

APPENDIX A. DATA MANAGEMENT

Appendix A: Data Management

A.1 SIGNIFICANT FIGURES AND ROUNDING

The laboratory reports results with various numbers of significant figures depending on the instrument, parameter, and the concentration relative to the reporting limit. The reported (or assessed) precision of each observation is explicitly stored in the project database by recording the number of significant figures assigned by the laboratory. Tracking of significant figures becomes important when calculating averages and performing other data summaries.

A.2 DILUTIONS

All analyte concentrations within the calibration range of the instrument in the lowest analytical dilution were selected as the final result. Any analyte concentrations that exceeded the calibration range and were qualified as estimated by the laboratory as an exceedance (“E” qualified) were rejected by the data validator. The values for these analytes were selected from the analysis of the sample dilution in which the analyte concentration was within the calibration range of the instrument. In cases where the result from the lowest analytical dilution is qualified by the laboratory or the validator, the validator will use their best professional judgment to determine whether or not the qualification warrants the selection of the result from another analytical dilution as the final result.

A.3 MULTIPLE RESULTS FOR THE SAME ANALYTE USING ONE ANALYTICAL METHOD

Multiple analyses of a sample for a group of analytes can occur as a result of laboratory QA issues that may only affect a subset of the analyte group. In these cases, there may be multiple results for certain analytes. The data validator will use the following rules to select a single value when multiple results are reported by the laboratory for a single analyte in a single sample using the same method:

- ◆ If all results are detected without qualification as an estimated value (i.e., J or E qualifier), then the result from the lowest analytical dilution is selected. If multiple, unqualified results from the same analytical dilution are available; the highest concentration is selected as a health-protective approach.
- ◆ If a mixture of estimated (i.e., J-qualified) and unqualified detected results are reported, then the unqualified detected result is selected.
- ◆ If all results are reported as detected with estimated qualification, the “best result” is selected using professional, technical judgment.

- ◆ If both non-detected and detected results are reported, then the detected result is selected.
- ◆ If all results are reported as non-detected, then the lowest reporting limit is selected.

A.4 MULTIPLE RESULTS FOR AN ANALYTE DETERMINED BY DIFFERENT ANALYTICAL METHODS

In cases where a single analyte is reported by more than one method, the preferred method will be identified in the QAPP. The results of this method will be selected as the final value by the data validator unless the validator identifies a QA issue that warrants the selection of the results from the alternate method. These instances and the justification for the decision will be documented in the data validation report. In cases where the results are generated in two separate analytical groups that are not submitted to the validator together, the QA manager will be responsible for evaluating the results and determining the most appropriate final result.