FECAL COLIFORM REPORTING

The following criteria are to be used in obtaining and reporting fecal coliform data:

Standard Methods suggests analyzing samples by filtering three different volumes (diluted or undiluted) depending on the bacterial density. Each laboratory must filter multiple dilutions of the sample in order to obtain plates containing 20 to 60 fecal coliform colonies. It is <u>recommended</u> that sampling containers of at least 250 ml be used in order to collect sufficient volume to meet method criteria. The requirements for calculating values are given in Standard Methods 9222 D-1997, and EPA Microbiological Methods for Monitoring the Environment, Water, and Wastes, EPA/600/8-78/017. 1978. US EPA. Page 124. The following is a compilation of these requirements to be used in calculating the fecal coliform count per 100 ml of sample for compliance with NC WW/GW Laboratory Certification.

ALL RESULTS MUST BE REPORTED IN WHOLE NUMBERS.

(1) **Countable Membranes with 20-60 Blue Colonies:** Calculate the fecal coliform results from membrane filters within the ideal counting range of 20-60 blue colonies using the general formula:

$$\frac{\text{Number of colonies counted} \times 100}{\text{volume of sample filtered in ml}} = \text{Fecal coliform colonies per 100 ml}$$

If more than one filter (including a 100 ml sample volume) has a count in the acceptable range, calculate the values in counts/100 ml for each filter in the countable range and average.

(2) **Countable Membranes with less than 20 Blue Colonies:** If all counts are below the lower limit (20) of the ideal counting range:
(a) Select the count most nearly acceptable and compute the count using the general formula. Report the count as an **Estimated** Count per 100 ml: <u>or</u>

(b) Total the counts on all filters and report as number per 100 ml. For example, if 50, 25, and 10 ml portions were examined and counts were 15, 6, and 0 coliform colonies respectively, calculate results as follows and report the count as 25 colonies per 100 ml.

$$\frac{(15 + 6 + 0)\text{ counts} \times 100}{50 + 25 + 10 \text{ ml}} = 25 \text{ colonies per 100 ml}$$

(3) **Membranes with No Colonies:** If counts from all filters are zero, report the count for the fecal coliform as a less than (<) value. Calculate the number of colonies per 100 ml that would have been reported if there had been one colony on the filter representing the largest filtration volume. For example, sample volumes of 25, 10 and 2 ml produced colony counts of 0, 0 and 0, respectively. The count would be reported as <4 colonies per 100 ml. If a 100 ml sample was analyzed report as < 1/100 ml.

$$\frac{<1 \text{ counts} \times 100}{25 \text{ ml}} = <4 \text{ colonies per 100 ml}$$

(4) **Countable Membranes with more than 60 Colonies:** If all filter counts are above the upper limit (60), but countable, calculate the count from the smallest volume filtered and report as a greater than (>) value. For example, if 10, 5, and 1 ml portions of samples were examined and counts were TNTC, 310, and 95 coliform colonies respectively, calculate results as follows and report the count as >9500 colonies/100 ml.

$$\frac{>95 \text{ counts} \times 100}{1 \text{ ml}} = >9500 \text{ colonies per 100 ml}$$

(5) **Uncountable Membranes:** For uncountable filters with more than 60 colonies or "Too numerous to Count" (TNTC), use 60 colonies as the basis of calculation with the smallest filtration volume and report as a greater than value. For example, sample volumes of 10, 1.0 and 0.1 ml <u>all</u> produced too many colonies to show separated colonies and the laboratory bench sheet showed TNTC. The count would be reported as >60,000 colonies per 100 ml.

$$\frac{>60 \text{ counts} \times 100}{0.1 \text{ ml}} = >60,000 \text{ colonies per 100 ml}$$

(6) **If the Filters for a sample have counts of both >60 and <20, but none in the 20-60 range:** Use all <u>countable</u> filters and calculate as in (2) (b) above.

(7) **Anomalies:** The above requirements are to be used except when an abnormality occurs in the analysis of a sample. When abnormalities occur, analysts must use their best judgment in selecting the proper value to report.