SECTION 3
HOW TO WRITE A BMP PLAN

3.1 Introduction

A best management practice (BMP) is a practice or combination of practices that provide an effective means of preventing or reducing levels of pollutants in facility discharges.

Facility operators design BMP plans to include a series of practices such as health management, feed management, effluent discharge management, and drug and chemical use. BMP plans are flexible and allow facility operators to design measures and practices that work within their facility management framework.

In the context of the CAAP proposed effluent guidelines, the BMP plan includes components that are designed to minimize the discharge of solids from the facility. The goal of this plan is to control conventional and nutrient pollutants in the discharge. The CAAP facility is expected to provide written documentation of a best management plan and keep necessary records to demonstrate the implementation of the plan. This type of regulatory structure allows individual facilities to develop a plan tailored to the unique conditions of the CAAP facility, while reducing the discharge of pollutants consistent with the goals of the Clean Water Act.

3.2 Guidance for Developing a BMP Plan

The goal of a BMP plan is to describe the standard operating procedures and BMPs used to minimize, collect, and dispose of pollutants generated during facility operation.

The following components are based on information from requirements in existing NPDES permits (USEPA Regions 1 and 10) for CAAP facilities in Idaho (USEPA, 1999), Maine (USEPA, 2002), and Massachusetts (USEPA, 2001). A BMP plan for CAAP facilities should include the following components:

1. Management of removed solids and excess feed (only for facilities under alternative compliance without TSS limits.)

    a. Describe pollution control equipment or methods used to enhance solids collection. (e.g. quiescent zones, settling basins)

    b. Describe how excessive solids buildup will be identified to trigger more frequent cleaning of raceways/culture tanks and equipment to prevent more suspended and dissolved materials in the discharge.

c. Describe feeding methods used to minimize the amount of feed and residual in the discharge.

d. Describe the preventive maintenance program for cleaning equipment used for cleaning culture units so that delays in cleaning due to equipment failure are avoided.

e. Describe inputs and outputs from the facility including water, dissolved pollutants, solids, fish, feed, and mortalities due to predation or disease.

f. Describe the cleaning of culture tanks/raceways and other equipment and how practices minimize the disturbance and subsequent discharge of accumulated solids during routine activities such as harvesting and grading of fish.

2. Proper operation and maintenance of a CAAP facility

   a. Describe maintenance procedures for in-system technologies to prevent the overflow of any floating matter and subsequent by-pass of treatment technologies.

   b. Describe the proper storage of drugs and chemicals to avoid the inadvertent spillage or release into the aquatic animal production facility.

   c. Describe the collection of aquatic animal mortalities, the frequency of the collections, and how mortalities are stored and disposed to prevent discharge into the waters of the United States.

3. Practices to minimize the potential escape of nonnative species (not applicable to flow-through facilities producing 100,000 to 475,000 lb per year.)

   a. Describe in detail precautions taken by the facility to prevent the loss of nonnative species. This description should include a schedule for preventive maintenance and inspection of the containment system, escape recovery protocols, and fish transfer procedures during stocking and grading.

   b. For net pen systems, describe secondary containment equipment. Secondary containment involves the use of a second set of containment netting around a net pen system. The secondary containment netting should be positioned to capture any fish that might escape the primary containment netting because of damage to the net pen system that could occur during a storm event or other structural failure.

4. Personnel training. Describe the training to be provided for employees to ensure that they understand the goals and objectives of BMPs and their role in complying with the goals and objectives of the BMP plan.

5. For net pen facilities, describe practices to minimize the discharge of net-fouling organisms, the prevention of discharges of blood, viscera, and fish carcasses associated with the transport and harvest of fish, the prevention of discharges of substances associated with in-place pressure washing of nets, and the prevention of discharges of feed bags, chemicals used to clean nets and gear, and materials containing tributyltin compounds.

6. Include a statement certifying that the facility manager and the individuals responsible for implementing of the BMP plan have reviewed and endorsed the plan.

Implementation Notes

Include a diagram or map of the facility to illustrate the layout of the operation.

(See sample BMP plan in Appendix B.)

Additional Resources

IDEQ (Idaho Division of Environmental Quality). N.d. *Waste Management Guidelines for Aquaculture Operations*. Boise, ID. <http://www2.state.id.us/deq/ro_t/tro_water/aquacult_open.htm>. Accessed September 2001.

Summerfelt, S.T., and B.J. Vinci. 2002. Best waste management practices for coldwater recirculating systems. In *Proceedings of The Fourth International Conference on Recirculating Aquaculture*, ed. T.T. Rakestraw, L.S. Douglas, and G.J. Flick, pp. 375-381. Roanoke, VA, July 18-21, 2002.

USTFA (U.S. Trout Farmer's Association). 1994. *Trout Producer Quality Assurance Program*. U.S. Trout Farmer's Association. Charles Town, WV.

CHECKLIST FOR BMP PLAN WITH TSS LIMITS

Proper operation and maintenance of a CAAP facility

- ❑ Description of maintenance procedures for in-system technologies to prevent the overflow of any floating matter and subsequent by-pass of treatment technologies.
- ❑ Description of proper storage of drugs and chemicals to avoid the inadvertent spillage or release into the aquatic animal production facility.
- ❑ Description of the collection of aquatic animal mortalities, the frequency of collections, and how mortalities are stored and disposed to prevent discharge into the waters of the United States.

Practices to minimize potential escape of nonnative species

- ❑ Description of precautions taken by the facility to prevent the loss of nonnative species.
- ❑ Description of containment system.
- ❑ Escape recovery protocols.
- ❑ Fish transfer procedures used during stocking and grading.

Personnel training

- ❑ Training for employees to learn procedures for BMPs.
- ❑ Assurance that employees understand their role in complying with the objectives of the BMP plan.

Statement of BMP review and endorsement

- ❑ Statement of certification signed by facility manager or individuals responsible for implementation of the BMP plan.

CHECKLIST FOR BMP PLAN UNDER ALTERNATIVE COMPLIANCE WITHOUT TSS LIMITS

Management of removed solids and excess feed

- ❑ Description of pollution control equipment and solids collection.
- ❑ Explanation of how excessive solids buildup will trigger more frequent cleanings of raceways or culture units.

- ❑ Description of feed management practices used to minimize the amount of excess feed.
- ❑ Description of preventive maintenance program used to prevent delays in cleaning due to equipment failure.
- ❑ Description inputs and outputs from the facility, including water, dissolved pollutants, solids, fish, feed, and mortalities.
- ❑ Describe the cleaning of culture tanks or raceways another other equipment and how practices minimize the disturbance and subsequent discharge of accumulated solids during routine activities such as harvesting and grading of fish.

Proper operation and maintenance of a CAAP facility

- ❑ Description of maintenance procedures for in-system technologies to prevent the overflow of any floating matter and subsequent by-pass of treatment technologies.
- ❑ Description of proper storage of drugs and chemicals to avoid the inadvertent spillage or release into the aquatic animal production facility.
- ❑ Description of the collection of aquatic animal mortalities, the frequency of collections, and how mortalities are stored and disposed to prevent discharge into the waters of the United States.

Practices to minimize potential escape of nonnative species

- ❑ Description of precautions taken by the facility to prevent the loss of nonnative species.
- ❑ Description of containment system.
- ❑ Escape recovery protocols.
- ❑ Fish transfer procedures used during stocking and grading.

For net pen facilities

- ❑ Operate the facility to minimize the concentration of net-fouling organisms that are discharged during events such as changing and cleaning nets and screens ashore.
- ❑ Avoid the discharge of blood, viscera, fish carcasses, or transport water containing blood associated with the transport or harvesting of fish into the waters of the United States
- ❑ Avoid the discharge of substances associated with pressure-washing nets into the waters of the United States. The use of air-drying, mechanical and

other nonchemical procedures to control net fouling are strongly encouraged.

- ❑ Develop and implement practices to minimize the potential escape of nonnative species.
- ❑ Discharges of feed bags and other solid wastes into the waters of the United States are prohibited.
- ❑ Discharges of chemicals used to clean nets, boats, or gear into the waters of the United States are prohibited.
- ❑ Discharges of materials containing or treated with tributyltin compounds into the waters of the United States are prohibited.

Personnel training

- ❑ Training for employees to learn procedures for BMPs.
- ❑ Assurance that employees understand their role in complying with the objectives of the BMP plan.

Statement of BMP review and endorsement

- ❑ Statement of certification signed by facility manager or individuals responsible for implementation of the BMP plan.

3.3 Guidance for Drug and Chemical Reporting Requirements

The goal of drug and chemical reporting requirements is to minimize drug and chemical discharges from a facility. Reporting requirements include the following:

1. For a written report for drugs and chemicals not used according to label requirements, list the following information:

    - Product name of the drug or chemical.
    - Reason for treatment
    - Dates and times of the addition (including duration).
    - The total amount of active ingredient added.
    - The total amount of medicated feed added (only for drugs applied through medicated feed).
    - Estimated number of aquatic animals medicated by the addition.

Submit written report within 30 days after conclusion of the addition of the drug or chemical.

Provide an oral report to the permitting authority within 7 days after initiating application of a drug or chemical that is not used according to label requirements.

2. For a written report for investigational new animal drugs, list the following information:

    - Product name of the drug or chemical.
    - Reason for treatment
    - Dates and times of the addition (including duration).
    - The total amount of active ingredient added.
    - The total amount of medicated feed added (only for drugs applied through medicated feed).
    - Estimated number of aquatic animals medicated by the addition

Submit written report within 30 days after conclusion of the addition of the drug or chemical.

Implementation Notes

1. For drug and chemical use and handling, keep original containers, and purchase and mix only the necessary amounts to reduce storage requirements and avoid potential leaks or spills.

2. Store drugs and chemicals in a designated space away from rearing areas, feeds, and water sources. Avoid storage areas with drains; this will help contain a spill if one should occur.

3. Use drugs or chemicals only as directed on the label.

4. Educate personnel on proper handling, use, and spill containment procedures.

5. Maintain accurate records for treatment application.

Additional Resources

The U.S. Food and Drug Administration Web site has more information on drug and chemical use in aquaculture:

http://www.fda.gov/cvm/index/aquaculture/appendixa6.htm
<http://www.fda.gov/cvm/index/aquaculture/aqualibtoc.htm>

3.4 References

USEPA (U.S. Environmental Protection Agency). 1999. NPDES Permit no. ID-G13-0000. Issued by USEPA Region 10 to Aquaculture Facilities in Idaho. Signed September 10, 1999.

USEPA (U.S. Environmental Protection Agency). 2001. NPDES Permit no. MA0005916. Issued by USEPA Region 1 to Woods Hole Oceanographic Institution, Environmental Systems Laboratory.

USEPA (U.S. Environmental Protection Agency). 2002. NPDES Permit no. ME0036234. Issued by USEPA Region 1 to Acadia Aquaculture, Inc. Signed February 21, 2002.