



Freshwater Zooplankton Enumeration and Identification Methods

Client: Quinsam Coal Corp.

Project: Quinsam Lakes Batch 2

Sample Inventory

Sample arrival: 16-Aug-2024

Number of samples: 3

Number of jars: 3

Screen size: 63 μm

Biologica project number: 24-123

Upon arrival, the samples were examined and double-checked against the chain of custody to ensure that (1) all samples were accounted for, and (2) each sample had the appropriate number of jars as indicated on the COC. Any discrepancies were reported to the client and were resolved before further sample handling. Samples were transferred from formalin into 70% ethanol and assigned a unique identification number. For processing, samples were analyzed in water and then transferred back into 10% Formalin for storage.

Sample Processing

Freshwater zooplankton samples were analyzed in two fractions as follows:

(1) A “Coarse” fraction comprised of cladocerans, adult copepods, and copepodids, in which a minimum count of 200 organisms was obtained; and

(2) A “Fine” or “Micro” fraction, in which only copepod nauplii and rotifers were identified and enumerated. Processing of the micro fraction was completed to either a 100-count or a maximum of three sub-samples. The Micro fraction was analyzed using a 1-mL Sedgewick-Rafter counting chamber.

The Coarse fraction was analyzed in a Bogorov tray through a stereo microscope at 10-40x magnification. All organisms were identified by taxonomic experts to the lowest taxonomic level using a compound microscope (100–400x magnification), appropriate dissection tools, and standard taxonomic references. For copepods, the stage of development was also recorded (copepodite stages I-V) as is the sex for mature individuals (copepod stage VI).

Sub-sampling for all fractions was performed using Hensen-Stempel pipettes.

Zooplankton were identified to species wherever possible, although immature copepods lack differentiating features required for identification beyond order (e.g., Calanoida, Cyclopoida, or Harpacticoida). All identifications were performed using taxonomic references and collaborations with external experts, where necessary.

Table 1. Summary of zooplankton samples processed for Quinsam Coal Corp. Quinsam Lakes Batch 2, 2024.

Client Sample ID	Date Sampled	Biologica Sample ID	Fraction	Split	Specimens Counted
LLM1-7Aug24-M	7-Aug-24	fz24-123-006	Fine	4/50	230
			Coarse	2/50	188
LLM1-7Aug24-R	7-Aug-24	fz24-123-007	Fine	7/50	269
			Coarse	2/50	150
MQL1-7Aug24-M	7-Aug-24	fz24-123-008	Fine	11/50	203
			Coarse	3/50	104

QA/QC

Ten percent (10%) of samples (1 sample) was reanalyzed to assess sub-sampling accuracy and taxonomic consistency. The sample was chosen at random and processed at different times to reduce counting and identification bias. The QA sample was completed in batch 1.

Data

Densities (#/L) were calculated using the net diameter, 5" (or 12.70 cm), and tow depth, 10 m.

Taxonomic data were recorded in Biologica's custom database. Results were provided to the Quinsam Coal Corp project manager in Excel spreadsheets via email.

Methodological and Taxonomic References

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