Comparison for Cobalt in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-8

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilStatFigures.py



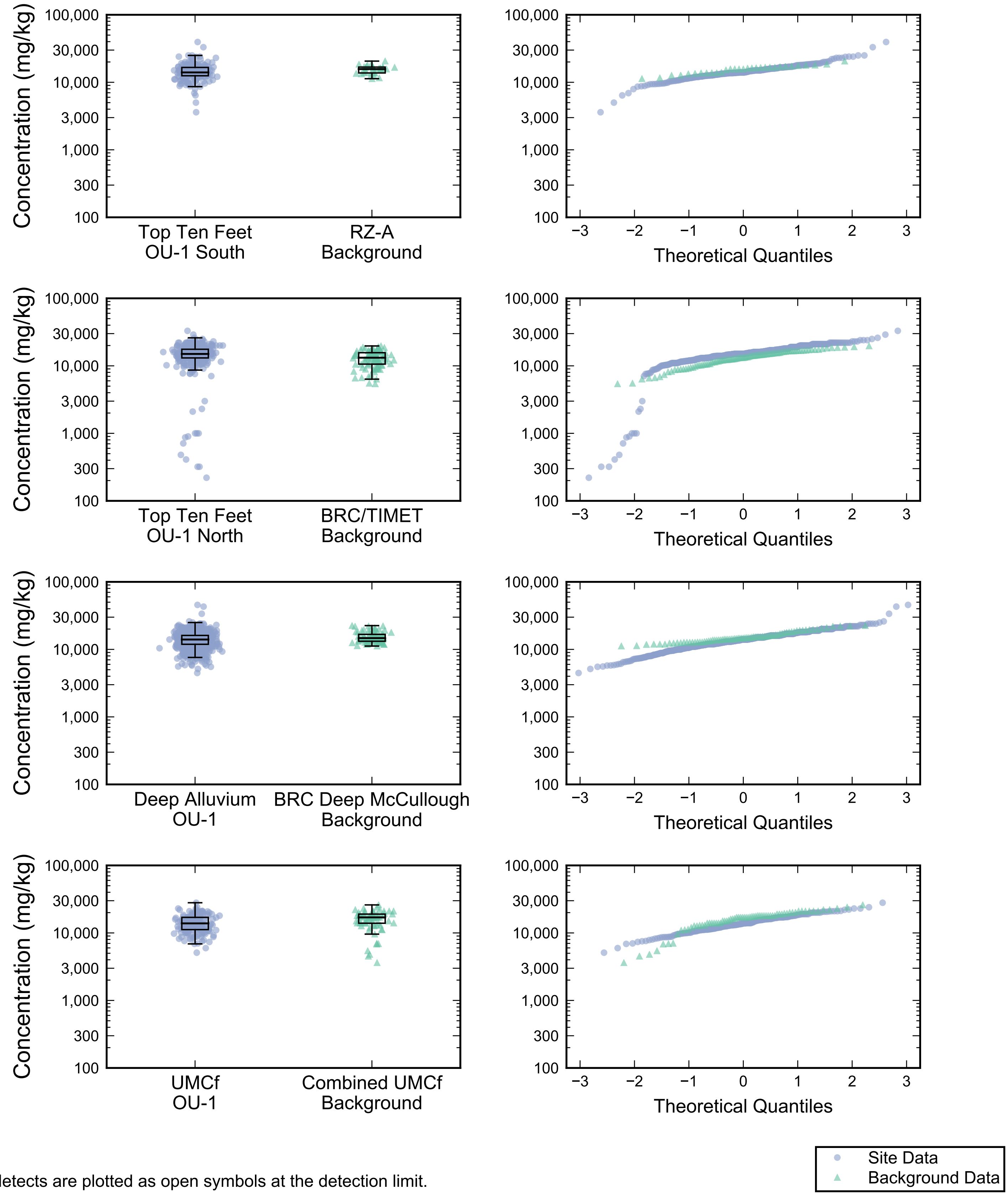
Site Data
Background Data

Non-detects are plotted as open symbols at the detection limit.

RAMBOLL	**Statistical Background Comparison for Copper in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-9**

Drafter: JH Date: 01/13/23 Contract Number: 169002 9369 Approved: Revised:

Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilStatFigures.py



Non-detects are plotted as open symbols at the detection limit.

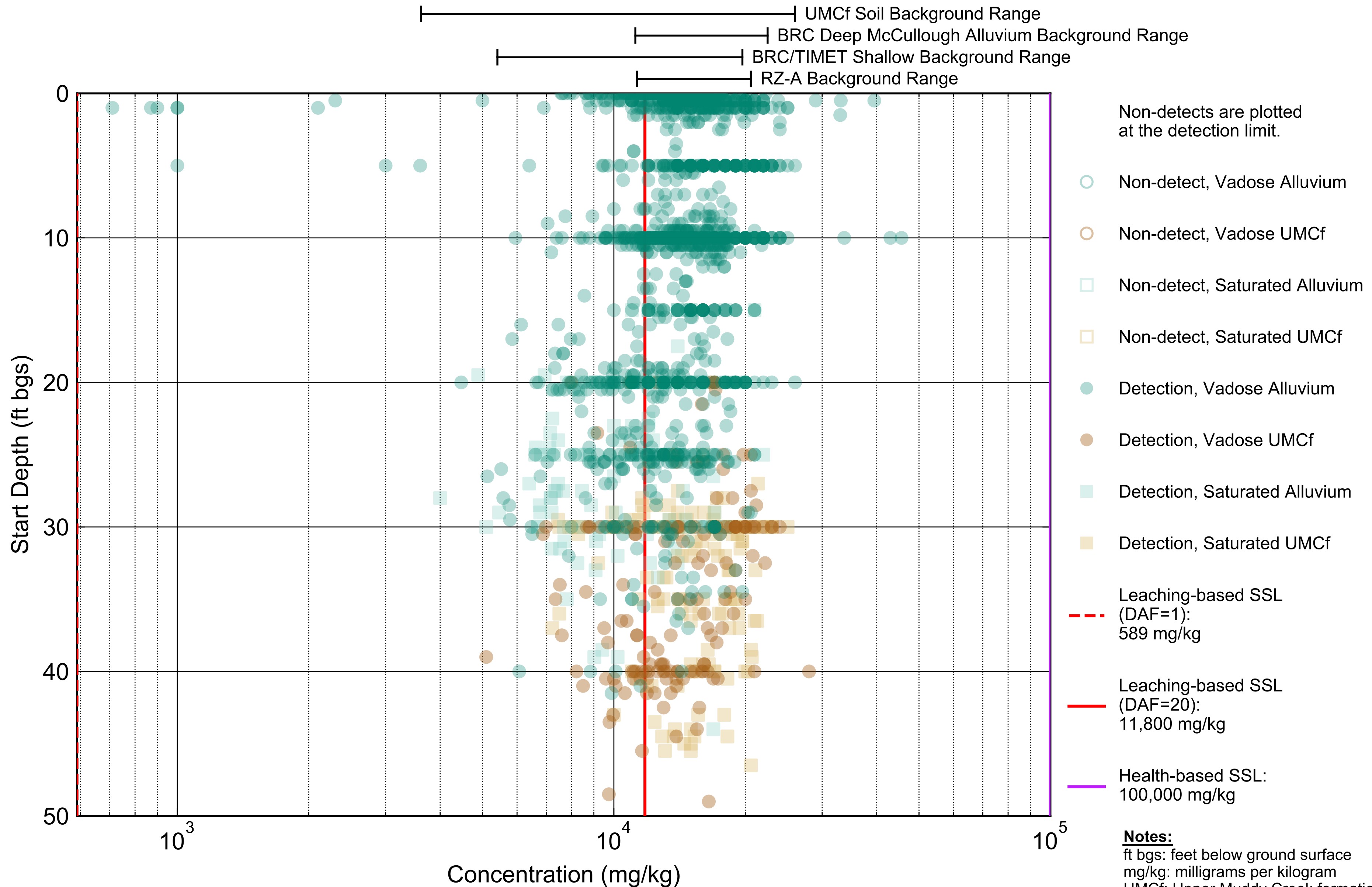
RAMBOLL

Statistical Background Comparison for Iron in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-10a

Drafter: JH Date: 01/13/23 Contract Number: 169002 9369 Approved: Revised:

Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilDepthProfiles.py



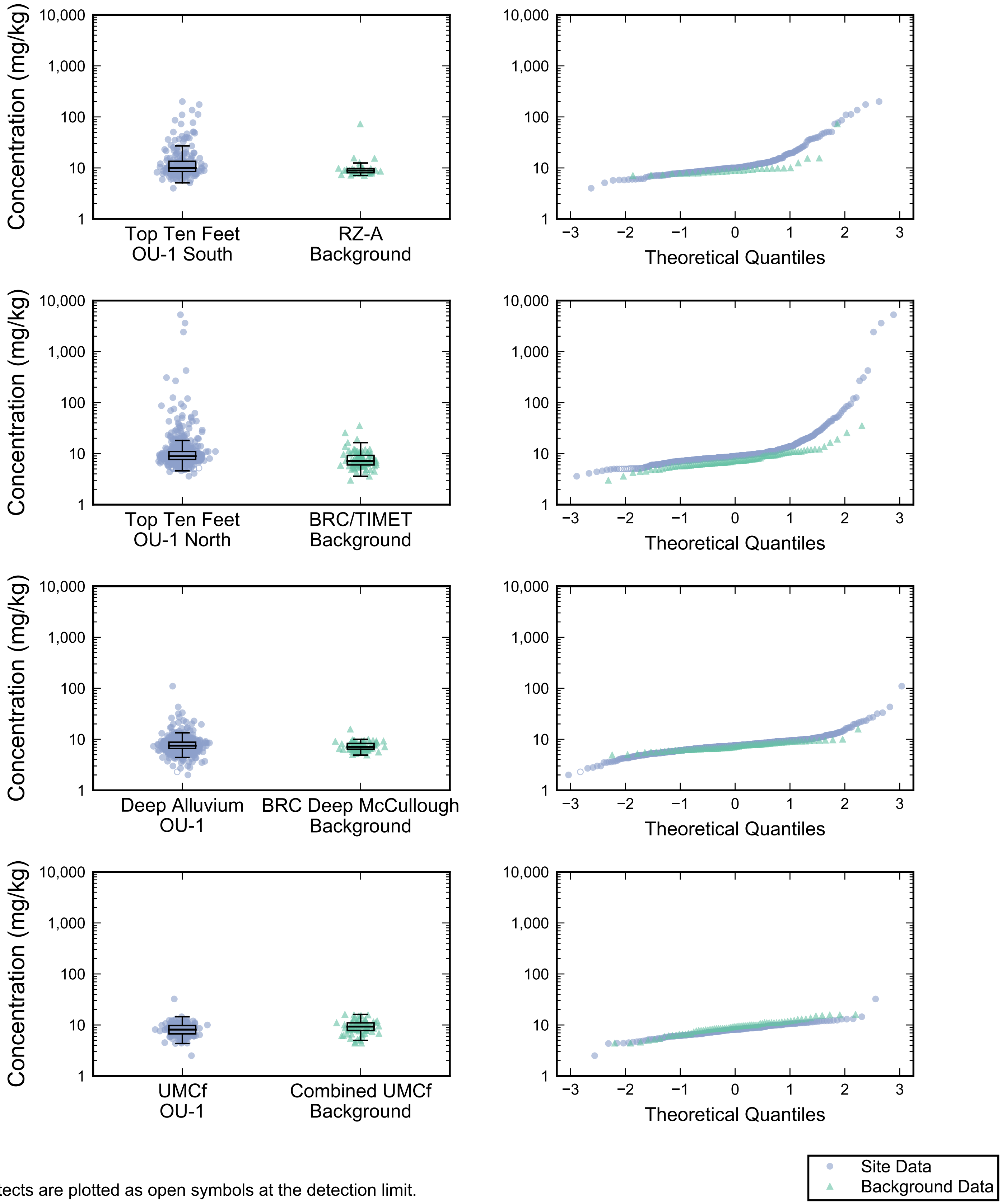
Notes:
ft bgs: feet below ground surface
mg/kg: milligrams per kilogram
UMCf: Upper Muddy Creek formation
SSL: Soil Screening Level
DAF: Dilution-Attenuation Factor

RAMBOLL

OU-1 Iron Soil Concentrations vs. Sample Depth
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-10b

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



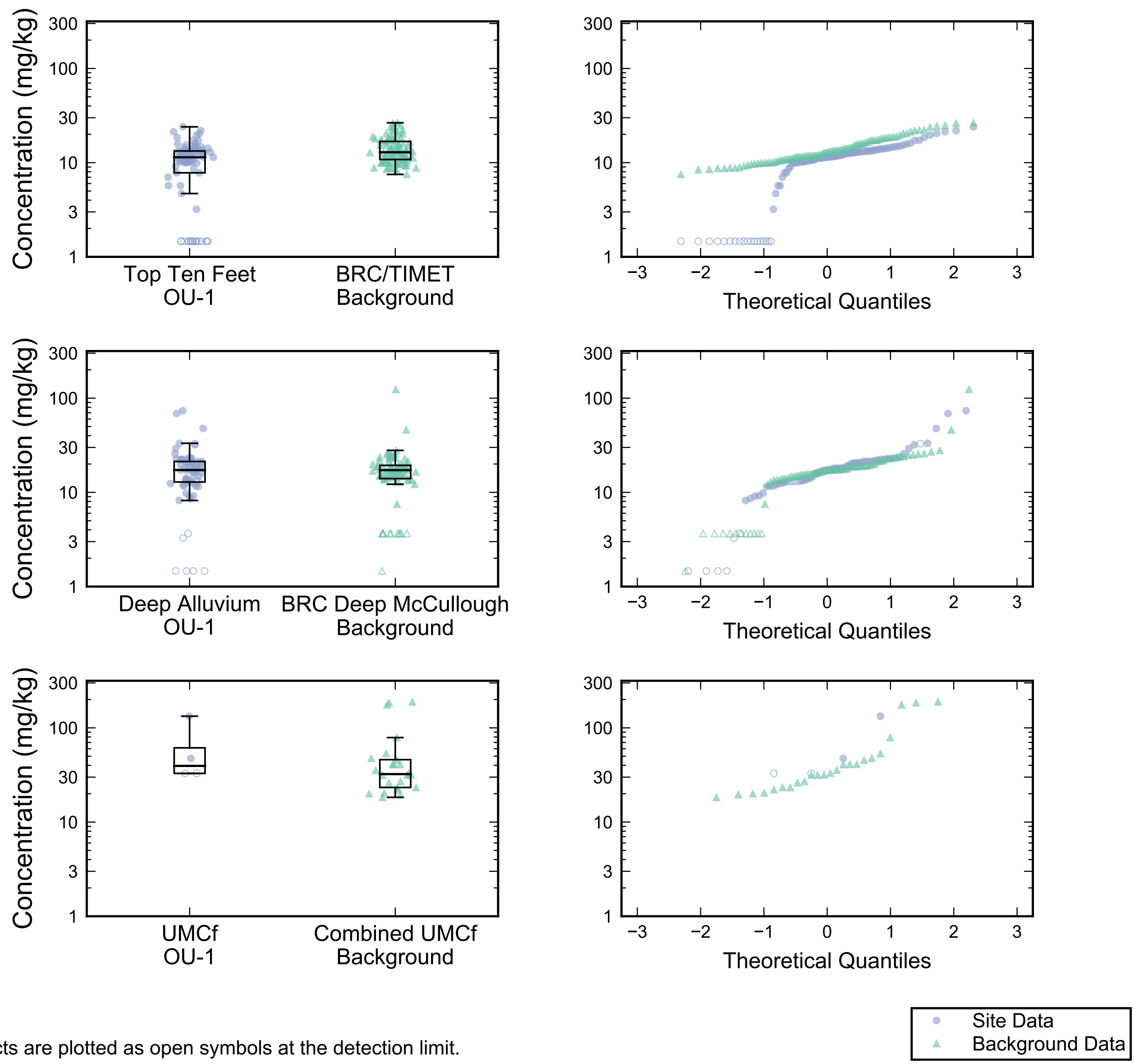
Non-detects are plotted as open symbols at the detection limit.

RAMBOLL

Statistical Background Comparison for Lead in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-11

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

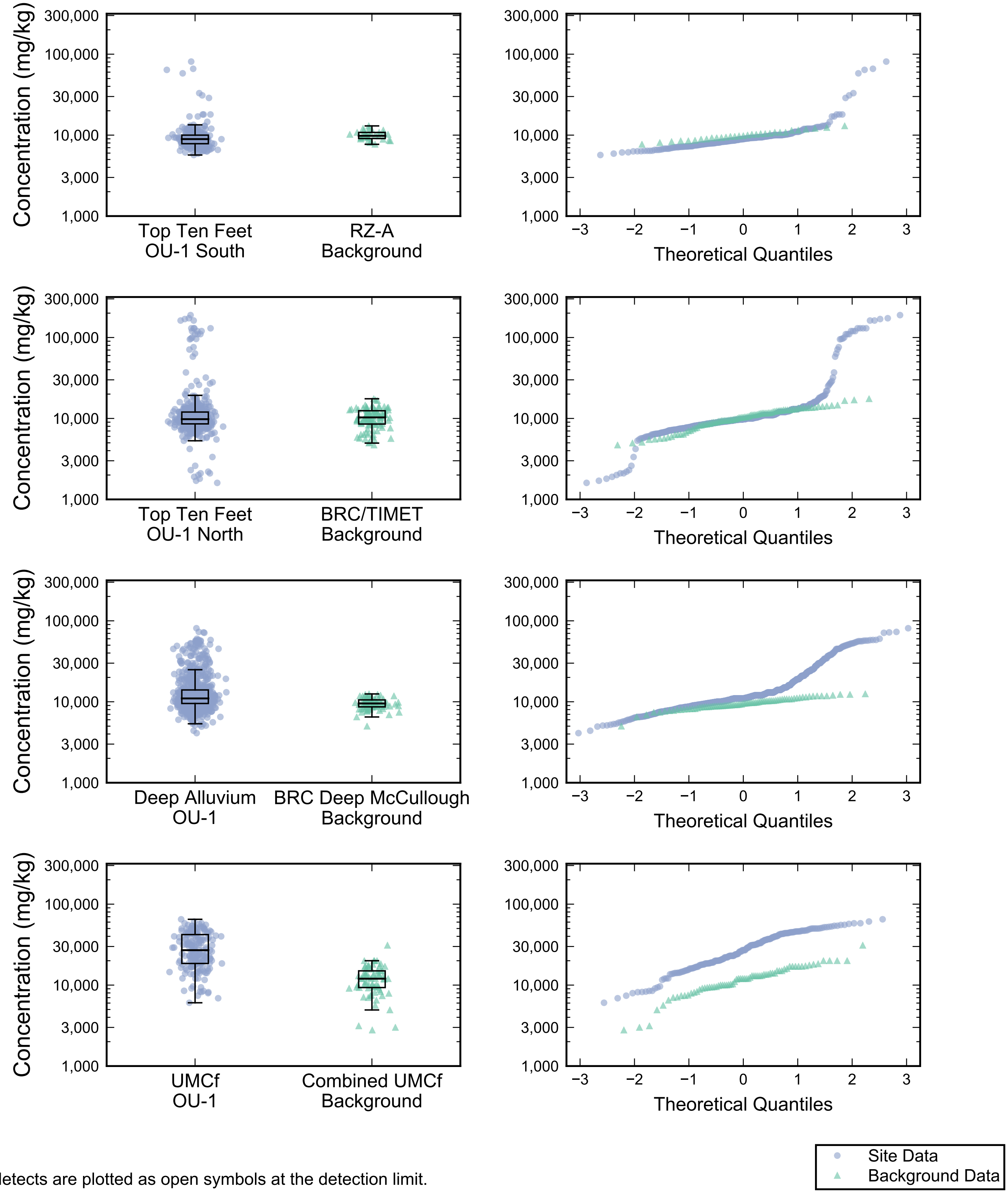


Non-detects are plotted as open symbols at the detection limit.

Statistical Background Comparison for Lithium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-12

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

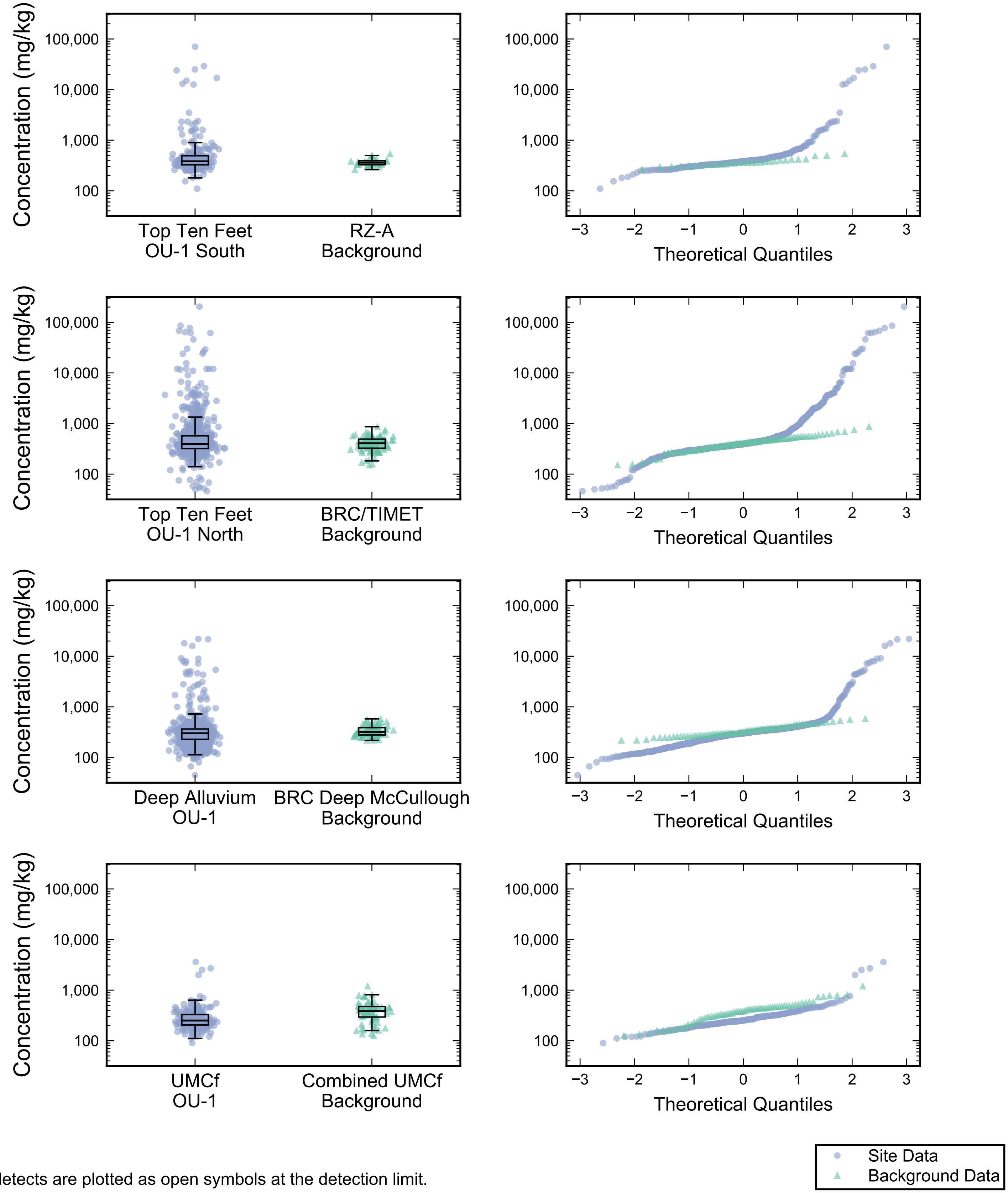


Non-detects are plotted as open symbols at the detection limit.

RAMBOLL	**Statistical Background Comparison for Magnesium in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-13**

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

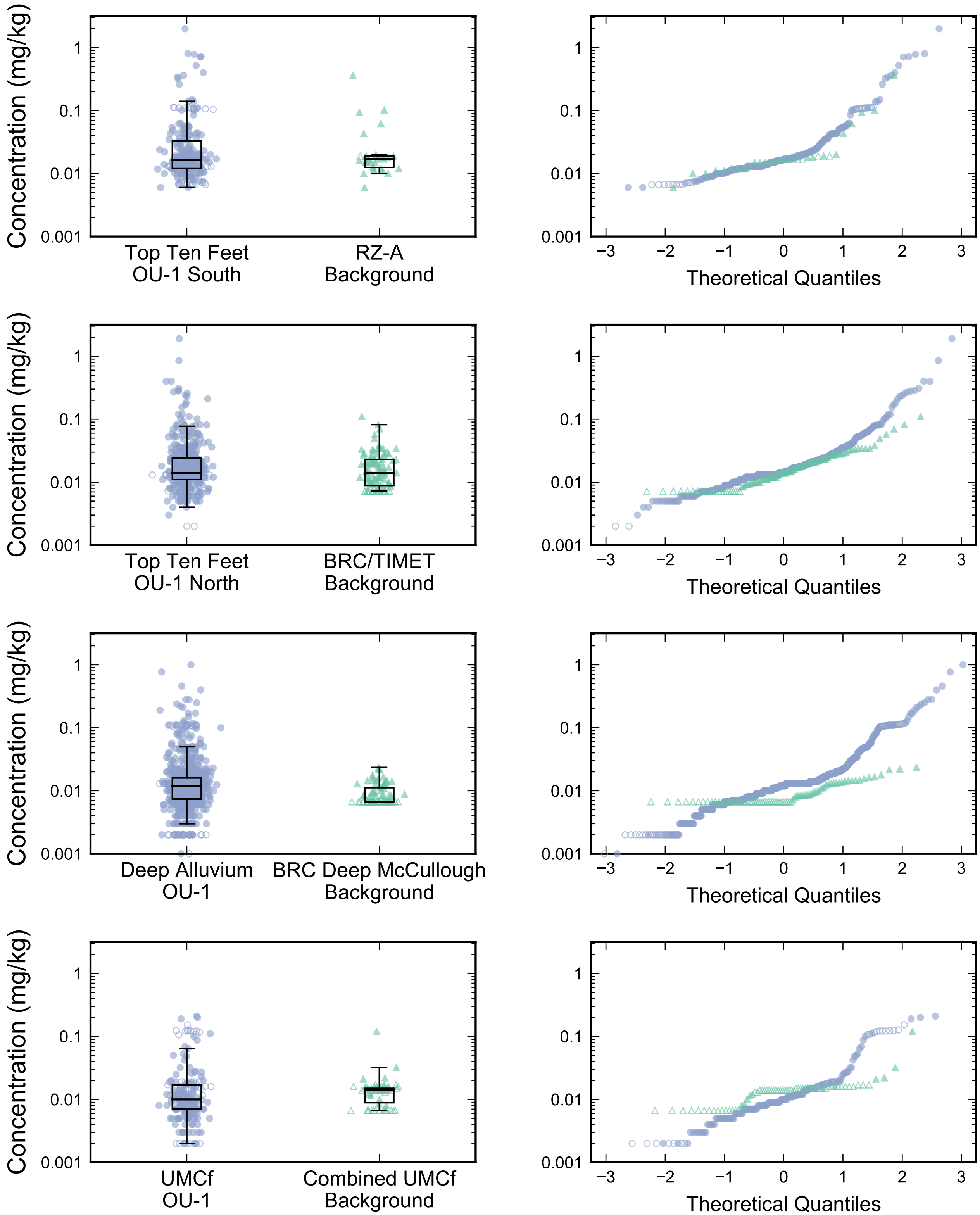
Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilStatFigures.py



Non-detects are plotted as open symbols at the detection limit.

RAMBOLL	**Statistical Background Comparison for Manganese in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-14**

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Site Data
Background Data

Non-detects are plotted as open symbols at the detection limit.

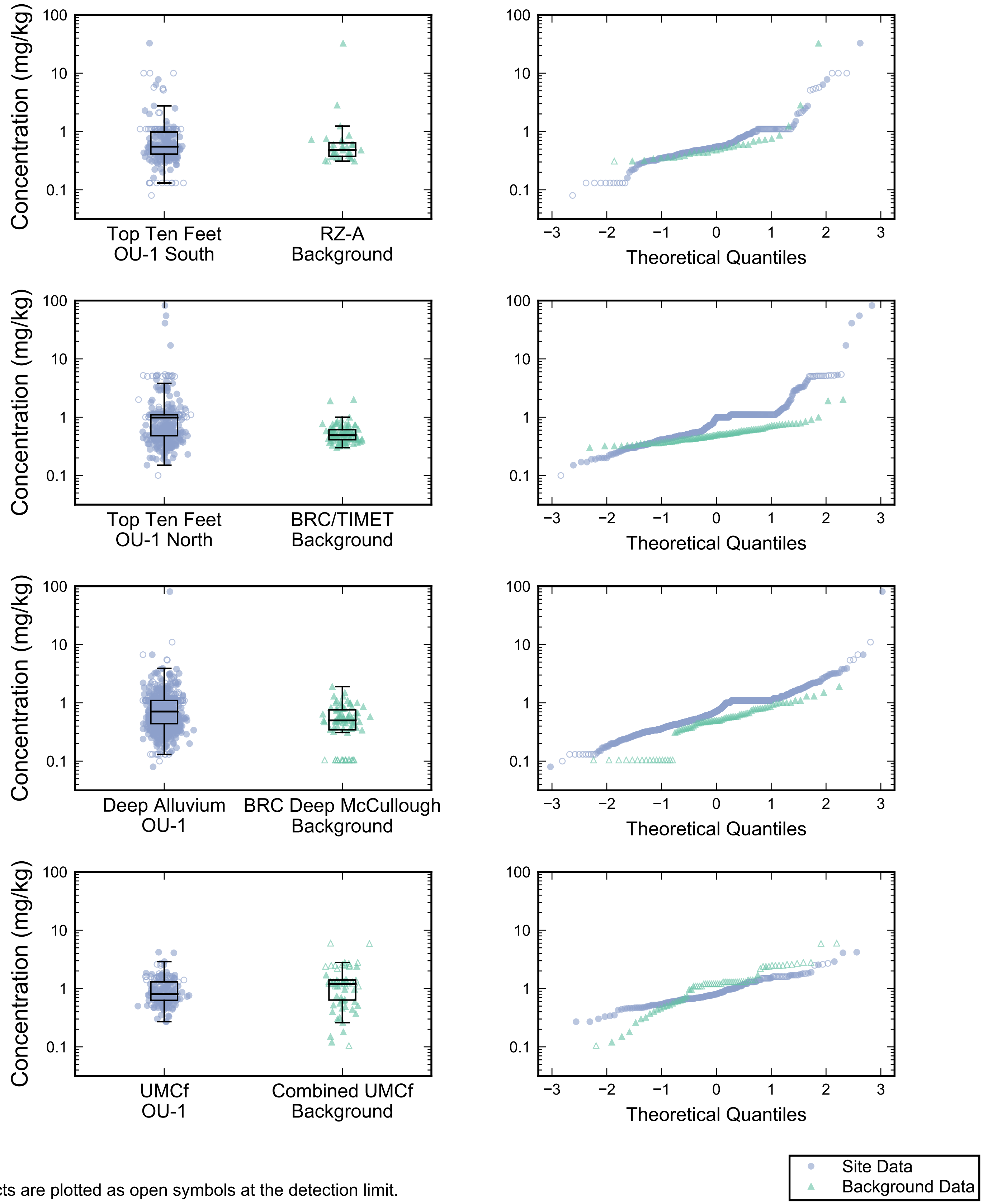
RAMBOLL

Statistical Background Comparison for Mercury in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-15

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilStatFigures.py

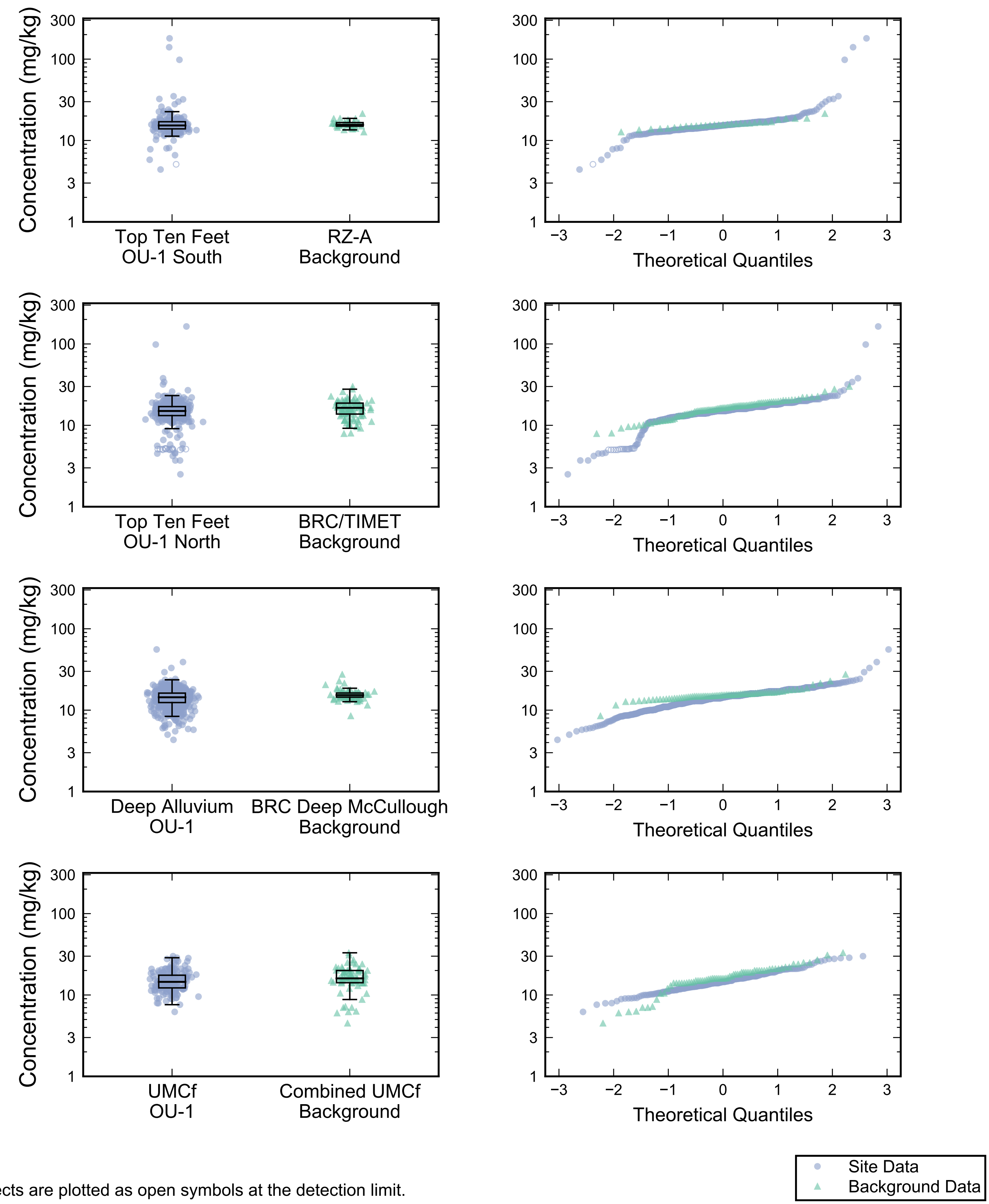


Non-detects are plotted as open symbols at the detection limit.

Statistical Background Comparison for Molybdenum in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-16

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



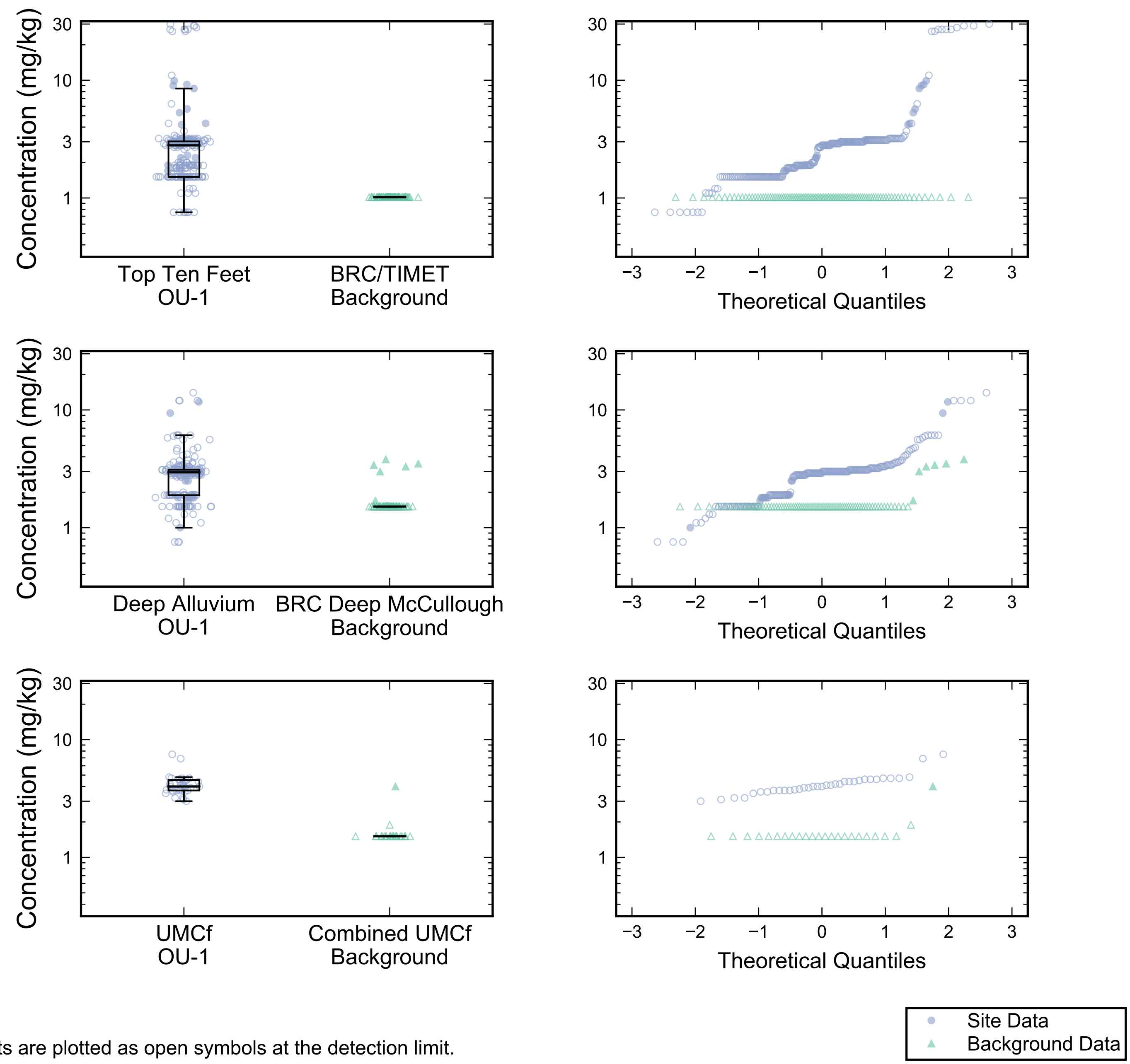
Non-detects are plotted as open symbols at the detection limit.

RAMBOLL

Statistical Background Comparison for Nickel in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-17

Drafter: JH	Date: 01/13/23	Contract Number: 169002 9369	Approved:	Revised:



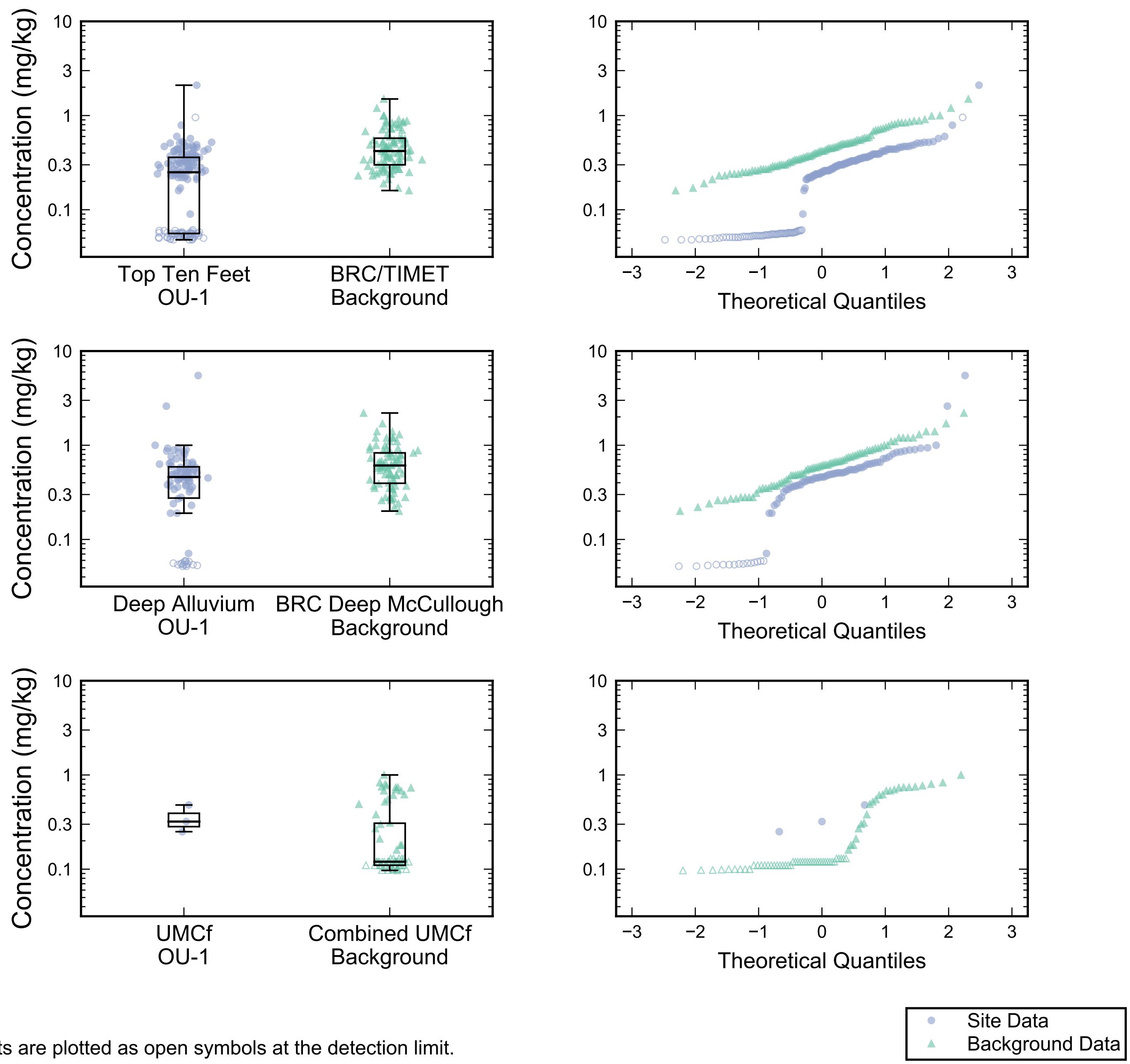
Non-detects are plotted as open symbols at the detection limit.

RAMBOLL

Statistical Background Comparison for Niobium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-18

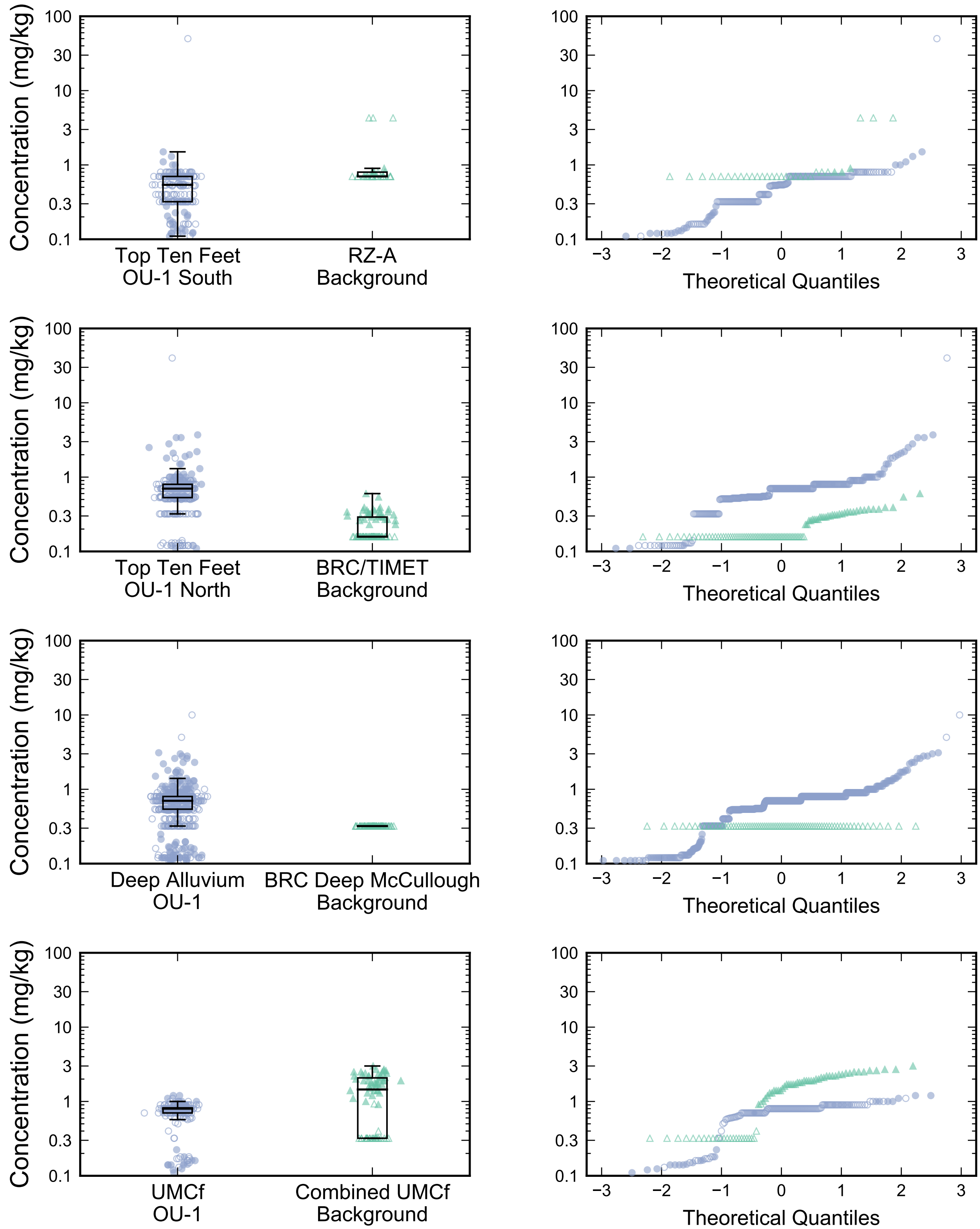
Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Non-detects are plotted as open symbols at the detection limit.

RAMBOLL	**Statistical Background Comparison for Palladium in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-19**

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Non-detects are plotted as open symbols at the detection limit.

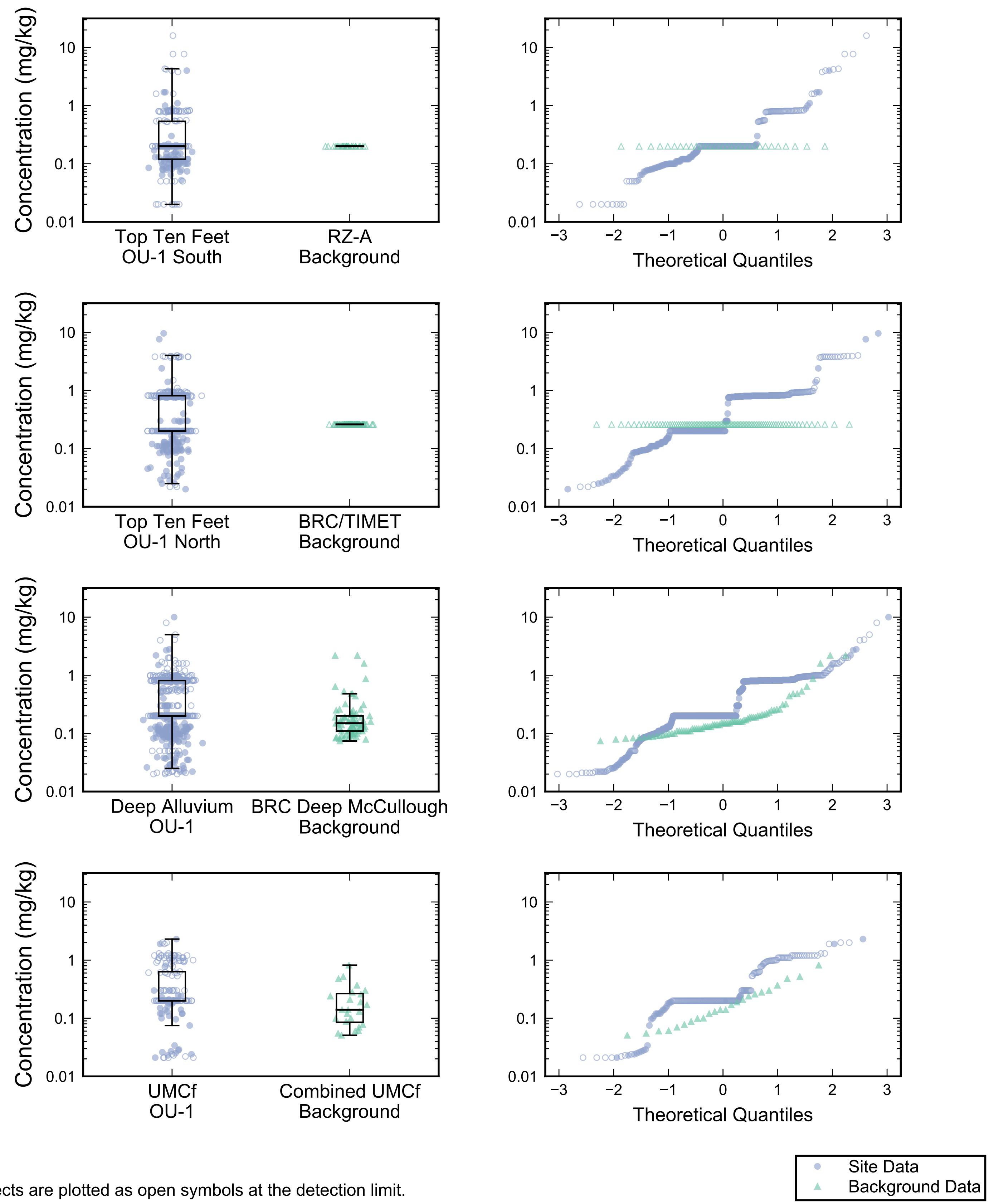
RAMBOLL

Statistical Background Comparison for Selenium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-20

Drafter: JH	Date: 01/13/23	Contract Number: 169002 9369	Approved:	Revised:

Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilStatFigures.py

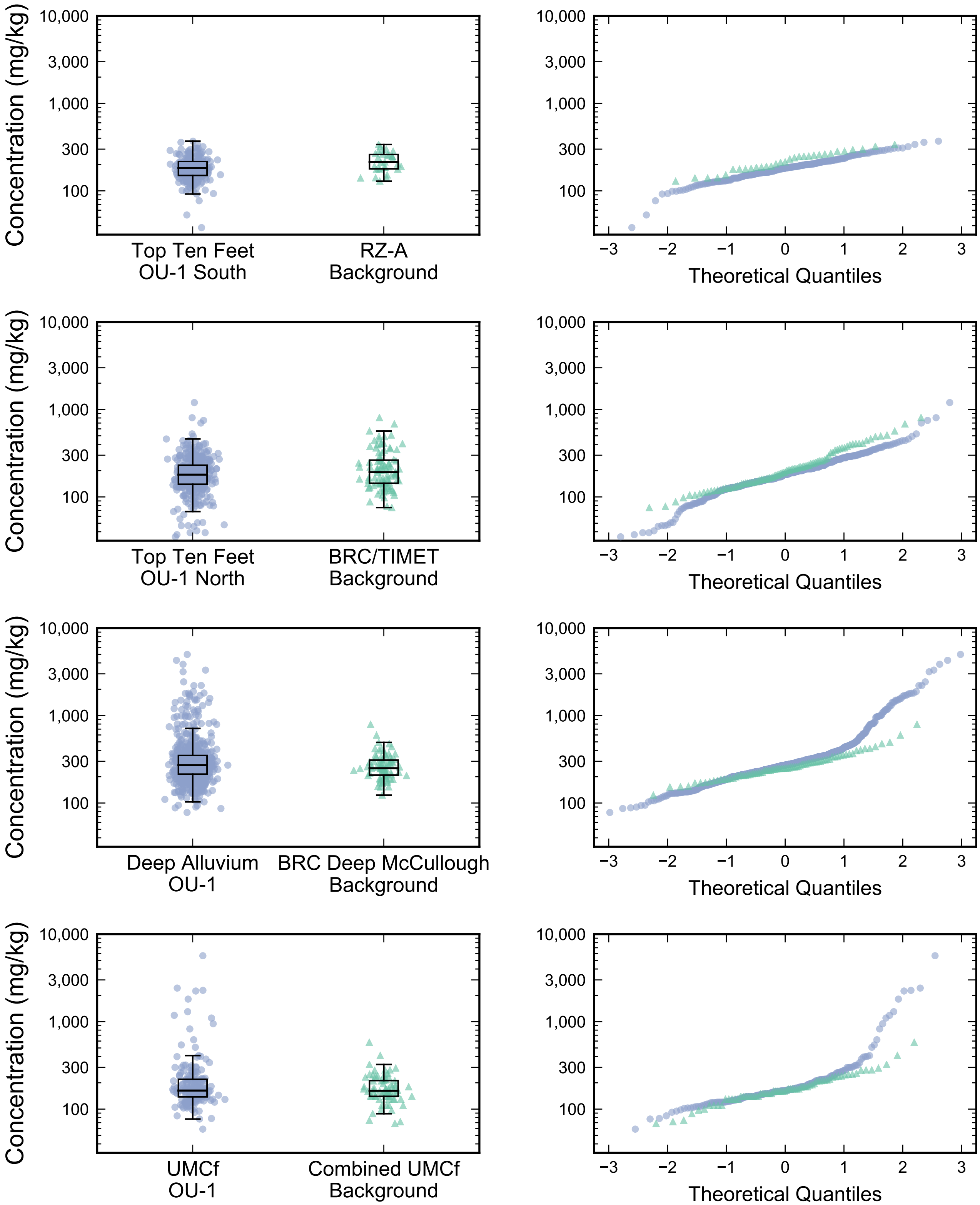


Non-detects are plotted as open symbols at the detection limit.

Statistical Background Comparison for Silver in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-21

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



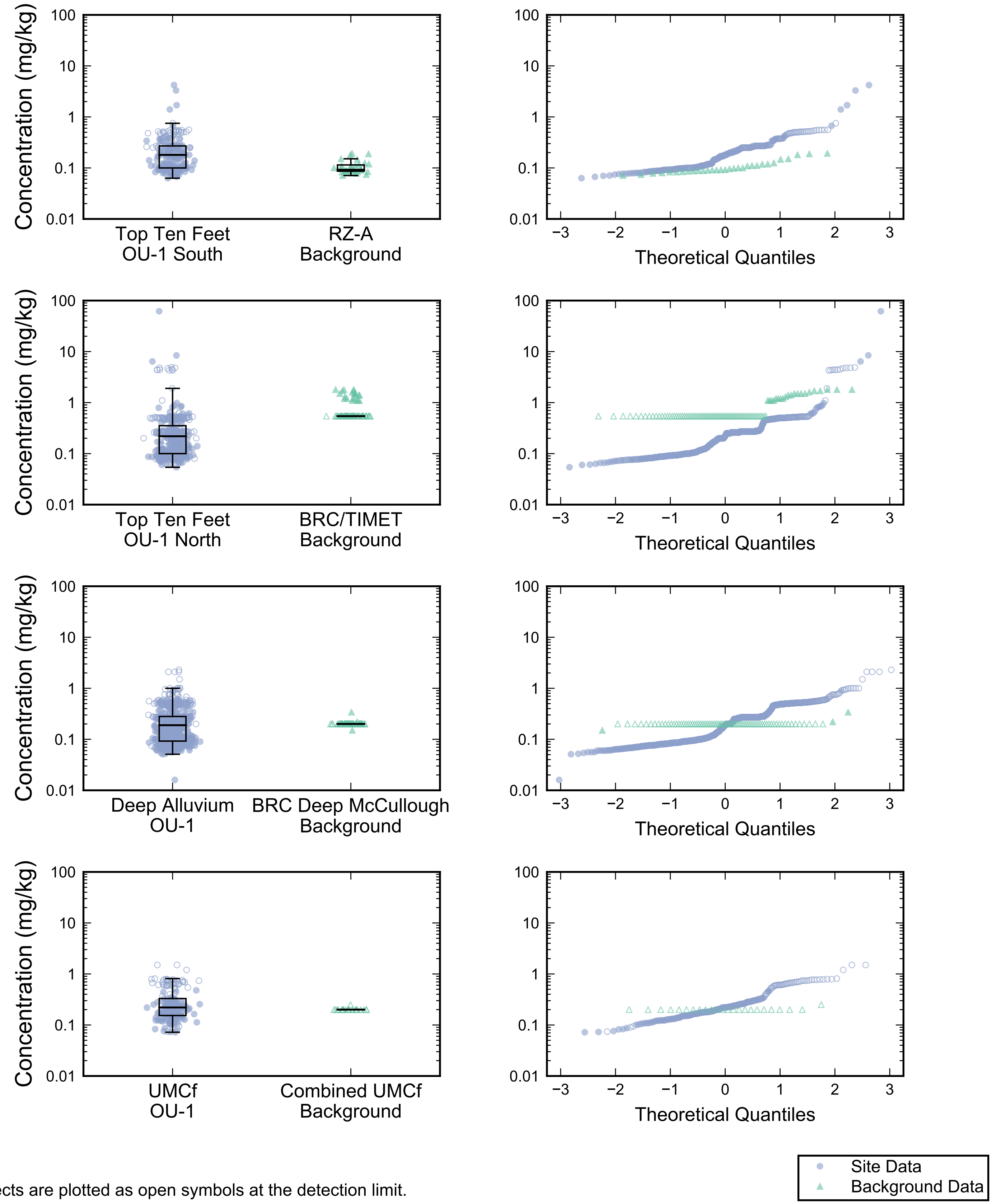
Non-detects are plotted as open symbols at the detection limit.

RAMBOLL

Statistical Background Comparison for Strontium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-22

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



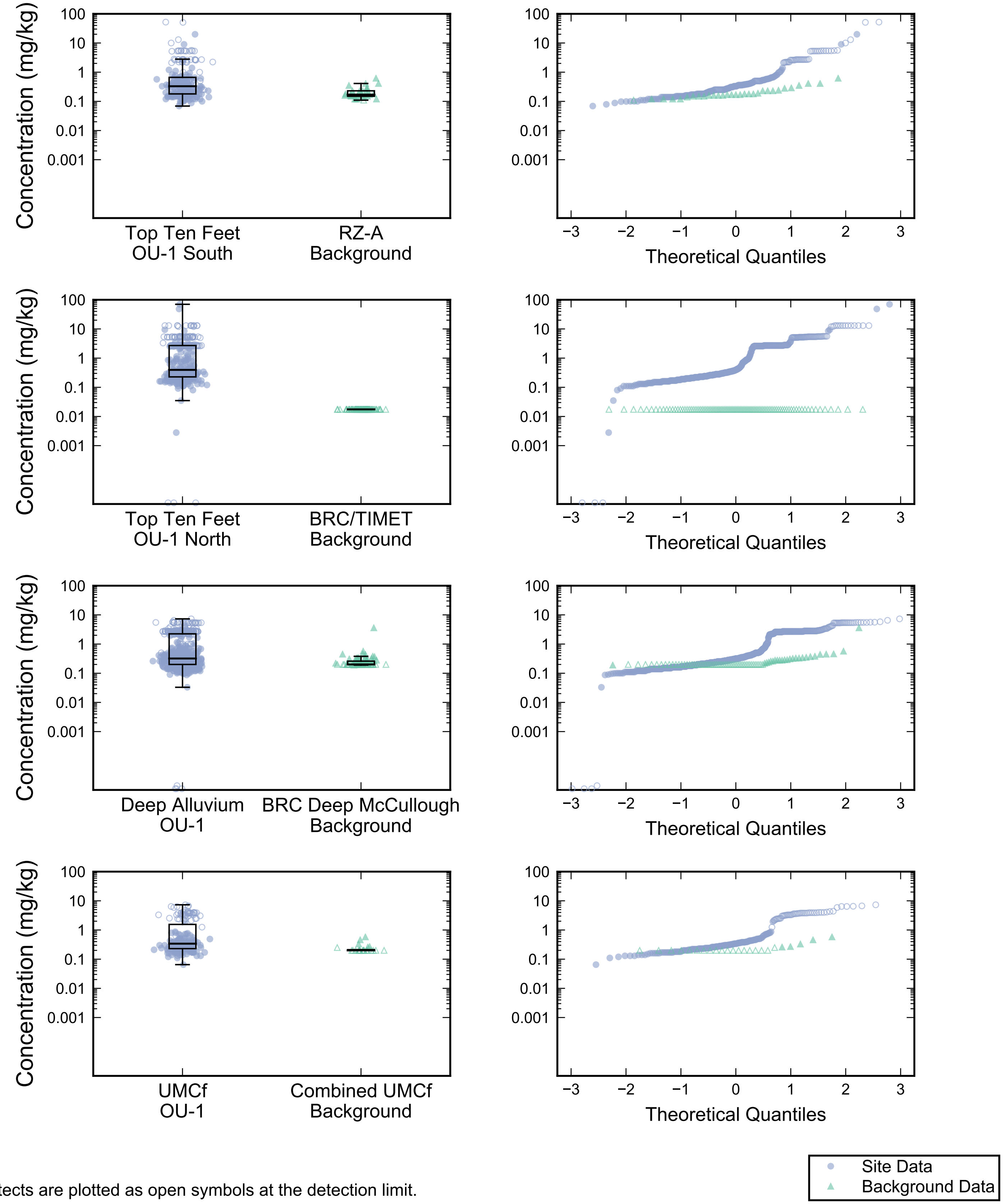
Non-detects are plotted as open symbols at the detection limit.

Statistical Background Comparison for Thallium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure

I-23

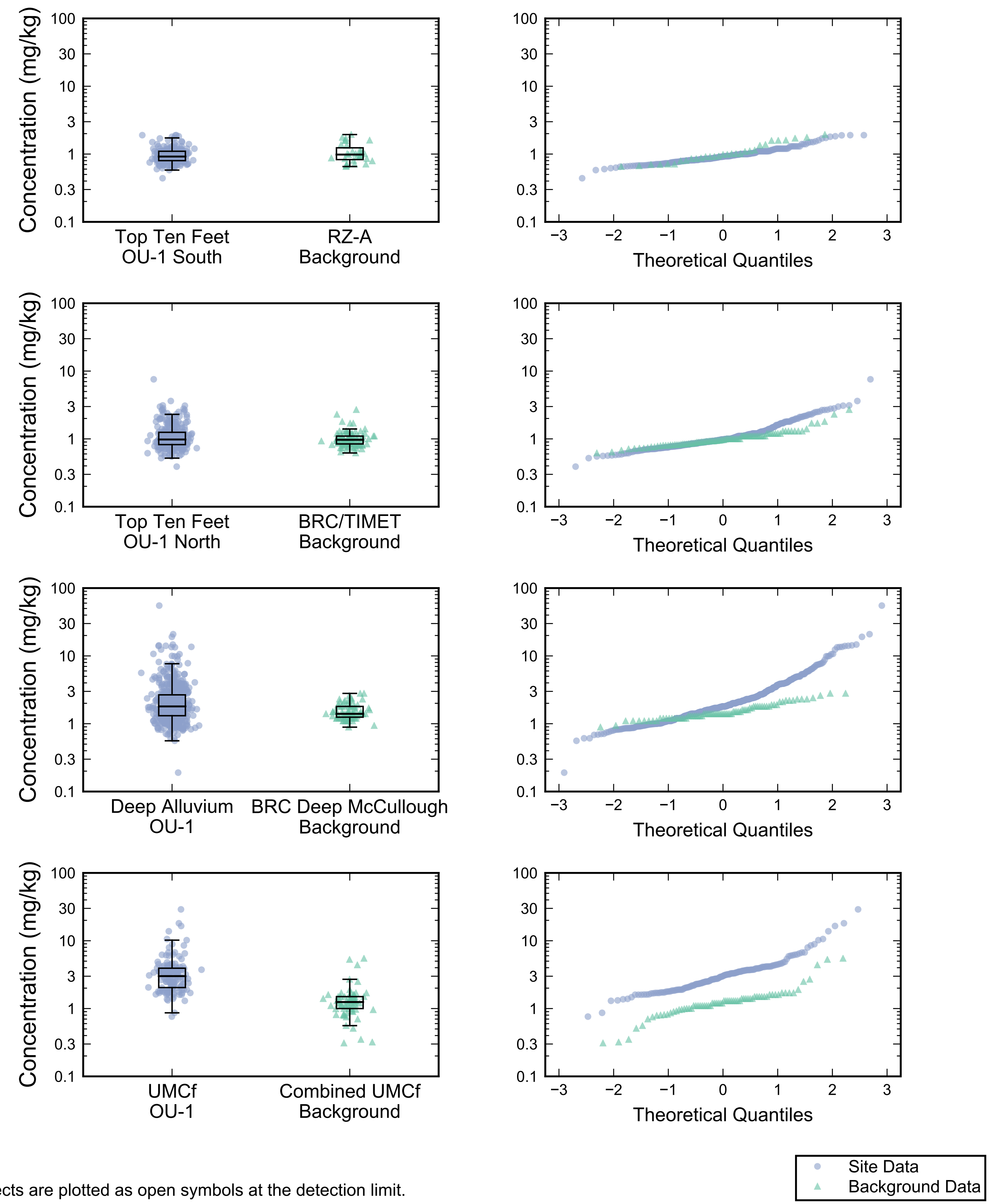
Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Non-detects are plotted as open symbols at the detection limit.

RAMBOLL	**Statistical Background Comparison for Tungsten in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-24**

Drafter: JH Date: 01/13/23 Contract Number: 169002 9369 Approved: Revised:



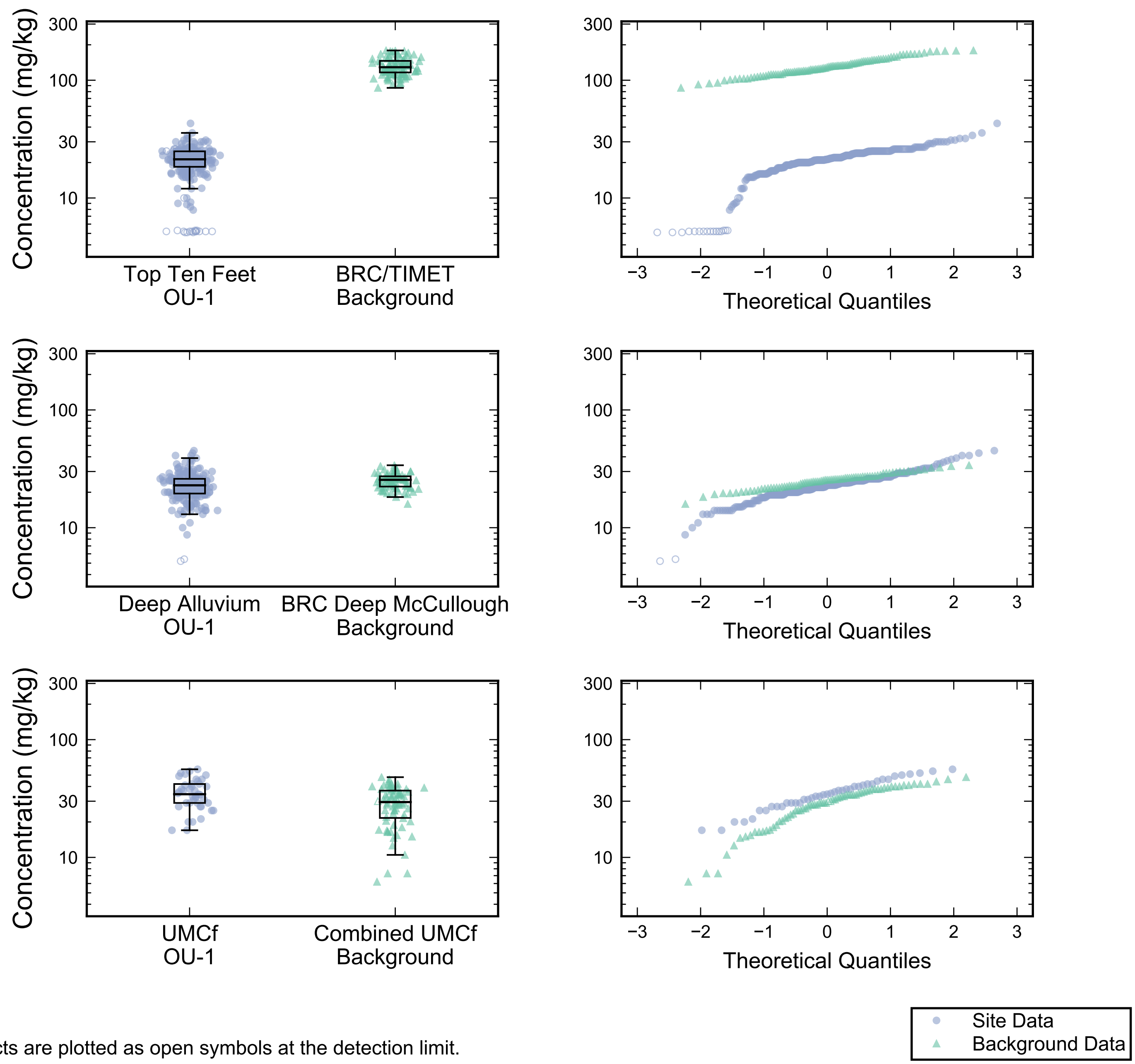
Non-detects are plotted as open symbols at the detection limit.

RAMBOLL

Statistical Background Comparison for Uranium (total) in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-25

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



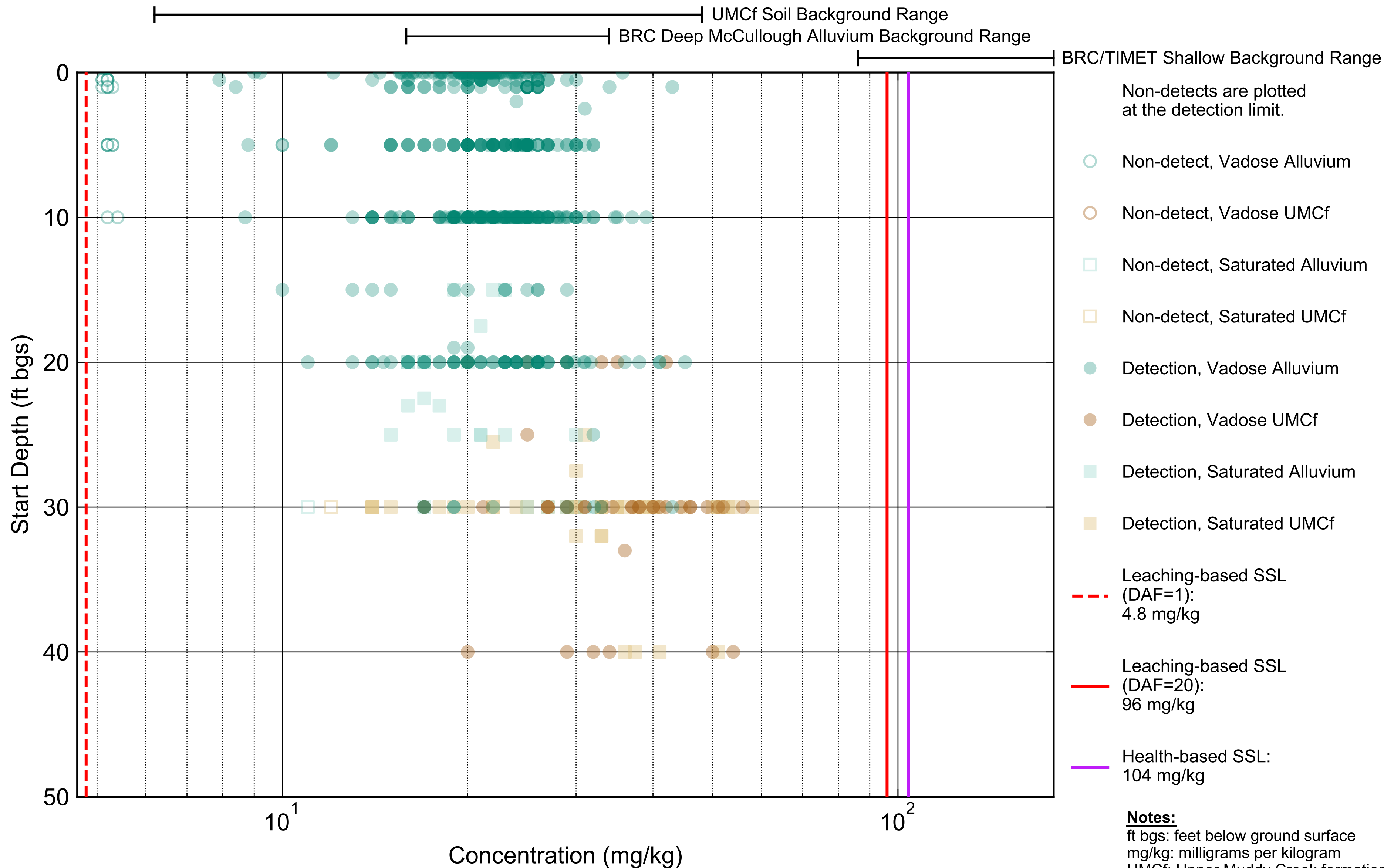
Non-detects are plotted as open symbols at the detection limit.

Statistical Background Comparison for Zirconium in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-26a

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilDepthProfiles.py



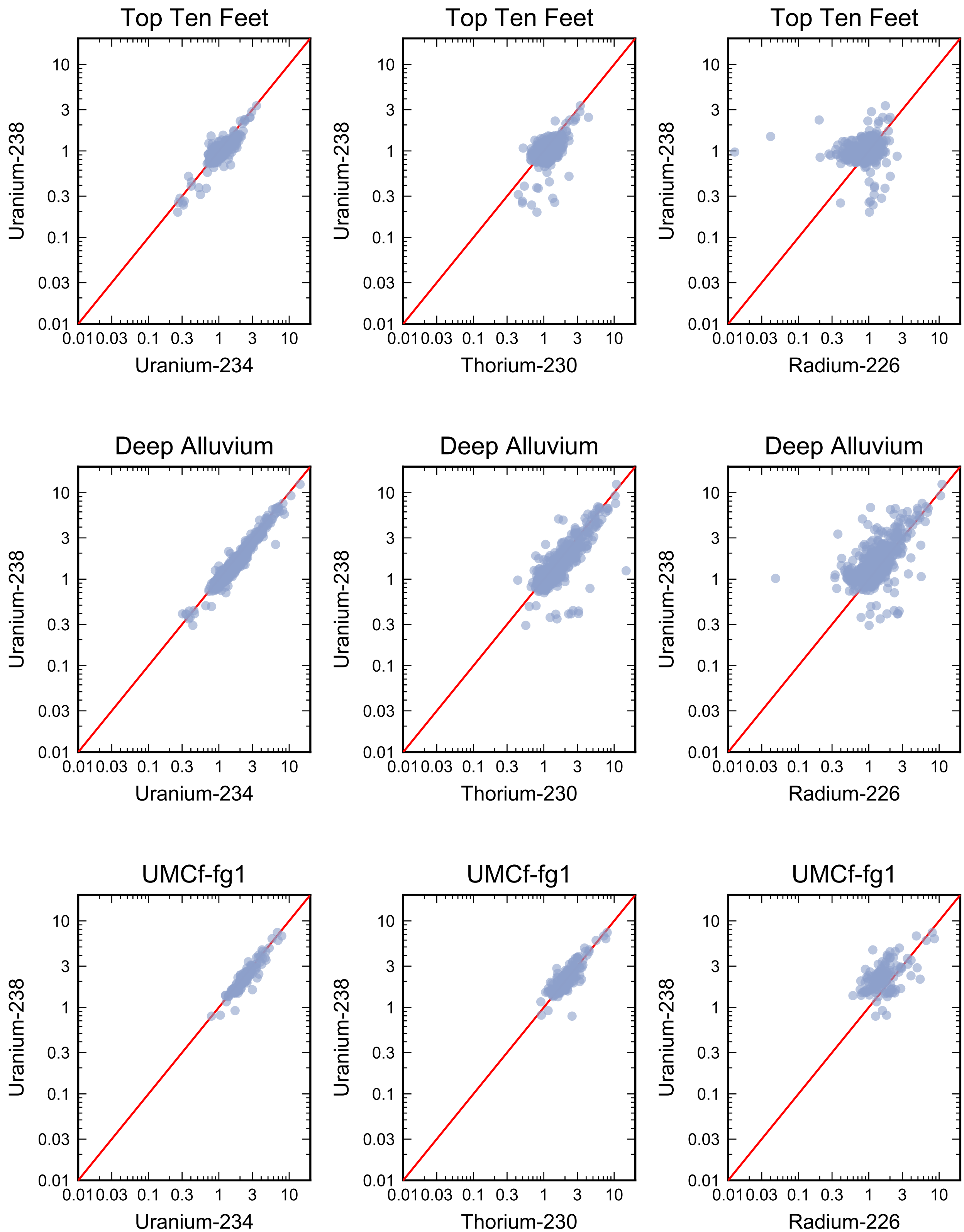
Notes:
ft bgs: feet below ground surface
mg/kg: milligrams per kilogram
UMCf: Upper Muddy Creek formation
SSL: Soil Screening Level
DAF: Dilution-Attenuation Factor

RAMBOLL

OU-1 Zirconium Soil Concentrations vs. Sample Depth
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-26b

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

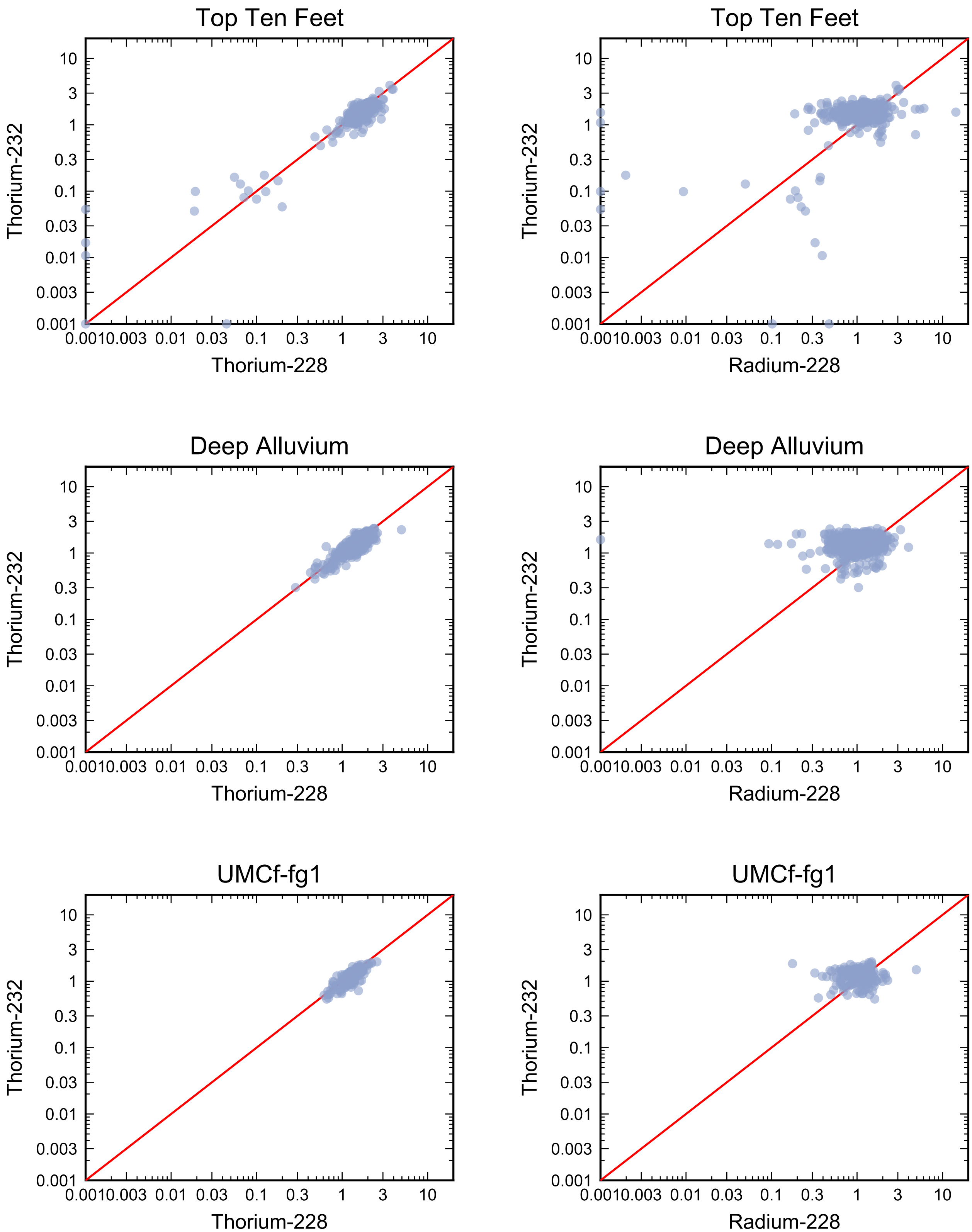


All data are plotted as log concentrations (pCi/g). Results of 0 or less plotted at 0.001 pCi/g.

RAMBOLL	**OU-1 Secular Equilibrium Scatterplots, Uranium-238 Decay Chain** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-27a**

Drafter: JH | Date: 02/05/21 | Contract Number: 169002 0169 | Approved: | Revised:

Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1BackgroundComparisonFigures.py



All data are plotted as log concentrations (pCi/g). Results of 0 or less plotted at 0.001 pCi/g.

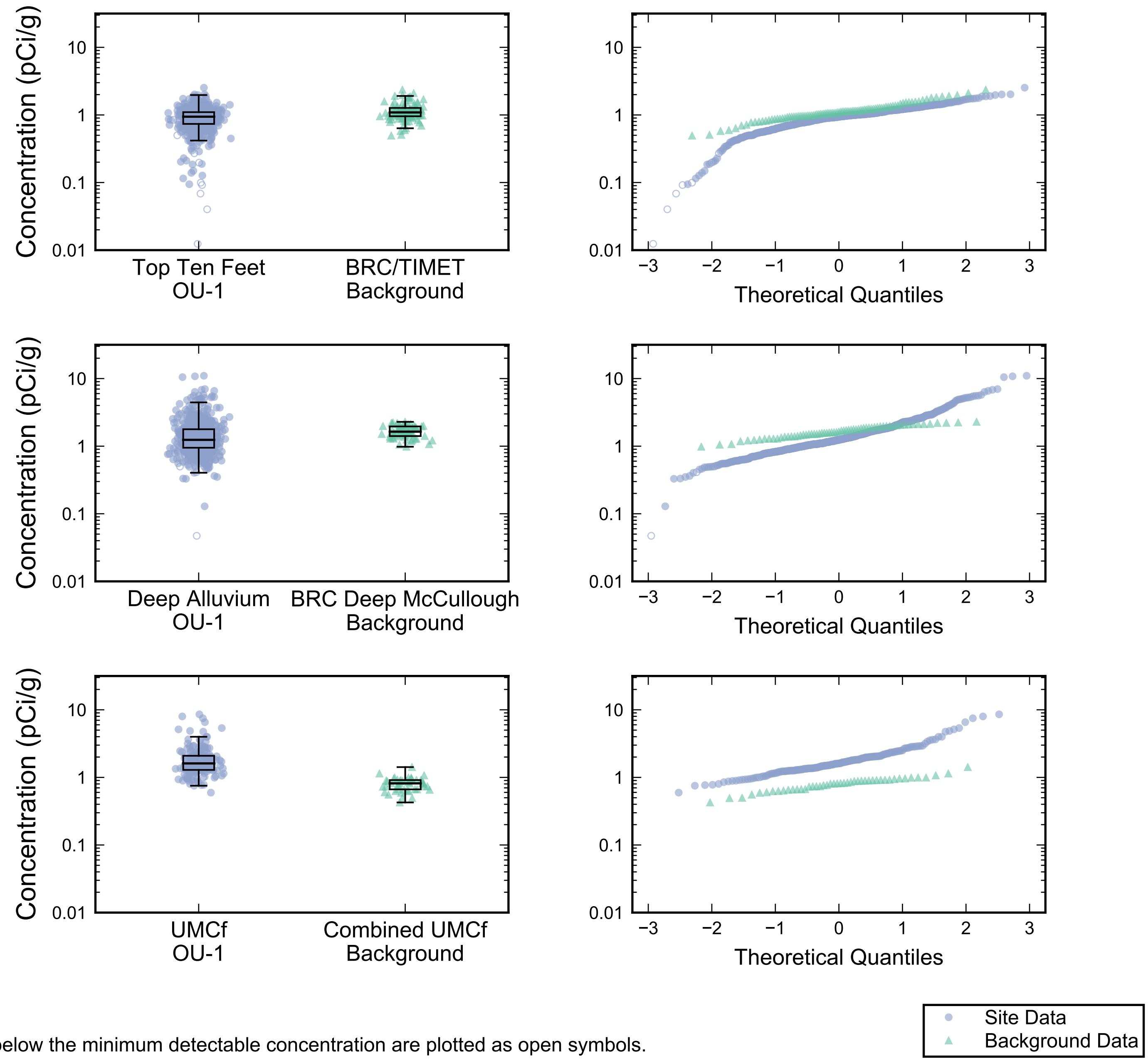
RAMBOLL

OU-1 Secular Equilibrium Scatterplots, Thorium-232 Decay Chain
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure

I-27b

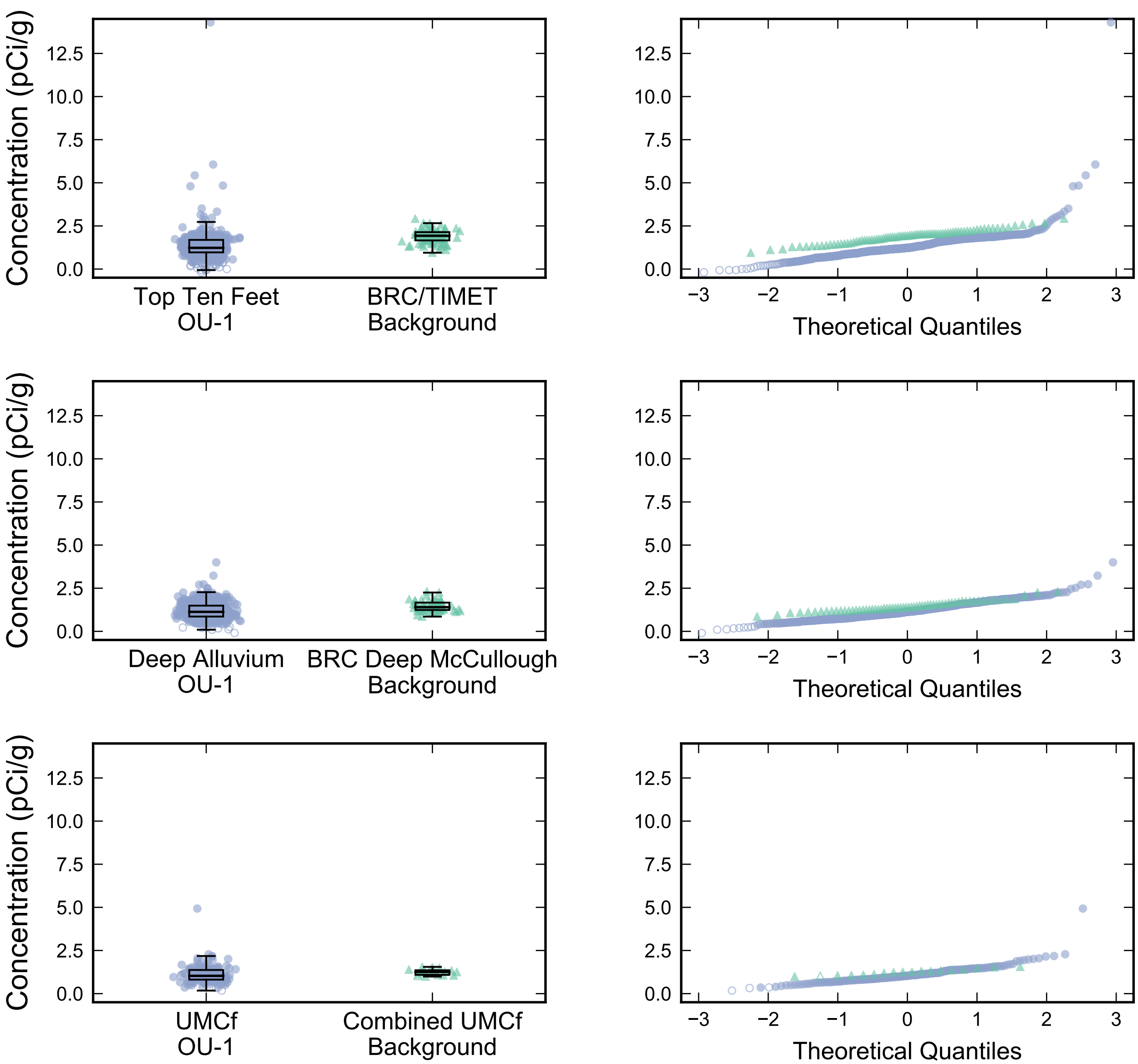
Drafter: JH | Date: 02/05/21 | Contract Number: 169002 0169 | Approved: | Revised:



Results below the minimum detectable concentration are plotted as open symbols.

RAMBOLL	**Statistical Background Comparison for Radium-226 in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-28**

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



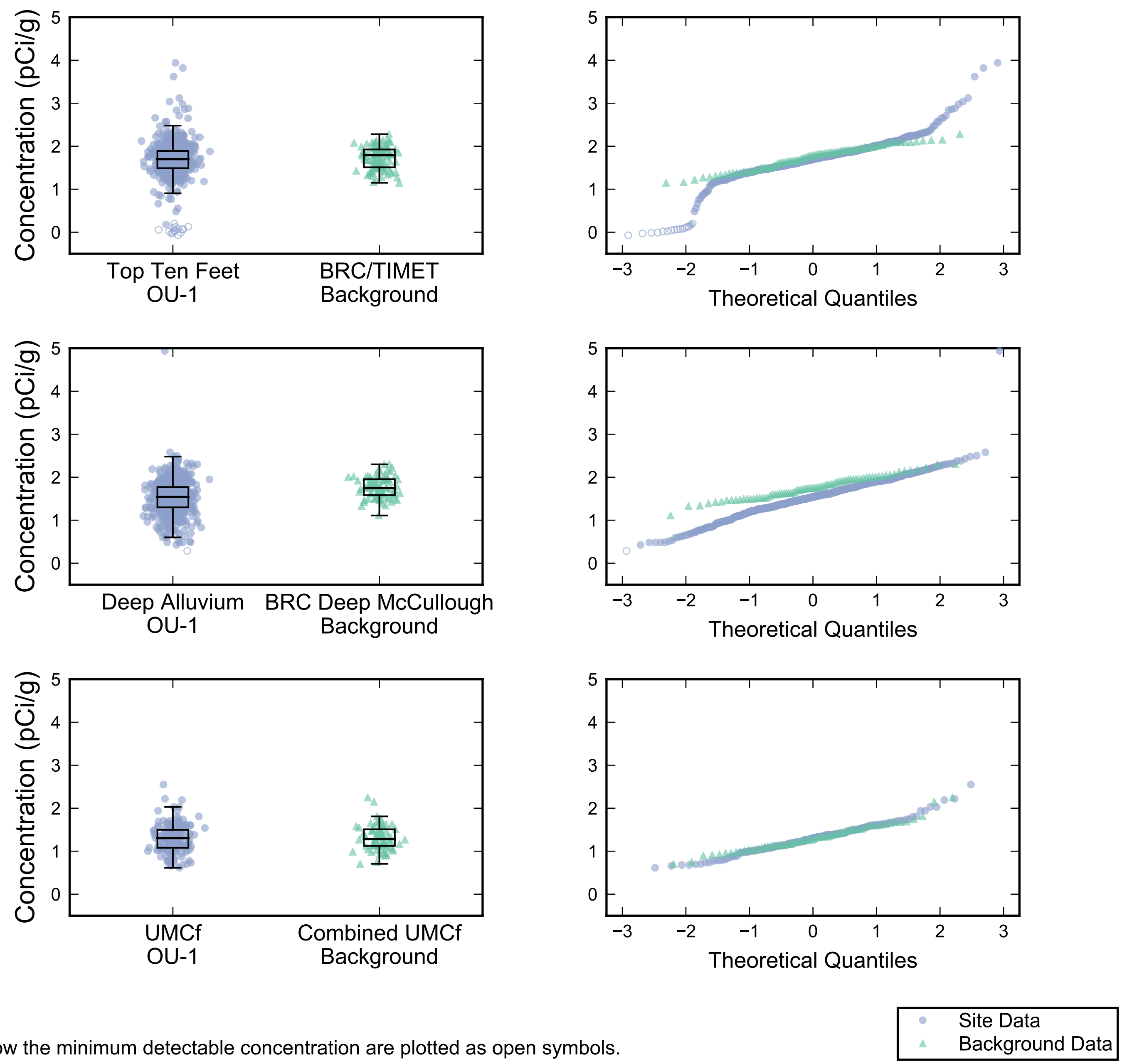
Site Data
Background Data

Results below the minimum detectable concentration are plotted as open symbols.

RAMBOLL	**Statistical Background Comparison for Radium-228 in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-29**

Drafter: JH   Date: 01/13/23   Contract Number: 169002 9369   Approved: Revised:

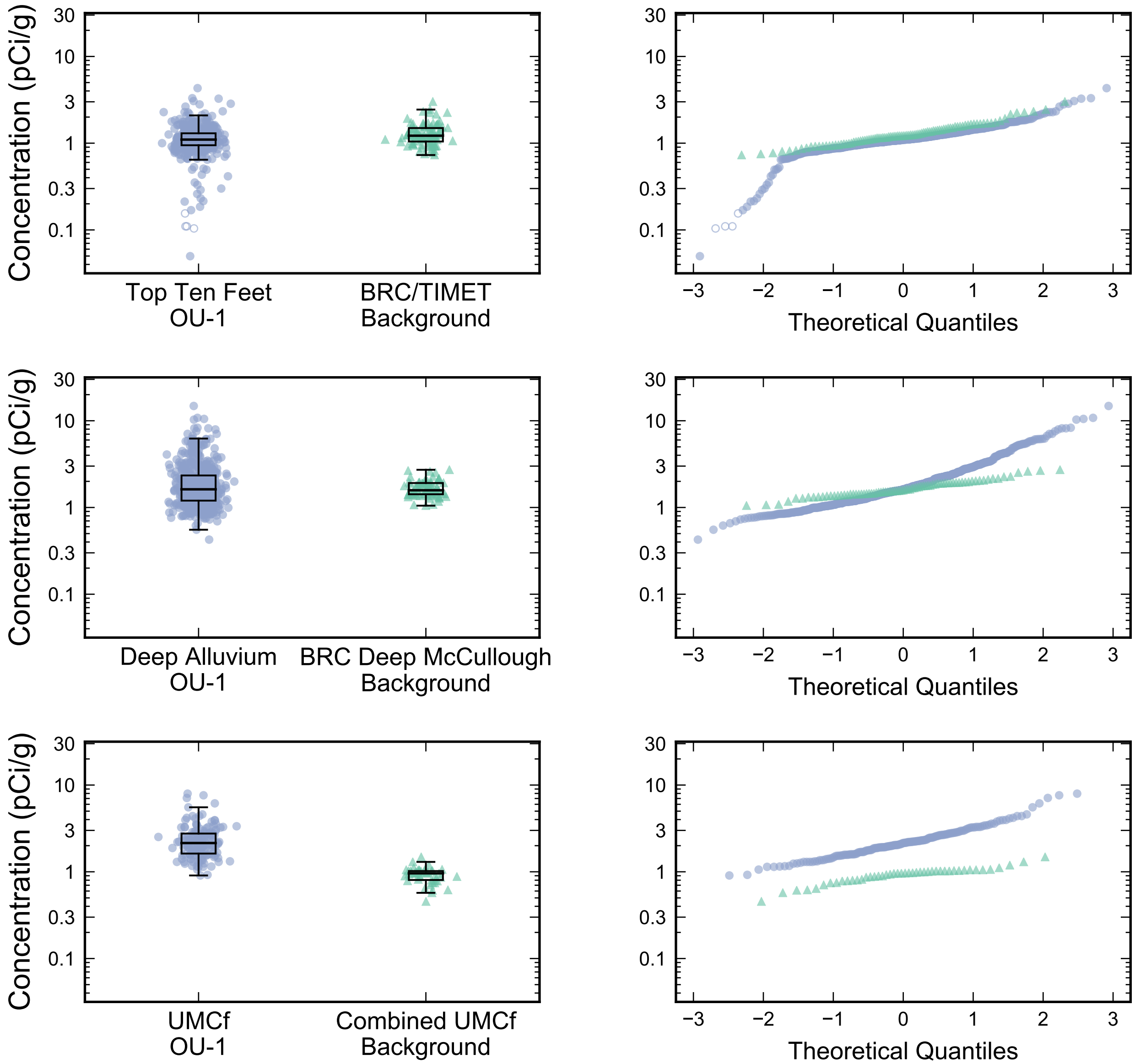
Path: rehemy\projects\NERT\RI_Evaluation\RI_OU1_OU2\OU1SoilStatFigures.py



Results below the minimum detectable concentration are plotted as open symbols.

RAMBOLL	**Statistical Background Comparison for Thorium-228 in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-30**

Drafter: JH Date: 01/13/23 Contract Number: 169002 9369 Approved: Revised:



Site Data
Background Data

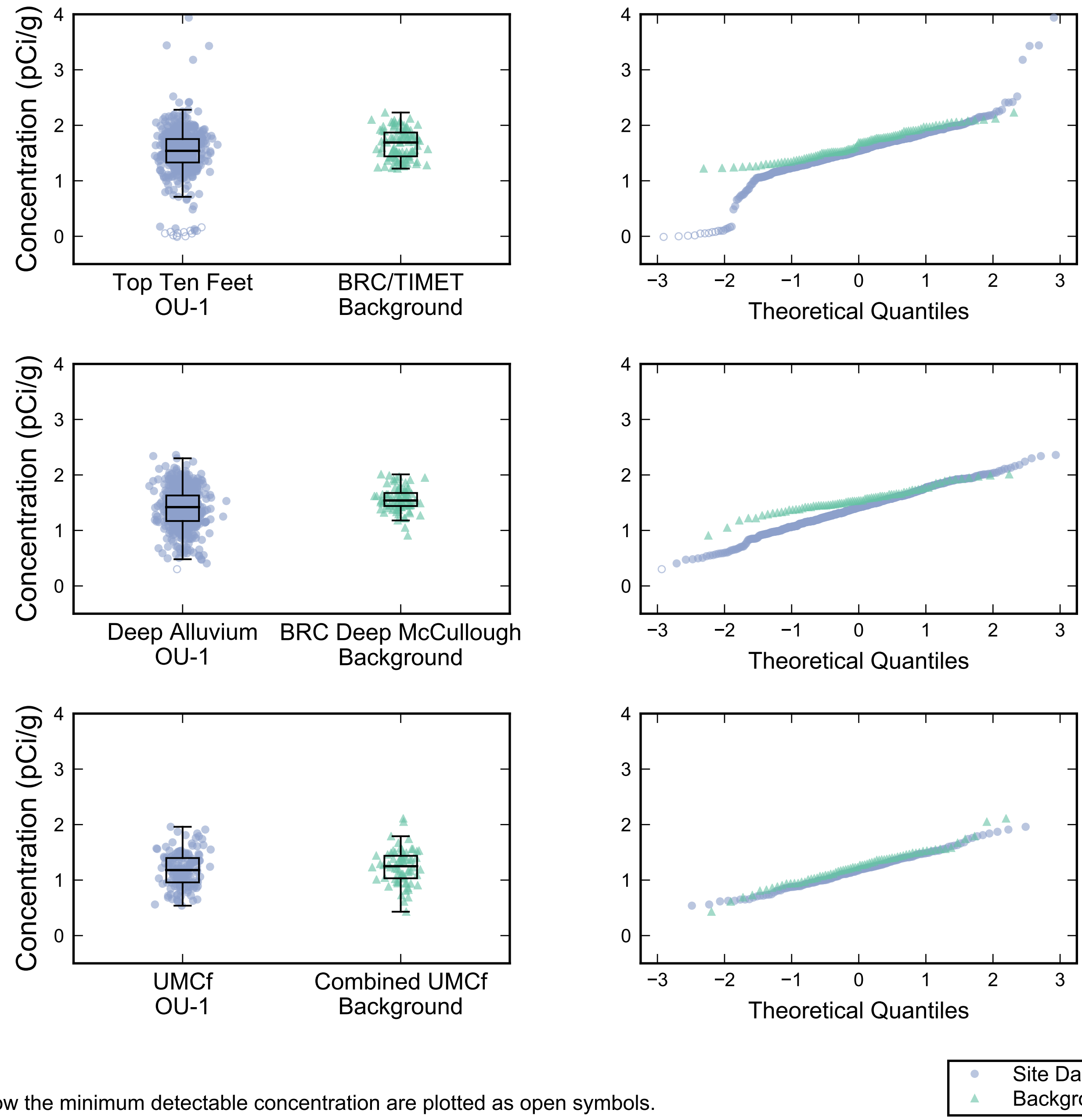
Results below the minimum detectable concentration are plotted as open symbols.

RAMBOLL

Statistical Background Comparison for Thorium-230 in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-31

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

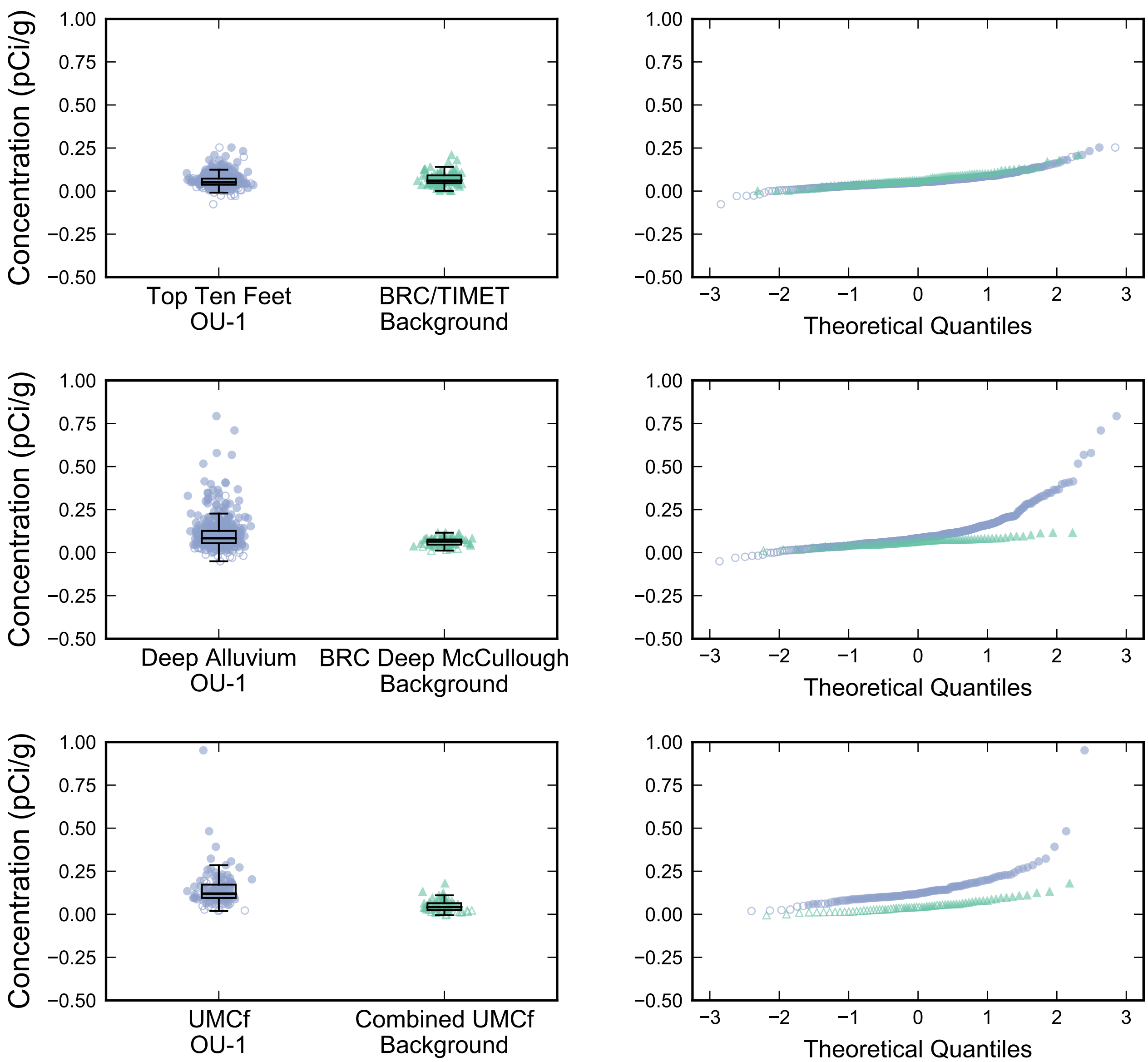


Results below the minimum detectable concentration are plotted as open symbols.

Statistical Background Comparison for Thorium-232 in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-32

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Site Data
Background Data

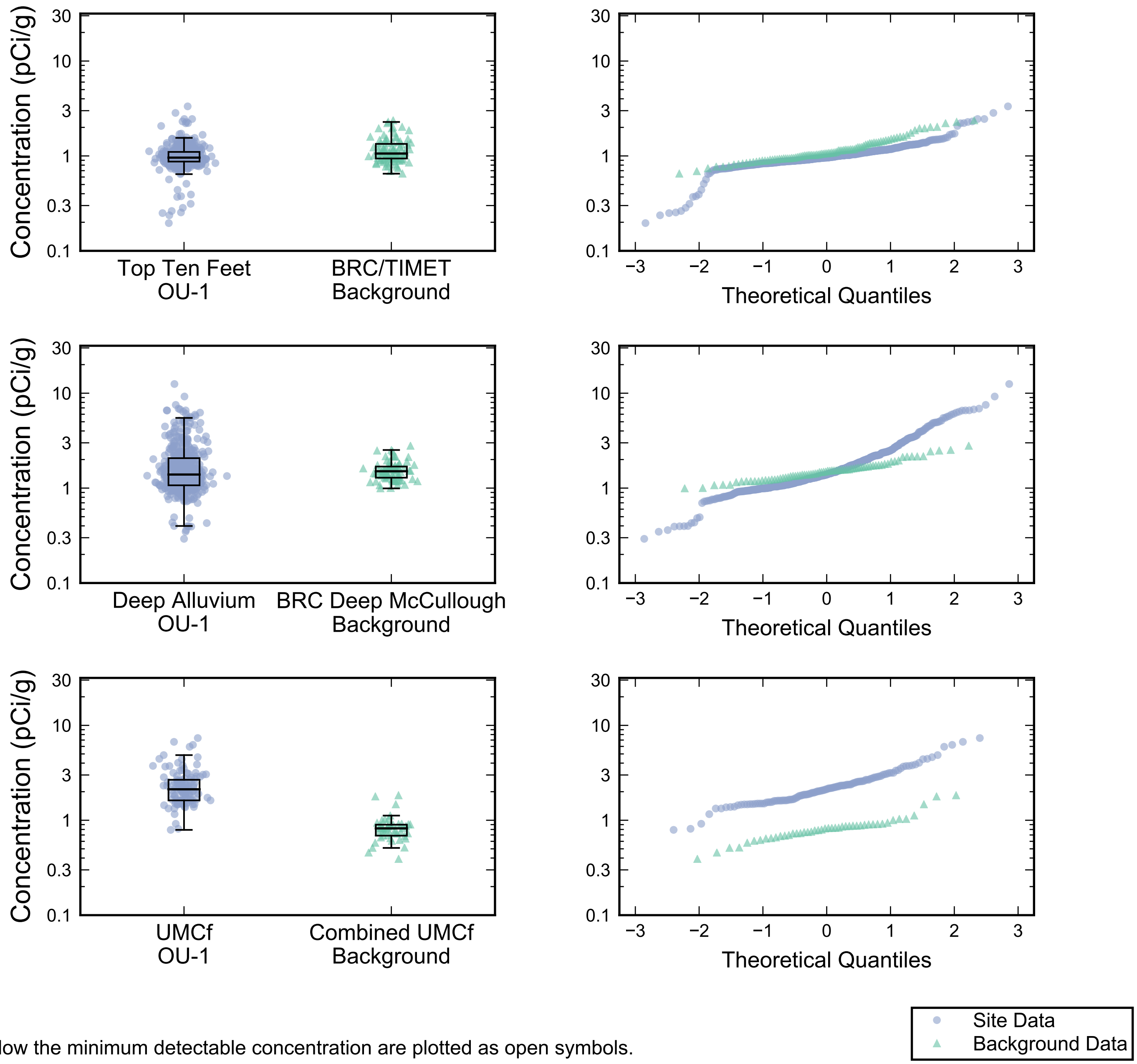
Results below the minimum detectable concentration are plotted as open symbols.

RAMBOLL

Statistical Background Comparison for Uranium-235 in OU-1 Soils
Site Soil Background Analysis
Nevada Environmental Response Trust Site; Henderson, Nevada

Figure
I-33

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:



Results below the minimum detectable concentration are plotted as open symbols.

RAMBOLL	**Statistical Background Comparison for Uranium-238 in OU-1 Soils** Site Soil Background Analysis Nevada Environmental Response Trust Site; Henderson, Nevada	Figure **I-34**

Drafter: JH | Date: 01/13/23 | Contract Number: 169002 9369 | Approved: | Revised:

ATTACHMENT I-1
EDD OF SOIL DATA FOR BACKGROUND ANALYSIS

(ACCESS DATABASE)

ATTACHMENT I-2
R CODE USED TO PERFORM BACKGROUND ANALYSIS

(ZIP FILE)