APPENDIX H. DATA MANAGEMENT

Appendix H. Data Management

H.1 LABORATORY REPLICATES

Chemical concentrations obtained from the analysis of laboratory duplicates or replicates (two or more analyses on the same sample) were averaged for a closer representation of the "true" concentration compared to the results of a single analysis. Averaging rules were dependent on whether the individual results were "detects" or "non-detects." If all concentrations were detects for a given parameter, the values were simply averaged arithmetically. If all concentrations were undetected for a given parameter, the minimum detection limit was reported. If the concentrations are a mixture of detects and non-detects, any two or more detected concentrations were averaged arithmetically and any detection limits were ignored. If there was a single detected concentration and one or more non-detects, the detected concentration was reported and the detection limit(s) ignored. The latter two rules were applied regardless of whether the detection limit was higher or lower than the detected concentration.

Identical data averaging rules were applied to calculations of mean concentrations for groups of field samples reported in Section 4 of this data report.

H.2 SIGNIFICANT FIGURES AND ROUNDING

The laboratory typically reports results with 1, 2, or 3 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.

Examples of significant figures are shown in Table H-1.

Table H-1. Examples of different numbers of significant figures

1 SIGNIFICANT FIGURE	2 SIGNIFICANT FIGURES	3 SIGNIFICANT FIGURES
0.04	19	19.1
0.4	120	122
4	3,500	3,550

When a calculation involves addition, such as totaling PCBs or PAHs, the calculation can only be as precise as the least precise number that went into the calculation. Example (assuming 2 significant figures):

> 210+19=229, but this would be reported as 230 because the trailing zero in the number 210 is not significant.

When a calculation involves multiplication or division, such as when carbon normalizing, all significant figures are carried through the calculation and then the total result is rounded at the end of the calculation to reflect the value used in the calculation with the fewest significant figures. Example:

> 59.9 x 1.2 = 71.88, to be reported as 72 because there are 2 significant figures in the number 1.2

When rounding, if the number following the last significant figure is less than 5, the digit is left unchanged. If the number following the last significant figure is equal to or greater than 5, the digit is increased by 1.

H.3 CALCULATING TOTALS

Concentrations for several analyte sums were calculated as follows:

- **Total PCBs** were calculated using only detected values for 7 Aroclor mixtures[1]. For individual samples in which none of the 7 Aroclor mixtures were detected, total PCBs were given a value equal to the highest detection limit of the seven Aroclors and assigned a "U" qualifier indicating the lack of detected concentrations.
- **Total DDTs** were calculated using only detected values for the three DDT isomers: 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT. For individual samples in which none of the isomers were detected, total DDTs were given a value equal to the highest detection limit of the three isomers and assigned a "U" qualifier indicating the lack of detected concentrations.

[1] Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260