POND CONSTRUCTION

REGULATORY CONSIDERATIONS:

A state permit is required if:

- the pond is formed by damming any running water.
- the pond is connected to any standing body of water.
- the pond is 5 acres or more in area or within 500 feet of the ordinary high-water mark of a lake or stream (Inland Lakes and Streams Act, 1972 PA 346).
- the pond or resulting spoils will be placed in a regulated wetland (Goemaere-Anderson Wetland Protection Act, 1979 PA 203), or in a designated floodplain (Floodplain Regulatory Authority, 1968 PA 245).
- (See Permits for Water Related Activites for more information.)

Technical Assistance:

Contact the local Natural Resource Conservation Service for technical questions regarding the construction of a pond, including the soils, water level, construction plan, etc. Questions regarding fish stocking and weed control should be referred to the local MSU Extension office.

Purpose:

Ponds can serve many purposes: wildlife, fishing, water for livestock and irrigation, fire protection and recreation. Most ponds in Genesee County are built primarily for fishing, with one or more of the other uses as secondary purposes.

TYPES AND DIMENSIONS:

Types:

There are two basic types of ponds: excavated (pit) and impoundment (dam). The excavated pond is constructed by digging a pit in impervious soils to contain surface runoff or in a soil with a stable high water table. The impoundment pond is built to block runoff or stream water. Because of the topography and water table in this region, most ponds are excavated.

Size (Surface area):

Fish ponds should be at least 1/2 acre or more in surface area. Smaller ponds are suitable for some other uses. A popular pond size is 80 to 90 feet wide, 200 to 250 feet long and 10 to 12 feet deep. If a pond is installed for wildlife use in an existing wetlands then a ratio of 50 percent open water to 50 percent vegetative cover is suggested.

Depth:

Fish ponds should have a minimum water depth of 15 feet to help minimize winter and summer oxygen depletion and prevent excessive weed growth. Slopes should be constructed at a 3:1 ratio (every 3 feet horizontal1 foot horizontal rise) to minimize erosion and weed growth.

Shallow ponds (1 to 3 feet of water) are best for wildlife, while other ponds should be at least six feet deep. Slopes for wildlife ponds should be very gradual (100:1 slope) to encourage plant growth.

WATER SUPPLY AND WATER QUALITY:

Water Supply:

It is desirable to have a groundwater-fed pond to raise fish since it is generally well filtered and not carrying excessive nutrients that contribute to weed growth. To verify the stability of the water level, expose and observe it for one full summer season before building the pond. Gray subsoil colors are a good indicator of saturated conditions, while a mixture of bright and dull grays indicate a variable, water table.

For those ponds that rely on surface runoff for their water supply, 6-10 acres of drainage area is needed for each acre of pond. Very large drainage areas cause problems if part of the water is not diverted around the pond.

On impounded ponds, the outlet can be a simple overflow structure. When discharging to a high-quality stream, where permitted, a "bottom draw" outlet should be required so that cooler water from the bottom of the pond enters the stream.

Water Quality:

Water quality in a pond should not be a problem if there is an adequate supply of clean water and there is no runoff or seepage from nutrient-rich sources such as barnyards, septic tanks, fertilized lawns or other polluted sources. Fence all livestock away from the pond and pipe the water in an area where they won't harm the pond. (They destroy vegetation, weaken banks and leave droppings that can over-enrich the water).

Weeds:

All ponds eventually have weeds, particulary in the shallow water around the edge. Weeds can be controlled using mechanical and chemical means as temporary solutions, but the construction of the pond and nutrients from water sources have the most impact on weed growth.

(See "Mechanical Harvest of Nuisance Pond and Lake Weeds" and "Aquatic Plant Control Using Algicides and Herbicides" for detailed information).

Safety:

Ponds can be dangerous for swimmers, especially children. When constructing a pond, all side slopes should be 2:1 or flatter to allow a person to climb the bank. Remove hazardous objects (stumps, logs, glass, etc.) from the swimming area. Install a safety station consisting of a life ring, 40 feet of rope and a 14 foot pole on a post near the pond as soon as the pond is completed.

Because of liability issues, consult with your attorney and/or insurance agent to determine the extent of your liability and legal requirements.

Fish:

A bass and bluegill combination is popular in many ponds. Catfish and trout are also used. Trout may be stocked if the water is cold enough, but they will not reproduce in the pond. Limit the number of species to avoid management problems later.

(See the booklet "Managing Michigan Ponds for Sport Fishing", and the "Game Fish Breeders' List" for more information)

LANDSCAPING AND EROSION CONTROL:

Erosion Control:

All of the disturbed area around the pond should be seeded with adapted grasses and legumes at least 20 feet from the edge of the pond. For best results, save the topsoil to spread over the area to be seeded and mulch with straw or old hay. Inlet or outlet pipes are often needed to control erosion or to regulate the flow into the pond or the water level in the pond. Avoid planting deep rooted plants (alfalfa, sweet clover, shrubs or trees) on dams or fill embankments.

Clear the area around the pond in the winter prior to construction and complete pond construction by September 15th to obtain adequate vegetation for winter soil protection.

Spoil pile:

Minimize or eliminate spoil placement in adjacent wetlands. No spoils should be placed between the pond and stream or in the floodway or floodplain. When permitted to increase habitat diversity, spoil islands should be no more than 20 feet in diameter, no more than 2 feet above original elevations, and at least 50 feet apart.

Seed and mulch the piles as soon as possible to minimize erosion. Typical seed combinations for clay soils include: Perennial ryegrass and smooth brome; Seaside bentgrass, perennial ryegrass and tall fescue; Creeping red fescue, seaside bentgrass and tall fescue. For sandy soils use perennial ryegrass or creeping red fescue. Seed from early Spring to early June or early August to early October. If mulch or irrigation is used, seed from late April to October.

Landscaping:

A landscaped buffer strip around a pond can provide a pleasing appearance and filter out nutrients and sediments that could contribute to weed growth. Construct an irregular pond edge to provide more edge effect. A shallow ledge 10-20 feet wide or wider along the pond perimeter can be created to promote wildlife usage. Plant deciduous trees and shrubs away from the water's edge to minimize the leaves that fall into the pond. They will break down, releasing nutrients that also contribute to weed growth.

Contractors:

(See the "Pond and Lake Resources" handout for a list of contractors).

Links to other pond pages:

Mechanical Harvest of Nuisance Pond and Lake Weeds
Chemical Control of Nuisance Pond and Lake Weeds
Pond and Lake Resources
Pond Permits

Resources:

MSU Extension, Genesee County: (810) 732-1470
NRCS (Natural Resource Conservation Service): (810) 766-5192
Soil Conservation District: (810) 230-8781
MDNR (Shiawassee District): (517) 625-4600
MDNR (Permits): (517) 373-9244
MDNR (Information): (517) 373-9400