

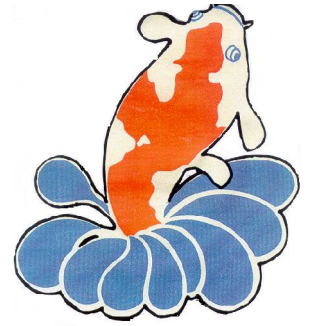
Woodland Water Gardens & Nursery

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Opening The Pond

Pond Clean Out: As the spring weather approaches, the first thing you will want to do is assess your pond to determine if you want to do a full or partial clean out, or none at all. During the winter months your pond will experience algae growth, sometimes mild, sometimes extreme. This is perfectly normal, so don't get concerned. If you have excessive algae, you will want to perform a full clean out. If the pond is relatively clean, a partial water exchange to replenish trace minerals is all you will want to do.

1. Transfer water from the pond to a holding tank for the fish if applicable. Drain the pond. If your pump is still in the skimmer box, disconnect the check valve or PVC line so the water from the Bio-Falls will drain out back into the pond. You may want to remove the pump and inspect it
- 2 Remove as much debris as possible by hand. Cut back any decayed plant foliage.
3. Power wash the rock to remove excess algae if required. You will typically wash down the pond a number of times, and pump out the dirty water until most of the debris and sludge is gone. The pond doesn't have to be spotless! It's not a hot tub! The pond's eco system will take care of balancing the pond.
4. If not already done in the fall, remove the lava rock and filter mats from the Bio-Falls. The filter mats typically last about three years before needing replaced. Hose off, or pressure wash the mats to remove last year's sludge. Also wash out the lava rock or bio-balls. After a season or two the lava rock begins to break down and plug up, losing its porous quality. We have switched from lava rock to bio-balls. They last forever, and are extremely light. Lifting a bag of lava rock can be extremely heavy, but the bio-balls make spring clean out much easier. Hose down the empty Bio-Falls and clean out any mud or debris in the bottom catch basin.
5. If you need to thin or split any plants, now is a good time to do that, before you begin refilling the pond.
6. Refill the pond. If you are using treated water to refill the pond, be sure to add a dechlorinator that will quickly dissipate chloramines and chloramines, such as Crystal Clear Dry Formula Dechlorinator. If you have fish, the manufacturer

recommends letting the pond cycle completely through for about an hour.

7. Transfer the fish back into the pond. BE CAREFUL! It is especially critical early in the spring when the water temperatures are still cold that you "bag" and transfer the fish slowly and carefully to avoid shock. More than a 4degree water temperature shift will induce some level of "shock" to your fish.
8. Seed the Bio-Falls with bacteria (liquid or powder) We recommend an initial dose of about a 1/2 cup for the average 16' x 11' pond. Add about two tablespoons every day for the next 10 - 14 days to get the biological filter seeded. Remember, the bacteria won't kick in until the water temperature is 52 degrees. Bacteria is not a "chemical". It is a natural organic organism, so using an excessive amount of bacteria may be a bit wasteful, but cannot hurt your pond in any way. Actually, those pondkeepers who tend to use higher doses of bacteria than is recommended by the manufacturers usually tend to have the cleanest ponds.
9. This is also a good time to check the edges of the pond, waterfalls, and streams to look for any settling that may have occurred over the winter months.



Plants: Most aquatic plants can be thinned and split. Lilies are best propagated in early spring, however a lotus needs to be split in the fall. The best reference for identification, care, and data for aquatic plants that I have seen is the new Encyclopedia of Water Garden Plants by Greg and Sue Speichert published by Timber Press. It was released in the spring of 2004 and is an invaluable reference for anyone interested in water gardening. Signed copies are available through Woodland if you would like a copy. This is also a good time to start using pond tabs (aquatic fertilizer) to give your plants a healthy start to the new season. Flowering plants such as lilies will benefit tremendously from a properly

implemented fertilization program throughout the season.

Do not purchase Water Hyacinth or Water Lettuce yet. Water temperatures need to be in to the 70's or these plants will disintegrate. While they are the two most formidable filtration plants available, they are tropical for us in zone 5.



If you need help with your pond clean out, we can jump in and give you a hand!

Fish: Spring is a very stressful time for fish. Water temperature fluctuations in early spring can make fish keeping a bit stressful for us humans too. Fish are cold blooded creatures, so their metabolism is directly related to the water around them. Fish have a strictly intestinal based digestive tract. They have a very very small stomach. When the water temperatures begin to warm during the day, they will become active. During the colder night time hours they will revert back to a much more dormant state. Feeding during this time can be a bit tricky. As the fish become more active it is preferable to feed them during the warmer hours so the proteins can digest while they are still active. Don't over feed during this time. Use a good quality spring and autumn fish food. This food is formulated with higher carbohydrates and reduced proteins to aid in digestion in cooler water. A good quality food will have a stabilized vitamin regimen of C,A,D and usually E as well as color enhancing spirulina algae content. Cheerios cereal is also a good choice in early spring.

For additional information on fish health and diseases, see the Fish Diseases handouts available upon request.



Example of Fish Pox viral infection. There is no reliable treatment for the disease, however it is not infectious and is more unsightly than dangerous. The symptoms usually appear and disappear as water temperatures change.

Other Considerations: We don't recommend the use of Aqua Shade or similar products for water gardens. These types of products use the blue tint to block sunlight penetration for weed control in large earthen ponds. The use of these products in a water garden can be more harmful than beneficial. If excess algae growth in a full sun pond is a problem, usually the addition of water lilies for water surface coverage is a more desirable remedy than "water treatment" of some nature.

Copper Sulfate can also be disastrous to a pond, particularly if you have fish. Copper Sulfate is a contact killer, and removes oxygen from the water. Even in large earthen ponds, improper doses can be catastrophic to aquatic life.

Pump & Line Chart

Line Diameter	Gallons/Hour
1/2 inch	300
3/4 inch	720
1 inch	1200
1 1/4 inch	1600
1 1/2 inch	3200
2 inch	4800
2 1/2 inch	6000
3 inch	11200
4 inch	12900

Water Gardening Electrical Considerations

- * Always use GFI protected circuit. (Ground Fault Interrupt)
All new homes are required to have GFI protection on each circuit in the house. If you have an older home. Be sure to install a GFI outlet for your pond.
- * Use UF/B 12-2 w/ground or UF/B 10-2 w/ground
- * Wire Size Rule of Thumb:
 - 1) If over 1800W (15A) use 10-2 cable
 - 2) Cable runs over 50' use 10-2 cable

Pump Operating Costs

$$P = I \quad E$$

(Watts) (Amps) (Voltage)

$$\frac{1000W}{120V} = 8.33A$$

$$5.0A \times 120V = 600W$$

- * Based on approximately 720 hours in a month

$$\text{Pump Wattage} \times .72 \times \text{cost/Kilowatt Hr.} = \text{Operating Cost}$$