



POND CONSTRUCTION AND DESIGN CONSIDERATIONS

(Not to be taken as formal approval for specific projects)

STRATEGIC DESIGN

Biodiversity = Structure and Habitat Diversity.

Some deep areas and some extensive shallows.

Shallows should be top-soiled and emergents should be transplanted or sod-rolled.

Shallows are 10-1 grade

Deep areas are 10 feet.

Convoluting shorelines. (more edge=more breeding pairs of waterfowl). Islands for nesting.

Transplant low shrubs. Armor windward shorelines.

WATER STRUCTURE

Large rocks on Bottom.

Spawning gravel at inlet and outlet.

Submerged trees=water Temperature gradient underneath and hiding cover for fish

Loafing logs from shoreline out into water (waterfowl resting)

Consider hollowing out the upper surface of the log. Toil soiling and planting wildflowers.

Submergent vegetation (the kind that swans and ducks like to eat).

Emergent vegetation (never cattails).

Transplants or emergent sod rolls are required.

Tall bull rushes are considered unusual but desirable in J.H.

Macro-invertebrates are critical for ducklings, cygnets & goslings.

Purifies and oxygenates water.

SHORELINE GRASSES, SEDGES AND FORBS

Do not mow to the edge of the pond.

Leave standing "residual cover" over winter for spring nesting.

Avoid leaving the nesting cover in a linear shape that predators can search systematically (i.e. grass cover must be in large blocks or predators kill every bird & nest).

SHORELINE SHRUBS

A variety of shrub sizes.

Cluster them with windward landing paths for large waterfowl left open.

Consider those that will provide cover and forage (Berries – wild roses?)

Overhanging water=temperature gradients and fish cover, also small herons.

TREES AND PERCHES

Consider birds of prey that catch fish and muskrats and birds, etc.

Songbirds and hummingbirds need trees.

COMMON MISTAKES

Plan adequate flow-through and limit lawn runoff to prevent algae growth.

Draw-down capacity for cure algae growth issues.

Warming of water.

Ability to maintain flushing flows in spring (flooding – silt).

Prevent wind/wave erosion.

TEMPERATURE CONSIDERATIONS

Ponds with a 2 day retention time with mean depths of 3.5-5 feet with maximum depths of 12 feet are likely to increase the temperature of the discharge water by 4.5-6 degrees above the inlet water source temperatures. Water temperatures above 60 degrees Fahrenheit are detrimental to trout. Water temperatures above 68 degrees are lethal to trout. Ponds therefore can contribute to the degradation of the Snake River fishery that we all enjoy.

Shade your pond extensively with trees and shrubs on the shore lines.

Consider floating islands (commercially available).

Reduce pond water retention times.

Design ponds that create a mixing of water levels within the pond.

Pond outlets should draw their water from 2' below the surface or more.

Ensure that fish passage structures use low temperature water.

Make certain that discharge water is not warmer than the receiving stream water, which can degrade an important existing water quality.

ALGAE & OTHER PLANT LIFE CONSIDERATIONS

Slower and warmer water is conducive to plant growth and therefore must be considered in the design of ponds. Sources of ground water for ponds or streams in Jackson Hole tend to have elevated nitrogen and phosphate levels, which further stimulate plant growth. These must be considered in the pond flow-through design, including draw-down capabilities, groundwater testing prior to construction, etc. If algae blooms are likely, do not construct the pond.

Chemical treatments with materials such as copper sulphate or other herbicides are likely to create other pollution problems that must be taken seriously and mechanical treatments are expensive and ineffective.