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Marquette, Michigan 49855
U.S.A.

and

U.S. Fish and Wildlife Service
Ludington Biological Station
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and

Department of Fisheries and Oceans
Sea Lamprey Control Centre
1219 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
Canada

INSTRUMENT OPERATING PROCEDURE

INSTRUMENT:

Fluorometer

MODEL:

8000

MANUFACTURER:

Turner Designs

PRECAUTIONS:

POTENTIAL INTERFERENCES

Do not use glass or quartz cuvettes.

Use only lens cleaning tissues or cloth on plastic cuvettes.

Use a clean cuvette for all readings. The Aquafleur™ is sensitive; sample residue may cause errors.

Fluorescence is temperature sensitive; read the blank, standard, and all samples at the same temperature.

High background or blank values may reduce sensitivity. Do not use this instrument for dye dilution studies.

SAFETY

No special safety precautions

PROCEDURES:

- I. Preparation of the Aquafluor™ Fluorometer for use.
 - A. Turn on the instrument by pressing **ON/OFF** button. The instrument will countdown from five after which it is ready to use.
 - B. If **RHOD** doesn't appear in lower left of screen, press the **A/B** button. This toggles between the Rhodamine and Turbidity channels.
- II. Calibration of the fluorometer.
 - A. With a known standard.
 1. Press the **STD VAL** button.
 2. Use the up and down arrow buttons to adjust the readout to the standard value. Holding the button down activates scrolling. When done, press **ENT** or **ESC** to return to home screen.
 3. Press the **CAL** button then the **ENT** button.
 4. Insert a blank, close cover, and press **ENT**. Be sure the cuvette is at least half full (>2 mL of sample), is free of bubbles, and is clean and dry. Wait until prompted before moving to the next step. Always orient the cuvette in the same direction when inserting it into the instrument.
 5. Insert calibration standard and press **ENT**. When calibration is complete, *Calibration Completed* will be displayed - press **ENT**. If **ENT** is not pressed within 10 seconds the readout will ask if you wish to abort the calibration - if not, press the down arrow then **ENT** to accept the calibration.
 6. Insert the Secondary Solid Standard, press either **READ** button, and record (attachment) the result. Slight variations in placement of the standard may result in variations in readings. It is recommended that 3-5 readings be taken while removing and reinserting the standard between readings. The average of these readings is used for future checks of instrument stability and for recalibration.
 - B. With the Secondary Solid Standard.
 1. If the instrument was previously calibrated with a known standard and the value of the Secondary Solid Standard was determined against that value, you can recalibrate with the Secondary Solid Standard.
 2. Follow calibration directions (II.A.1. – 6.).
 3. Enter the value found for the Secondary Solid Standard in place of the known standard.

III. Analyzing unknown samples.

- A. Samples are collected by either hand or more routinely through the use of automatic water samplers. Natural fluorescence is present in stream water, so the fluorescence of water from the site to be sampled (without Rhodamine) is measured first to provide a background reading. Stream water with suspended solids must be filtered to remove the solids before measurement. The background fluorescence is used for comparison to determine if Rhodamine dye is present or absent.
 - 1. If suspended solids are present in the stream water, filter before measurement.
 - 2. Place a properly filled, dry cuvette into the sample compartment. Press either of the two **READ** buttons.
 - 3. The instrument will auto-range, measure and average the fluorescence for 5 seconds, then display the reading at the top center of the display. *WAIT* is displayed in the upper left corner of the display during the 5- second measurement period. When *WAIT* disappears, the next sample can be read.

MAINTENANCE:

- A. Minimal maintenance is required or possible. Replacement of batteries is completed according to instructions found in the instrument manual. A section on service/troubleshooting is included in the instrument manual.
- B. All maintenance conducted on the instrument is recorded in the instrument log book.

REFERENCE:

Aquafluor™ Handheld Fluorometer and Turbidimeter User's Manual P/N 998-0851 and Aquafluor™ Secondary Solid Standard Operational Instructions P/N 998-0025 REV A.

This procedure has been reviewed and approved by the undersigned representatives of the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada.

REVIEWED/APPROVED _____ DATE _____
Field Supervisor (U.S.)

REVIEWED/APPROVED Mike Spivak DATE 05 MAR 2020
Program Manager (Canada)