Guidance for Meeting Farm Standard 3.0 & 3.1 Section 3E Environmental Monitoring Requirements (Water Quality and Sediment Monitoring for Cages or Net Pens in Fresh or Brackish Water).

Purpose:

Cage farm operations located in freshwater or brackish water bodies are required under BAP Farm Standard (FS) Issue 3.0 and 3.1 to comply with an environmental monitoring approach that is intended to detect when conditions in the water body are tending towards a state of environmental enrichment that could lead to eutrophication. FS 3.0/3.1 set limits for certain water quality variables that are indicative of a mesotrophic or intermediate state of eutrophication. In mesotrophic waters, the risk of dissolved oxygen depletion is less than in eutrophic or hypereutrophic waters. A mesotrophic condition limits the extent of environmental enrichment and protects fish welfare to enable conditions suitable for good fish growth and efficient feed conversion. To assure that environmental quality is maintained at a level to support good fish welfare and mesotrophic conditions, farms are required to evaluate changes in water quality that may anticipate reaching the water quality limits established in FS 3.0/3.1 clause 3.23. Corrective actions to avoid having conditions deteriorate further typically include a reduction of biomass and the associated feed inputs.

Rationale:

Some parameters specified under FS 3.0/3.1 Section 3E are new to BAP farm standards (**notably total phosphorus**) or were monitored in a different fashion previously under the older versions (**notably chlorophyll a**). When farms that were certified under BAP Finfish and Crustacean Farm Standard (FCFS) Issue 2.4 transition onto FS 3.0/3.1, it is recognized that ongoing crop cycles that were initiated under the old standard require time to be completed, and farms likewise need time to implement the new environmental monitoring process and to adjust their operations in collaboration with other producers, to ensure that stable conditions meeting the new environmental requirements can be maintained in the water bodies in which the farms are located.

There are two audit clauses in FS 3.0/3.1 that particularly require clarification in this respect:

> 3.23: Water quality in the surface mixed layer of water bodies used for cage culture shall conform to **at least two out of three** of the following: not more than 40 µg/L for **total phosphorus**, not more than 15 µg/L for **chlorophyll a**, not less than 3 m for **Secchi disk visibility** as an average of sample collections encompassing four consecutive months. In addition, average **daily dissolved oxygen** concentration at 50 cm depth shall not be less than 4 mg/L for more than four consecutive months.
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> 3.24: From a baseline established by an independent (third-party) **during the first year following initial certification**, any increase in annual average total phosphorus, or chlorophyll a concentrations, or any decrease in annual average Secchi disk visibility shall not exceed 25%. In addition, any decrease in annual average dissolved oxygen concentration shall not exceed 25%.

Clause 3.23

For clause 3.23, it is important to note that, as the requirement is stated, farms are required to meet the limits for at a minimum **two out of three** of the variables cited: **total phosphorus, chlorophyll a**, and **secchi disk visibility**, calculated as an average of readings over four consecutive months. Note particularly that farms are allowed to have one out of these three parameters exceed the stated limit. Farms must all also meet the requirement stated for **dissolved oxygen**, likewise as an average of readings over four consecutive months. These water quality limits

provide some flexibility because each water body responds uniquely. Water quality in many water bodies varies seasonally (cold, warm/dry, rainy), and this monitoring approach is intended to account for that variation.

But further, for audits taking place in 2022-2024, BAP is allowing a transitional phase for cage farms in lakes and reservoirs to implement management changes needed to maintain environmental conditions that will comply with Section 3E of FS 3.0/3.1. Non-conformities against the limits set in clause 3.23 may be conditionally waived during 2022-2024 audits, but non-conformities exceeding the limits by more than 100% will not be waived. In addition, during this transitional phase, any farms whose non-conformities against clause 3.23 have been waived will be required to supply the Certification Body and BAP with supplemental information including permit details, ongoing production levels and feeding rates, and bi-monthly updates on stocking rates, feeding rates, and mortalities. Year-over-year progress towards compliance with the limits for two out of the three parameters (**total phosphorus**, **chlorophyll a**, and **Secchi disk visibility**) must be demonstrated.

Clause 3.24

From the wording of **clause 3.24** it should be clear that the requirement is **not applicable (N/A) during the first year a farm becomes certified under FS 3.0/3.1**. But during the first year **following initial certification under FS 3.0/3.1**, farms must arrange for an independent study to be made of these four parameters (total phosphorus, chlorophyll a, secchi disk visibility, and dissolved oxygen), to establish the baseline conditions for future audits under clause 3.24 (deteriorations on an annual basis of any parameter to not exceed 25%).