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## *Aquacleaner Waterfront Restoration System: Lakes*



## *Waterfront Restoration*

*“New Technology is coming to Save Your Lake”*

Aquacleaner Environmental is on the leading edge of technology in the field of Suction Harvesting and Suction Dredging Equipment. Suction Harvesting offers the best short and long-term solutions to controlling and eradicating the spread invasive Aquatic Vegetation and Dredging is no longer a nasty 8-letter word, but rather is a natural step in the restoration of any body of water. Lake Bottoms get soft and fill in through many means, which only helps further their demise. ***Our equipment and the methodology behind its use offers a real source of remediation to YOUR LAKE PROBLEMS.***

## **Services Available**

Lake Wide Restoration	Lake Assessments	Environmental Clean-Ups
Homeowner Restoration	Pond Assessments	Dredging (spot dredging & large scale)
Break Wall Construction	Flood Pump Outs	Boat House Pump Outs

## **Mission Statement**

At Aquacleaner Environmental, our goal is to design, build and implement a new generation of machines that will aid in the reclamation of your **Lakes, Ponds and Waterfront properties**. We can remove problems that hinder the use of the your waterways, making them more healthy, while remaining conscious of our environment and the need to protect it. Regardless of the nature of each job, our equipment can restore your waterfront property to what it was years before all the debris filled it in. We surround ourselves with the best and brightest specialists in the waterfront restoration industry. Our staff all has personal experience and a passion for the water and the ecosystem it supports. Our equipment is based on fundamentally sound principals in keeping environmentally conscious. We perform various services and sell our equipment only after checking on all legal ramifications and procedures, always keeping in mind the delicate balance that exists between nature and man.

## **The Aqua Cleaner System**

The core of Aquacleaner Environmental services comes from the strength and abilities of the Aqua Cleaner. The Aqua Cleaner's are several unique pump designs, one a Suction Harvester and the other the smallest Gas Powered Dredge Machine. Both machines come in several different size configurations depending on the required applications.

**The Aqua Cleaner Vegger** is a Suction Harvester that is designed to suck up any type of solids that will pass through a hose. These include aquatic vegetation, leaves, rocks, zebra mussels, sticks and other debris. S.H. has been around since the 80's but nobody has refined it and made it easier to use, bigger and more efficient. Trying to capture debris while moving at least 1200 gpm is a difficult task and knowing how to operate a nozzle is even more trying.

A powerful suction harvester that operates with a man under the water extracting unwanted plants by the rooting system so that they don't grow back as fast. The machine is equipped with several different filtration options (depending on the project) that allows the water to pass through them, while capturing the plants, rocks, sticks, leaves and assorted debris. This machine is an environmentally friendly means of dealing with an overwhelming problem.

Vegetation Capacity – 50 to 500 Square feet per hour depending on the type of plant, density, and rooting system. 5' x 10' pontoon with 2 pumps, diver air compressor and comes with a 4", 5" and 6" hose configuration.

**The Aqua Cleaner Dredger** is a unique designed suction dredge, also operated with a diver technician in the water. This is a machine that will suck up silt, muck, sand and other soft organic material. It uses water agitation to create a slurry and can pump over 1000' away without a booster.

Bigger is not better when it comes to home or spot dredging. One person, who stands in the water with a custom-built control rod, operates our dredge machine. The water agitator creates a slurry, which then goes through the suction hose. It is the most environmentally sound method of dredging that is capable of removing between 10 – 20 cubic yards per hour (1 – 2 dump trucks) and can pump up to 1000' away

**Aqua Cleaner Octopus-** A large pontoon boat (24' – 28') suction harvester designed for large vegetation and debris removal with multiple nozzles feeding it onto our large pontoon boat, where it can be de watered, and then shipped to a dump barge.

**Aqua Winch –** A portable, self contained winch with motor that can be placed at the waters edge and will pull up to 10,000 lbs items out of the water. When used with our Aqua Claw Rake it can remove large amounts of Cat Tails or other tuber rooted plants.

**Aqua Cutter** – A self-contained pressure water that will cut any organic rooting system, and is mounted on a small pontoon or operated on shoreline, and has a built in feeder pump.

### **Applications and Services:**

#### **DASH Acreage Projects**

Invasive Aquatic Plants can cause severe problems for the overall health of any lake or water body. Even plants such as lily pads if left unattended can fill an area and choke it to the point where it is of little value to the people that want to use it nor the ecosystem we share it with.

**History:** DASH has been a technique used to remove and suppress invasive plants, since the Mid 70's however few companies have invested any resources to expand on the technology. Aquacleaner Environmental has been in this field since 2000 and has defined it's roll in the waterfront restoration industry by manufacturing a variety of suction harvesting machines including the most aggressive and mechanized system to date. In the service portion of our business we continue to lead the way by extracting more aquatic vegetation and working with a variety of invasive plants. In the 2013 season we removed over 20,000 onion bags of plants totaling over 500 tons of bio mass



There are several aspects to putting a DASH Boat project together:

**Determining ROP** – DASH programs can be very successful based on the dynamics involved including the type of plant, height of plant, density of plant and the type of sub straight. The ROP one can expect to achieve is directly related to these dynamics. A single 5" nozzle can work at a ROP of 500 square feet per hour and a double 5" system can work at 1000 square feet per hour. An acre project can be covered in approximately 40 hours.

#### **Remediation Program for DASH:**

Aquacleaner Environmental will assist your lake in developing a management plan that addresses all aspects of suction harvesting program.

Defining the targeted area – We first begin by prioritizing the areas that need work, based on the type of plant, location, density and amount of traffic a given area might have.

**Capacity** – There are several criteria that must be asessed to determine the rate of progress (ROP) that you can achieve using our Aquacleaner S.H. It is important to understand the relationship between the time spent in any one spot versus the quantity of vegetation removed. Working the bottom more extensively takes more time but also may yield better results long term relative to the re growth. ROP varies from 200sq/hr to 600sq/hr

**Type of plant:** Rooting System dictates how fast we can remove this year's plant. Your goal is to get last years plants out as well which are beneath this years plants.

**The type of bottom** – Soft, silted in bottoms will make plant removal and it's rooting system easier to extract. Hard bottoms like clay or sand will require more suction to get to the rooting system of the plant.

**The density** of the plant both in how many plants are in a given box as well as how tall they are. More Biomass requires more time to go through a given area.

**The Depth of the water** is important because deeper water work will slow your rate of progress due to the logistics of moving around while under water and the size of the plants involved.

**Define The Other Types** of debris in the area to be cleaned. Leaves, stick rocks, zebra mussels, and larger timber must be gone through as part of a shoreline remediation and to maximize your use of the waterfront.

### **DASH Homeowner Projects**

A variety of services are available for the homeowners including: Invasive/overgrown plant removal, shoreline remediation (leaves, sticks, zebra mussels, debris), and suction dredging>

### **Suction Dredging Projects**

Aquatic vegetation grows and dies each year, sending the carcass of the plant to the lakes bottom. There they decompose and fragment, which only increases the density of the plants in following season's and adds to the build up of organic sediment. Suction Harvesting slows this process down and over repeated use, will stop this vicious cycle. In contrast with chemical treatments or weed cutters, we also offer the advantage of selectivity. If you want only the milfoil removed but want the lily pads to remain untouched, we can easily accommodate your desires. In the end it may be necessary to dredge out a given area to remove the organic sediment and reduce the nutrient load.

#### **Dredging:**

The traditional method for removing soil entailed having a large construction excavator operate either from your dock or out on a barge. This process is imprecise and not very effective. Scooping large volumes of soil from a water way is intrusive, disrupting the ecosystem and doesn't afford a close tight cleaning. In ponds the risks are far greater. Pumps are the preferred method of dredging but the norm in the industry are large, aggressive machines, which move huge amounts of water and silt which are very hard to manage in a small contained area like your backyard of your lakefront property.

The Aqua Cleaner operates by sucking up silt and water together and pumping it to a desired location. The most cost effective method involves pumping the material into a field and letting the water and sediment dissipate and be absorbed into the ground. Our second option is to pump the silt and water (slurry) into a dewatering bag that sits on your property. The water slowly leaches out and over a short period of time, the silt contained in the bag will harden and can then be removed. Silt is typically composed of a very pure, organic material (great for composting), which can be spread over your lawn or given to local landscapers or farmers.

Site Plan For Dredging: A) Mark off area to be dredged. B) Build staging area C) Pump out soil into the staging area and allow to de water and dry D) Move soil onto dump trucks E) Cart away soil

The benefits of the Aqua Cleaner Dredging System are many. Aqua cleaner can return your property to the original hard packed bottom. We can get into all tight spaces around docks and barges and carve out a more precise removal of soil. We can assist you in obtaining all permits and disposal requirements.



