Catfish Ponds on Level Land
Catfish Pond Dimensions

- Approximately 10 acres, 600 ft wide
- Average 4 ft deep
- Smooth bottom, 1% slope or less
- Levees at least 10 ft wide at top
- Levee slopes 3:1 or best 5:1
- Drain dimensions at least 12 inch diameter
A Well Constructed Levee
A Finished Levee
Pond Soils Must Have Clay

- A minimum of 25% clay is required to slow the rate of seepage from ponds
- Construction requires that clay be compacted after each 12 inch layer
- Clay content over 60% should be mixed with soil of a lesser clay content
- Top soil layers must be disrupted with a trench and filled back with clay
Rubber Tire Dirt Scrapers
Catfish Pond Equipment

- Three phase power is essential
- Hook ups for three aerators each with 10 HP electric motors is common
- Bulk feed storage for at least 16 tons of catfish feed should be near the ponds
- Remote sensors, monitors and transmitters need power supplies
Three Phase Electric Power
Pond Construction Work Plan

- Survey
- Soils
- Water Supply
- General
  - Permits
  - Contracts and Estimates
  - Financing
Survey the Grade
Use Laser Leveling
Pick an Experienced Contractor
Identify the Soil Types

\{ Top Soil \}
\{ B & C Horizons \}
Check the Soil Texture
Pond Design Options

0.2% slope falls 1.2 ft over 600 ft
Levee Pond Layout

Drapins

10 A

Well

General Direction Of Slope
Volume of a Levee

Assume 16 ft Top Width.
Assume 5:1 Slope on both sides.
Assume 5 ft average Levee Height.

\[
(16 \times 5) + (5 \times 5 \times 5/2) + (5 \times 5 \times 5/2) = 205 \text{ sq ft}
\]

\[
205 \text{ sq ft} \times 100 \text{ ft} = 20,500 \text{ cu ft per 100 ft length}
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\[
20,500 \text{ cu ft} / 27 \text{ cu ft per cu yd} = 759 \text{ cu yd/ 100 ft}
\]
Multiple Pond Sizes for Hatchery
Size Ponds According to Your Need

- Generally 10 Acres for loading 20,000 lb of catfish per harvest.
- Size ponds according to market FIRST.
- Consider topographical and soils characteristics of your property.
- Avoid long and narrow ponds or odd shaped ponds.
- Use the slope of your land.
Water Control Structures

Pond Drains
Water Supply Lines
Drains on Outside of Levee
Swivel Drains
Drain Through Core
Antiseep Collar
Seal the Collar
In Levee Drain Lines

Clean-outs every 400 ft
Concrete bearing masses at junctions
Junctions at 45 degrees
Drain too High
Weighted Drain
Improperly Weighted Drain
Supported Supply Line
Alfalfa Valve
Supply too Close to Levee Toe
Well and Power Unit
Filling Ponds from Natural Water
13 Million Gallons in a 10 A Pond
Water Budget

(Evaporation + Seepage) – Rainfall =

Water that must be Pumped
Water Budget

• 45 inches/year Average in Georgia
• Evaporation from ponds 0 to 1 inch per day
  – Accounts for about 36 inches per year
• Seepage varies according to compaction
  – 0.05 to 0.5 inch per hour
  – Accounts for about 12 to 120 inches per year
Water Needed

- 48 to 60 inches to fill the pond
- If pond is full:
  - 3 to 12 inches for well built ponds
  - 48 to 120 inches for seeping ponds
Estimating Water Flow

Area of pipe = A

Q = “A” X “D”

D

12 in.
Flow Problem

Assume an 8” diameter pipe.
Assume “D” is 12 inches.

“A” = 3.14 x 6^2 = 113 sq inches

Q = 12 x 113 = 1,356 GPM
How Long to Fill a Pond?

Assume a 10 acre pond.
Assume a 400 GPM well capacity.
Assume very short distance between well and pond.

\[
10 \text{ A} \times 4 \text{ ft} \times 325,000 \text{ gal/A-ft} / 400 \text{ GPM} = \]
\[
32,500 \text{ minutes or 541 hr or 22.5 days}
\]

Recommend 50 GPM per Acre of Pond
Options to Fill Ponds

• Seek sites with adequate ground or surface water.
• Drill several wells and pump into linked water lines. (3 x 400 GPM = 1,200 GPM)
• Pump from adjacent ponds that are to be drained using a high volume-low head pump.
This Could Be You!
Bins Require Extra Land
Don’t Forget Storage