Conventional Parameters
in Freshwater Sediment and Marine Sediment

Terms appearing in the tables are defined in the *Surface Water Ambient Monitoring Program Quality Assurance Program Plan*, which contains a glossary (Appendix E), as well as a list of abbreviations and acronyms (Appendix F).

Table 1: Quality Control[1]: Conventional Parameters in Freshwater Sediment and Marine Sediment

Laboratory Quality Control	Frequency of Analysis	Measurement Quality Objective
Calibration Standard	Per analytical method or manufacturer's specifications	Per analytical method or manufacturer's specifications
Laboratory Blank	Total organic carbon only: one per analytical batch (n/a for other parameters)	<RL or <30% of lowest sample
Reference Material	Total organic carbon only: one per 20 samples or per analytical batch, whichever is more frequent (n/a for other parameters)	80-120% recovery
Laboratory Duplicate	One per analytical batch	RPD<25% (n/a if native concentration of either sample<RL)
Field Quality Control	**Frequency of Analysis**	**Measurement Quality Objective**
Field Duplicate	5% of total project sample count	RPD<25% (n/a if native concentration of either sample<RL)
Field Blank, Travel Blank, Equipment Blank	Per method	<RL or <30% of lowest sample

[1] Unless method specifies more stringent requirements

Table 2: Sample Handling: Conventional Parameters in Freshwater Sediment and Marine Sediment

Parameter	Recommended Container[1,2]	Recommended Preservation	Required Holding Time[3]
Acid-Volatile Sulfides	G	Freeze to ≤-20 °C	1 year
Grain Size	G	Wet ice to ≤6 °C in the field, then refrigerate at ≤6 °C	1 year
Organic Carbon (Total)	G	Cool to ≤6 °C or freeze to ≤-20 °C	28 days at ≤6 °C; 1 year at ≤-20 °C
Phosphorus (Total)	G	Cool to ≤6 °C	14 days

[1] "G" is glass

[2] Samples for total organic carbon and grain size analysis can be combined in one 250-mL clear glass jar, and sub-sampled at the laboratory in order to utilize holding time differences for the two analyses. If this is done, the 250 mL combined sediment sample must be refrigerated only (not frozen) at ≤6 °C for up to 28 days, during which time the sub-samples must be aliquoted in order to comply with separate storage requirements.

[3] Each "Required Holding Time" is based on the assumption that the "Recommended Preservation" (or a method-mandated alternative) has been employed. If a "Required Holding Time" for filtration, preservation, preparation, or analysis is not met, the project manager and SWAMP Quality Assurance Officer must be notified. Regardless of preservation technique, data not meeting the "Required Holding Time" will be appropriately flagged in the SWAMP database.

Table 3: Recommended Corrective Action: Conventional Parameters in Freshwater Sediment and Marine Sediment

Laboratory Quality Control	Recommended Corrective Action
Calibration Standard	Recalibrate the instrument. Affected samples and associated quality control must be reanalyzed following successful instrument recalibration.
Laboratory Blank	Reanalyze the blank to confirm the result. Investigate the source of contamination. If the source of the contamination is isolated to the sample preparation, the entire batch of samples, along with the new laboratory blanks and associated QC samples, should be prepared and/or re-extracted and analyzed. If the source of contamination is isolated to the analysis procedures, reanalyze the entire batch of samples. If reanalysis is not possible, the associated sample results must be flagged to indicate the potential presence of the contamination.
Reference Material	Reanalyze the reference material to confirm the result. Compare this to the matrix spike/matrix spike duplicate recovery data. If adverse trends are noted, reprocess all of the samples associated with the batch.
Laboratory Duplicate	Reanalyze the duplicate samples to confirm the results. Visually inspect the samples to determine if a high RPD between the results could be attributed to sample heterogeneity. For duplicate results due to matrix heterogeneity, or where ambient concentrations are below the reporting limit, qualify the results and document the heterogeneity.
Field Quality Control	**Recommended Corrective Action**
Field Duplicate	Visually inspect the samples to determine if a high RPD between results could be attributed to sample heterogeneity. For duplicate results due to matrix heterogeneity, or where ambient concentrations are below the reporting limit, qualify the results and document the heterogeneity. All failures should be communicated to the project coordinator, who in turn will follow the process detailed in the method.
Field Blank, Travel Blank, Equipment Blank	Investigate the source of contamination. Potential sources of contamination include sampling equipment, protocols, and handling. The laboratory should report evidence of field contamination as soon as possible so corrective actions can be implemented. Samples collected in the presence of field contamination should be flagged.