

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
CONNECTICUT
AQUACULTURE PONDS

(Ac.)

CODE 397

DEFINITION

A water impoundment constructed and managed for farming of freshwater and saltwater organisms including fish, mollusks, crustaceans and aquatic plants.

ground water, or diverting spring or stream flows.

The site must be protected from flooding, sedimentation, and non-sediment contamination.

PURPOSE

Provide a favorable aquatic environment for producing, growing, and harvesting aquaculture crops.

The soils within the pond area, as well as those in the contributing drainage area, must be checked for residues of pesticides and other harmful chemicals if there is any possibility of contamination.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all impoundments that store water and are managed for aquaculture purposes.

Acid soils shall be limed to achieve a neutral condition or the desired pH level for best production.

Where the facility is a component of an approved CNMP.

When multiple ponds are installed, each pond shall be arranged so that it can be managed independently of the others to facilitate harvesting and the control of parasites and disease.

CRITERIA

General Criteria

Laws and Regulations. All Federal, state, and local laws, rules, and regulations, including local inland wetland agency regulations, governing the construction and use of this practice as well as setbacks from wells, surface water and property boundaries shall be followed. Planned work shall comply with all federal, state, and local laws and permit conditions and requirements. **The landowner shall obtain all necessary permits prior to construction, and any land clearing activities, or stocking.**

All ponds shall be designed to minimize the escape of non-native or otherwise harmful species to adjacent surface water bodies especially downstream and upstream of streams and rivers.

A protective cover of vegetation shall be established on all exposed soil surfaces that have been disturbed. If soil or climatic conditions preclude the use of vegetation, other protection methods shall be used.

Aquaculture ponds may be: (1) embankment ponds that intercept and store surface runoff water, or (2) off-channel impoundments or excavated ponds that are filled by pumping

Water supply. Any available water source may be used if the quality and quantity are adequate. If water is pumped from rivers and streams or other sources where undesirable fish, pesticide residue, fish disease, and parasites may be introduced, filters must be installed in the pumping system.

Evaporation rates, stocking densities, and cultured species

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service Connecticut State Office (<http://www.ct.nrcs.usda.gov>), or download it from the Connecticut electronic Field Office Technical Guide (eFOTG) <http://www.nrcs.usda.gov/technical/efotg/>

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requirements shall be used in establishing specific incoming flow rates.

Water Quality. Water entering the pond shall be aerated to increase dissolved oxygen and dissipate harmful gases, if needed. The minimum dissolved oxygen level in ponds is 3 to 5 parts per million. Supplemental aeration within the aquaculture pond shall be included, as necessary to maintain desired dissolved oxygen.

Water temperature and water chemistry shall be suitable to meet the species requirements and the planned production level.

Incoming water shall be introduced as far away from outlet drain as practicable to prevent the rapid removal of fresh water from the pond.

Provide for the collection, harvest and utilization of wastes from the cultured organisms.

Provisions shall be made for any needed treatment of water released downstream to ensure that the designated use of the receiving waters as determined by the Connecticut DEP is not degraded from the aquaculture impoundment structure.

Design Criteria – Embankment Ponds.

Earthfill dams and embankments around excavated ponds shall meet or exceed the requirements for embankments as specified in Connecticut NRCS Standard 378, Pond.

The minimum top width of the embankment shall be 14 feet, where it is to be used as a road for harvesting, feeding, and management purposes and is nonpublic.

Design Criteria – Excavated Ponds. Ponds established by excavating and constructing an embankment around their outer perimeter that excludes outside runoff shall have either an auxiliary spillway or a principal spillway pipe installed with sufficient capacity to remove a 10-year/24-hour direct rainfall amount in 48 hours or less. A minimum 8-inch diameter pipe shall be used.

Levee construction shall include the required embankment settlement to the minimum freeboard requirements. A minimum berm width of 10 feet shall be provided between the outside toe of levee and top of bank of outlet drainage ditch.

Pipes and conduits. Pump discharge through levees shall be installed above expected high water level, and provisions shall be made to prevent pump and motor vibrations from being transmitted to discharge conduits.

Interior embankments constructed for division of water or to direct water flow for circulation shall have adequate cross section to ensure stability and function for its intended purpose.

Adequate provisions must be made to protect earth surfaces from turbulent water at pipe inlets and outlets.

Pond size and depth. The pond shall be constructed to the recommended size and depth for the species to be grown.

Drains. All ponds shall have facilities for complete as well as partial drawdown. Turn-down pipes, quick-release valves, bottom-water release sleeves, pumps or other devices for water level control and pond management are to be included in the design and construction of the impoundment. Conduit design and seepage control shall meet or exceed the requirements specified in Connecticut NRCS Standard 378, Pond.

Pond bottom. Where organisms are harvested by seining, the pond bottom shall be smooth and free of all stumps, trees, roots, and other debris. Existing channels and depressions in the pond area shall be filled and smoothed. The edges of the pond shall be deepened to provide at least 3 feet of water.

Where crawfish are harvested by trapping, complete clearing and removal of trees, stumps, and other vegetation is not required.

The pond bottom shall be sloped to the outlet at a gradient of at least 0.2 foot per 100 feet.

Access and safety. Provisions shall be made for access to the site as well as access for operation and maintenance. Ramps for equipment access shall have a grade of 4 horizontal to 1 vertical or flatter.

Appropriate safety features shall be made available nearby to aid people who may fall into the pond and devices installed to prevent such accidents.

Fences shall be installed as necessary to exclude livestock and unwanted traffic in

accordance with Connecticut NRCS Standards 382, Fence and/or 472 Access Control.

CONSIDERATIONS

The State fishery agency or appropriate State University or research institution should be contacted for recommendation on pond size, water depths, and adapted commercial aquatic species.

Consider any adverse impact to cultural resources when planning for aquaculture ponds.

Other planning considerations include the following:

- The visual design of ponds should be carefully considered in areas of high public visibility and those associated with recreational fishing.
- Consider the effects on the volume of downstream flow or aquifers that might cause undesirable environmental, social, or economic effects and contribute to water table decline from heavy pumping.
- Measures to avoid depredation by birds and/or other animals should be included in the design in accordance with Connecticut NRCS Standard 472, Access Control.

PLANS AND SPECIFICATIONS

Plans and specifications for constructing aquaculture ponds shall be in keeping with this standard and shall describe the site-specific requirements for applying the practice to achieve its intended purpose.

To the extent practical, specifications shall conform to NRCS National Engineering Handbook Part 642.

As a minimum the plans shall include:

- A site location map with topographic information.
- Typical cross sections of the pond(s) showing the elevations and dimensions.
- Structure size, location, material type, and elevations.
- Disposal of any excess excavated material.
- Location and type of fence, if required.
- Areas to be vegetated and vegetative specification.

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) Plan shall be prepared for, reviewed with, and signed by the landowner or operator responsible for the application of this practice. The O&M Plan shall provide specific instructions for proper operation and maintenance of each component of this practice and shall detail the level of repairs needed to maintain the effectiveness and useful life of the practice.

The O&M plan shall provide for inspection, operation, and maintenance of vegetation, pipes, valves, spillways, roads, and other parts of the system