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SERIES

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# Filtering the Pond with a Bog Garden

Courtesy of Jim Purcell, Jim's Water Gardening, Eugene, OR

A bog is an area which is consistently has a water level several inches below the "soil" surface.

In nature, bog soils are usually very high in organic materials, and low in pH.

Traditionally, using semi-permeable liners, ornamental bog gardens have imitated these conditions in order to grow plants (such as pitcher plants) which have adapted to these areas.

For filtration purposes, bog gardens are constructed using waterproof liner (such as Firestone Pondgard 45 mil EPDM) and pea gravel. They may utilize a wide range of marginal pond plants, bog plants and even many standard garden plants. These bog gardens have two primary functions:

## 1. Beauty

The bog filter provides the perfect background to the pond, showcasing plants while allowing more pond surface area to remain open. It also provides a natural looking transition from land to pond.

## 2. Filtration

Bog gardens are the ultimate pond filter for water purity, clarity, and low maintenance. Unlike man made filters, bogs can completely process organic waste, including solid waste, and will even biologically detoxify waste. Waste by-products still build up in the water and create various problems including a build up of nitrates and phosphates which promote algae growth. In bog filters, gravel traps organic debris until it can be broken down by bacteria and used by the plants. All by-products are processed and used as food by the microbes and plants. Nature can balance itself, given the opportunity.

## BOG FILTER CONSTRUCTION

### Step 1

The size of bog filter required will vary according to the organic load it is expected to process, often a function of how much fish food is used. For most purposes, a bog filter whose surface area is 10% of the surface area of the main pond will suffice, with up to 20% for heavy loads.

### Step 2

Excavate an area next to the main pond to a depth of at least 12 inches. Build a retaining wall of concrete or concrete blocks to separate this area from the main pond. The top of the wall should be 1-2 inches below the pond surface when filled. Remember to make liner for the bog filter level, and to allow extra line for the sides of the retaining wall. Use felt protection mat and/or scrap liner to protect the liner from rough or sharp edges. An alternate method is to build the bog filter as an extra-wide shelf, place the liner, and build the retaining wall on top of the liner, using rock if desired. Fill in any large cracks which would "leak out" gravel, using mortar or black expanding foam. Do not fill in cracks which are shallower than 2 inches below pond surface.

*(continued on reverse side)*

### **Step 3**

Place liner in pond and bog filter, following vendor's liner installation instructions.

### **Step 4**

Install the pump in the main pond as far away from the bog filter as possible, using a pump which will circulate the pond volume at least once every two hours or pond under 4,000 gallons, and at least once every four hours for pond over 4,000 gallons. Use over-sized pipe or tubing to maximize flow to the bog. Screen or pre-filter the pump in some fashion to prevent clogging. A full size filter is unnecessary.

### **Step 5**

Use PVC pipe to build a distribution manifold the length of the bog. The pipe should be very over-sized (for example, if the pump has a 1" outlet, use a 2" pipe). Drill 1/4" holes about 3" apart, in a line about halfway between the side and the bottom of the pipe. Cap the far end of the pipe. Lay it on the bottom of the bog as far from the main pond as possible. Bogs wider than three feet benefit from multiple lines.

### **Step 6**

Place decorative (usually flat) rock across the top of the retaining wall, allowing small cracks between and under rocks for water flow. Water will be pumped from the main pond into the bog filter, through the gravel, and flow back into the pond over the retaining wall through cracks between rocks.

### **Step 7**

Fill bog filter with pea gravel, mounding the gravel so it is about 3 inches above water level for most of the bog. Mix larger pieces of river rock into the top layer of gravel for a more natural look. Incorporate some of the rock around the pond and landscape in the bog filter to visually tie the landscaping together. Feel free to use some large pieces of wood, as well.