NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTIVE STANDARD

COMMERCIAL FISHPONDS

(Ha, Ac.)
CODE 397

DEFINITION

A water impoundment constructed and managed for the commercial production of fish. For the commercial production of Crawfish refer to page 394-4 of this standard.

PURPOSE

Commercial fish ponds are constructed to provide water for the production of all types of fish legally permitted for sale under State law.

SCOPE

This standard establishes the minimum acceptable quality for the design and construction of fish ponds and is in addition to the National Standard.

The water supply is usually obtained by pumping from wells, lakes, or perennial streams.

These ponds are classified in one of three categories with optimum sizes as follows:

1. Hatchery ponds are used for hatching and producing fish fry. The optimum surface area varies form 0.25 to 2.0 acres.
2. Nursery ponds are used for growing fish fry to proper stocker size. The optimum surface area varies from 1.0 to 5.0 acres.
3. Finishing ponds are used for growing stocker fish to edible size. The optimum surface area varies from 2.0 to 40.0 acres.

For detailed recommendations on size, and other management data see the “Land Management Guide, A Supplement to Biology Standard and Specification for Louisiana”.

CONDITION WHERE PRACTICE APPLIES

GENERAL

This practice applies only where it is determined that a site suitable for fish production is justified. An adequate supply of good quality water shall be available.

FOUNDATION

The area on which an embankment is to be placed shall consist of material that has sufficient bearing strength to support the embankment without excessive consolidation. The foundation shall consist of relatively impervious material which will prevent an excess seepage of water.

RESERVOIR AREA

The soils shall be impervious enough to prevent excessive seepage losses, or shall be of such nature that sealing is practicable.

DESIGN CRITERIA

Ponds constructed by placing an embankment around their outer perimeter that excludes outside water shall be classified as excavated ponds. These ponds shall meet all the requirements of the National Standard for excavated ponds with the following additional requirements:

1. The minimum top width of the embankment shall be fourteen (14) feet and the side slopes shall be three horizontal to one vertical (3:1 (H:V)) or flatter.
2. To contain direct rainfall, a freeboard of 1 foot (minimum) shall be added to the height of the embankment.
3. The design height of the embankment shall be increased by the amount of the expected settlement. This increase shall not be less than 5 percent.
4. The minimum elevation of the top of the settled embankment shall be increased to allow for wave action. This increase shall be over the entire embankment and be as specified in the following table:

FETCH* (Feet)	FREEBOARD (Feet)
0 – 1000	0.0
1001 – 1250	0.2
1251 – 1500	0.4
1501 – 1750	0.6
1751 – 2000	0.8
over – 2000	increase proportionally

*Fetch is longest open water distance.

WATER SUPPLY

Springs, wells, or water from intermittent streams are all satisfactory, provided a sufficient supply of suitable quality water is available for (1) increasing the depth of water at the time of filling at a rate sufficient to prevent the establishment of noxious weeds, and (2) to maintain the water level in all ponds during the period of greatest water use. A minimum rate of 40 gallons per minute per surface acre should be used.

Surface water should be filtered to remove all wild fish and predators.

Water from all sources should be aerated to increase oxygen content.

WATER DEPTH

Same as National Standard, except the minimum water depth for Catfish Ponds shall be 3.5 feet.

SPECIFICATION

Specification for Commercial Fishponds shall follow the procedures given in the Louisiana Supplement for Pond 378, Embankment Pond Specification.

NOTEKEEPING

Notekeeping for Commercial Fishponds shall follow the procedures given in Notekeeping, for "Ponds" – 378, except that cross-sections for construction check can be taken every 500 feet.

COMMERCIAL CRAWFISH PONDS

STANDARD

Definition

A water impoundment constructed and managed for the commercial production of crawfish.

For non-commercial crawfish ponds – refer to "Wildlife Wetland Habitat Management, reporting Code 644 and "Dike" reporting Code 356 for guidance on pond construction.

Design Criteria

Crawfish ponds constructed by a combination of excavation and embankment shall be classified as excavated ponds, when the depth of water against the embankment at spillway elevation is less than three (3) feet.

These ponds shall meet or exceed all the requirements of the National Standard for excavated ponds.

The embankment portion of these ponds shall meet the requirements specified in the Standard and Specifications for Dike – 356 with the following additional requirements:

1. Embankments that will be used as a road for management purpose shall have a minimum top width of eight (8) feet and a minimum side slope of two (2) horizontal to one (1) vertical.
2. Interior embankments (baffle levees) constructed for the diversion or circulation of water shall have adequate cross section to provide for stability and function for its intended purpose. Interior embankments are not a requirement.
3. The drainage and/or water circulation structures should be sized to convey the incoming pump discharge or provide the necessary drainage for vegetative growth. The overflow pipe shall have sufficient capacity to remove a 10 yr/24-hr. direct rainfall amount or be at least 8 inches in diameter, whichever is larger.

   All structures shall meet the applicable Standards and Specifications for Code 587, "Structures for Water Control" or 410, "Grade Stabilization Structures".

The pump shall be sized to provide an adequate supply of water. The "Land Management Guide, A supplement to Biology Standard and Specification for Louisiana", should be used as a guide.

Specification

Crawfish pond levees shall meet the requirements in the specification for "Dikes" - 356.

Notekeeping

Notekeeping for crawfish pond levees shall follow the procedures given in Notekeeping for "Dikes" – 356.

SPECIFICATIONS FOR WATER QUALITY AND OTHER CONSIDERATIONS

1. Channel Catfish, Crawfish, and Bait Fish (open pond culture)

   A. Water Quality – Water must be free of harmful pollutants. The landowner should determine water quality before constructing ponds. The water quality meets specifications if the channel catfish, crawfish, and bait fish survive, grow, and reproduce satisfactorily. Some general water quality parameters are:

      1) Dissolved oxygen – The desired optimum dissolved oxygen level is above 5 parts per million (ppm).

      2) Temperature – Catfish grow rapidly when water temperature is between 70 and 85 degrees F.; growth is slow below 60 and above 90 degrees F. Crawfish grow rapidly when water temperature is between 60 and 85 degrees F., growth is slower below 60 and above 90 degrees F. A good summer temperature for bait fish is around 80 degrees F.

      3) pH – The desired range is 6.5 to 9.0, but pH may fall below or above these levels for occasional short periods with no harm to fish.

      4) Carbon dioxide – Carbon dioxide toxicity is related to oxygen levels. Fish usually show little distress at 15 ppm carbon dioxide if the dissolved oxygen level is high. However, at 25-30 ppm, carbon dioxide is harmful even if the oxygen level is adequate.

      5) Iron – Well waters which contain high ferrous iron concentrations can cause mortality by iron oxidizing (ferric iron) and settling on the gills in amounts that interfere with respiration. Aeration of the water combined with flow through a vegetated or a gravel lined channel for a distance of 200' will reduce iron to acceptable levels.

      6) Salinity – Catfish and crawfish can be successfully grown in waters containing up to 8 ppt (8,000 ppm) salinity. Reproduction can occur up to around 2.5 ppt (2,500 ppm).

   B. Other Considerations – Stocking rates, feeding rates, pond sizes, harvesting methods, double-cropping rice and crawfish, water supplies, construction and other aquaculture related data can be found in the following:

      a. Land Management Guide
      b. Catfish Farming – Farmers Bulletin No. 2260
      c. Manual for Bait Fish Culture in the South
      d. Biology Job Sheets
      e. Biology technical notes
      f. State and University bulletins and brochures
      g. Engineering Field Manual
      h. Other

2. Other Aquatic Animals – Obtain specifications from an SCS biologist, Louisiana State University, Louisiana Department of Wildlife and Fisheries, Cooperative Extension Service of from other qualified professionals.