SOIL CONSERVATION SERVICE
CONNECTICUT AND RHODE ISLAND
STANDARDS AND SPECIFICATIONS
COMMERCIAL FISH PONDS
397
(acre)

Definition

A water impoundment constructed and managed for commercial aquaculture production.

Scope

This standard applies to impoundments that store water and are managed for commercial aquaculture purposes. It applies to all types of ponds installed or modified for commercial production of fish and other aquatic animals and plants, including those for fee harvesting on the site. It does not apply to ponds used for noncommercial aquaculture products grown for home use or recreational purposes. This standard applies to class (a) dams having a product of storage times effective height of dam of less than $1.13 \times 10^6 m^4$ (3,000 acre ft.^{2}) and effective height of dam less than 10.7 m (35 ft.).

Purpose

To provide a favorable water environment for producing, growing, and harvesting commercial aquaculture crops.

Conditions Where Practice Applies

On land where soil conditions, water resources, and topography are suitable for constructing a pond or reservoir for aquaculture production that meets the following criteria and conditions:

1. Water quantity will be adequate considering evaporation, seepage, and need for water exchange.

2. Water quality will be suitable for use in aquaculture production or can be made satisfactory by treatment.

3. Application of practical pond management techniques will achieve the desired level of production on a predictable basis.

4. Access to the site is available or can be constructed and maintained.

5. Provision will be made for any needed treatment of water released downstream from the pond.

6. Ponds will store the recommended depth and area of water needed for the specific species to be grown.

7. The location, design, and installation of ponds will comply with all pertinent federal and state regulations including wetlands, floodplains, and prime farmlands.

Planning Considerations

The owner/operator's objectives will dictate the level of development and management to be planned. A thorough aquaculture resource assessment must be made to determine the feasibility of the project. Biology Technical Note No. 22 contains an Aquaculture Resource Assessment Guide suited to this purpose.

Permits

The construction of a commercial fish pond in Connecticut will require a diversion permit from the State Department of Environmental Protection (DEP), and will require a local wetland permit from the town. In addition, a permit is required from the DEP Fisheries Unit for the importation and/or liberation of live fish or fish eggs into waters of the state. In Rhode Island a wetlands permit is required from the state, and in both states a dam construction permit will be required if the dam height exceeds three (3) feet. In both states a commercial operation growing fish for resale requires registration with the respective state fisheries agency.

Design Criteria

The site must be protected from flooding, sedimentation, and contamination. If there is a possibility of contamination by chemicals or pesticides, soil and/or water testing in the suspected area of the watershed and/or pond site must be completed.

Ponds can be either embankment or excavated or a combination of both. If site conditions require a berm around the perimeter of the pond to protect it from flooding and surface runoff, it must be incorporated into the design.

Water Supply

Wells are the most desirable source of water, but any available source may be used if the quality and quantity are adequate. If streams or rivers are used, adequate screening and filters must be used to prevent undesirable fish, plants, or aquatic invertebrates entry to the pond. Any pumping or pipeline

facilities shall be located to best serve the pond, taking into account accessibility for maintenance and repair, protection from overflow and flood hazards, utilities and future expansion. Incoming water shall travel the longest practicable distance before reaching the pond outlet to ensure internal water circulation.

Water Quantity
Dependable water supplies of at least 50 gallons per minute GPM per surface acre are essential where supplemental feeding is practiced. Flow shall be measured during the period of low flow, usually August or September.

Water Quality
If necessary, water entering the pond shall be aerated to increase dissolved oxygen and dissipate harmful gases.

Temperature
A. Trout Pond - Water temperature measured six (6) inches below the surface shall not exceed 70°F during the warmest time of the year.

B. Warm Water and Bait Fish - Water temperature measured six (6) inches below the surface shall be 70°F or higher for at least 90 days to ensure reproduction during the summer and provide an adequate growing season.

pH shall be within the range of 6.0 to 9.0. Minimum dissolved oxygen shall be 5 mg/l or higher. Total alkalinity (methyl orange) should be in the range of 50 to 200 mg/l, $CaCO_3$ equivalent unless supplemental feeding is practiced. When supplemental feeding is practiced lower M.O. alkalinity is acceptable.

Pond Size
Surface area shall be a minimum of one-quarter (¼) acre unless supplemental feeding is practiced. Surface area shall be a minimum of 1/10 acre where trout are artificially fed. Commercial fish ponds for bait fish shall not exceed 3/4 acre and fee fishing ponds shall not exceed 3 acres.

Pond Depth
Spring fed ponds or ponds with running water where fish will over winter shall be 6 feet deep or deeper over one-fourth (¼) of the total area when the flow is 50 G.P.M. or greater per surface acre. Ponds with less than 50 G.P.M. per acre surface flow shall be 8 feet deep or deeper over one-fourth (¼) of the total area. All pond shorelines should slope 2:1 to a depth of 3 feet to discourage weed growth.

Pond Bottom
Where fish are harvested by seining, the pond bottom shall be smoothed and free of all trees, roots, and debris. Existing channels and depressions in the pond area shall be filled and smoothed. When a harvest basin is used for harvesting fish the pond shall be graded toward the basin such that the basin becomes the lowest point within the pond. The slope to the harvest basin or outlet shall be at least 0.2 foot per 100 feet.

Harvesting
Lift nets, seines, traps, and pumps are harvesting methods. However, draining is the most widely used method. A harvest basin is usually used to capture bait fish. The basin is built inside the pond 15 feet square and 1 foot deep with the top of the basin set at the invert of the drain pipe. Ponds larger than 0.3 acres shall have a basin sized at 2 percent of the total pond area. To facilitate capture of fish the basin shall not be deeper than 1 foot. The basin can be constructed of concrete, concrete blocks, or wood. Do not use pressure treated lumber.

Spawning Facilities
For bait fish production ponds, spawning boards or similar devices must be available for fathead minnows, and if natural vegetation is absent, artificial vegetative mats must be provided for golden shiners.

Drains
The pond must have facilities for complete as well as partial drain down.

Stocking Rates
Stocking rates are dependent on the cultural methods used to raise fish and the rate of flow of incoming water. Supplemental feeding rates and schedules are dependent on the species being raised, the water temperature, size and number of fish and size of pelleted food. The manufacturers recommendations should be followed.

Access and Safety
Provision shall be made for access to the site as well as access for operation and maintenance. The maximum grade for equipment access shall be 20 percent (5:1 slope). Appropriate safety features and devices shall be installed or made available close by to aid people who fall into the pond and to prevent such accidents.

If the owner's objectives include fee fishing, consideration should be given to the retention of trees for shade. Maintaining a grassed area, at least 12 feet in width from the pond's edge around the pond perimeter, will facilitate fisherman access for casting.

Seeding
All disturbed areas and new construction above normal water level will be seeded to permanent grasses.

Operation and Maintenance
A plan for operation and maintenance shall be prepared for use by the operator. The plan shall provide for inspection, operation, and maintenance of vegetation, pipes, valves, spillways, effluent water, and other parts of the system.

Construction Specifications

Commercial fish ponds shall be constructed according to the specification for POND-378.

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