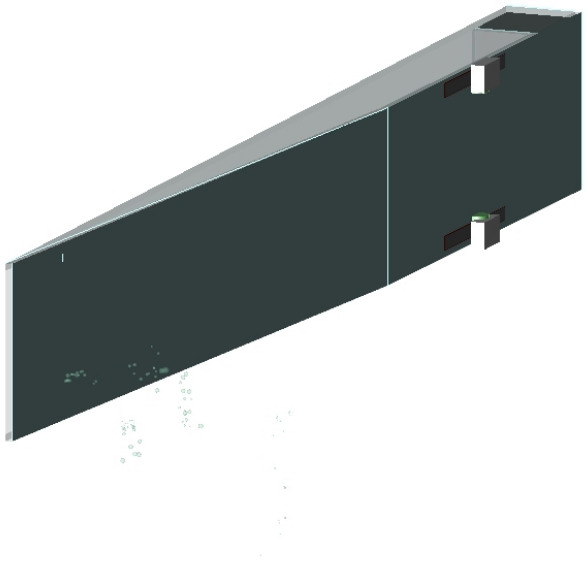
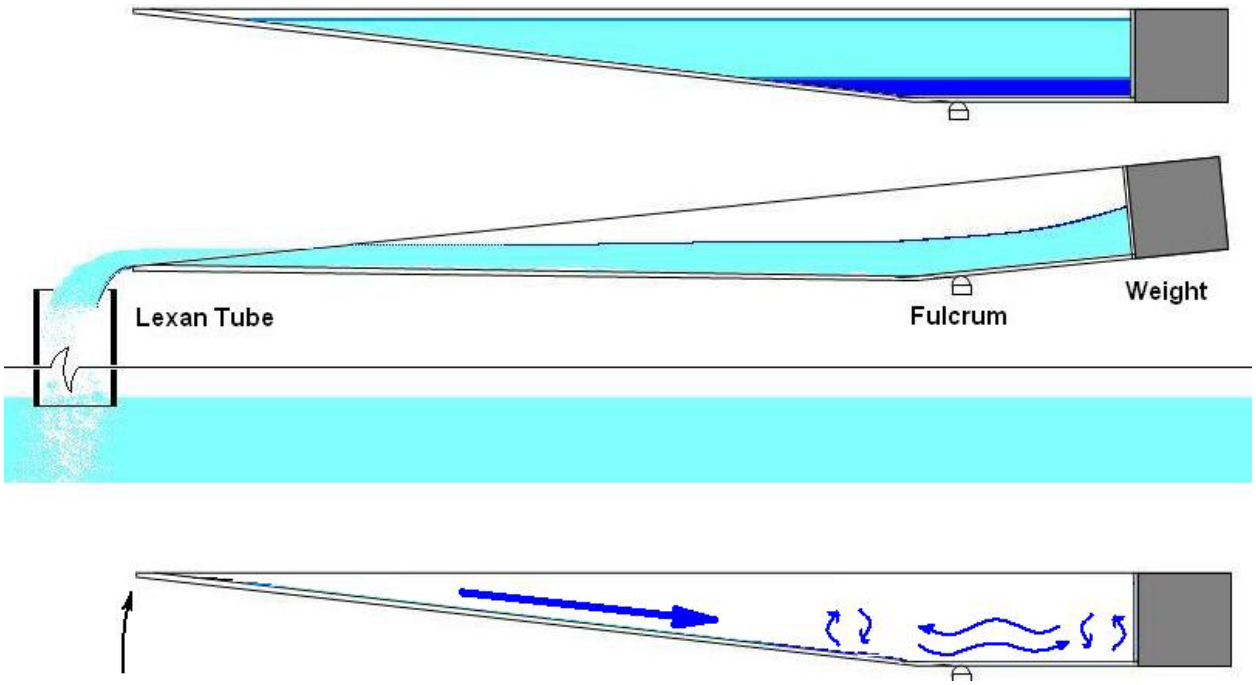




The first sketch [above] shows, in dark blue, the way that the water will fill the tray at first.
The light blue indicates how the water extends to the left, just before the tray becomes unstable enough to tip and dump the water into the tank.

The second sketch shows how water flows down and across the tray once it tips.
This causes a rushing surge of water motion through the algae inside the tray before it cascades into the tank.

The third sketch shows that, as the tray springs back to its starting position,
the remaining water rolls back down the tray to cause turbulence that further helps to prevents clumping and stimulates healthy growth.

Counter Balance Weight

This design works better with a weight at the end but may not be completely necessary. Most any heavy object would do as long as it fits into your enclosure. I used steel bar stock because it was small, compact and fit in with my low profile look.

I found a place where I could buy steel and get it cut to length. Just about every town has places like that, even very small ones. You just have to call around to find one. The first time I think that I bought some bar stock. I paid about $12 to get four 2 by 1 inch pieces of steel and asked them to be cut and they charged me $1 per cut. Then I glued the four pieces together to make one block that was 2 by 4 inches square. I made sure that the length of the steel was a quarter inch shorter than the opening that it would fit into.

The second time I think that I got two 1 by 4 inch pieces for about $25 after cutting. That time I decided to get an additional ¼ inch removed after the fact and it cost me another 20 bucks. I was lucky to get that price because they had to use a different process. Do your research and find somebody that will sell and cut your steel for a reasonable price.

Of course steel can get very sharp on the edges need to be sanded or ground down a little for safety's sake. Very often the seller will deburr the product at no additional price. I tapped the corners with a hammer to blunt them and then sanded them off a little more.

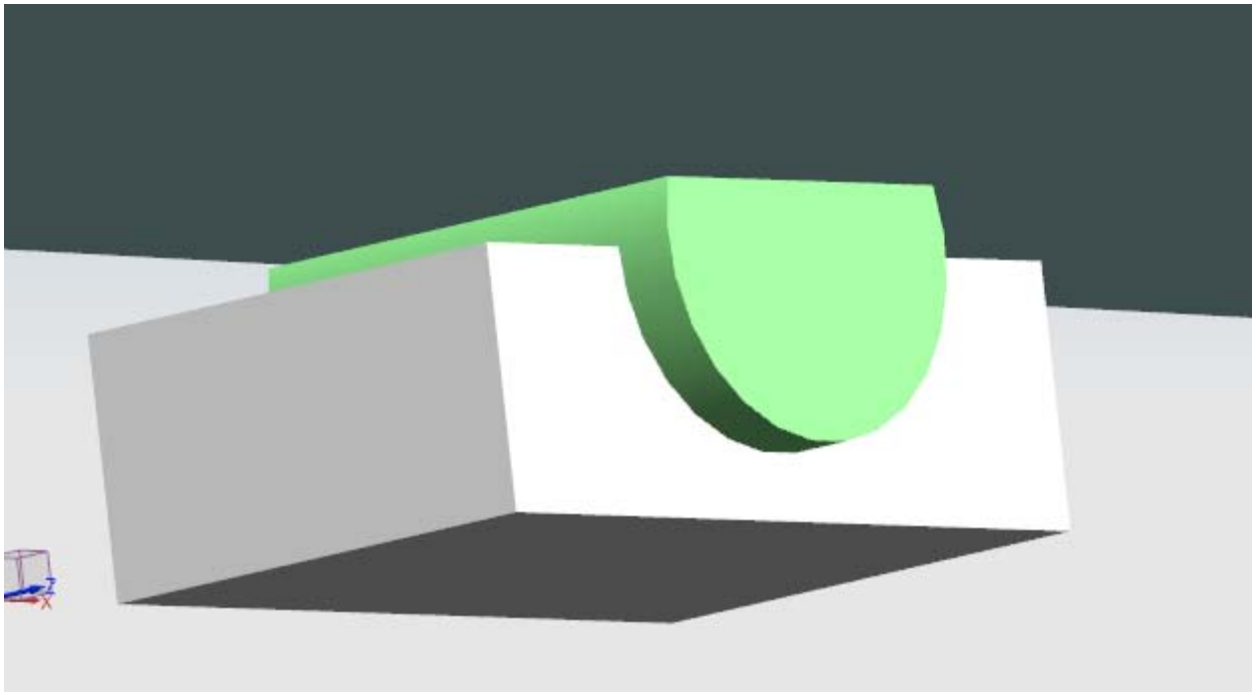
Steel rusts very quickly so sealing it is very important and you must follow up every once in a while to see if the seal has broken down. If you do it right, you will save yourself some time. Since algae takes up metals very well, I didn't worry much about a little bit of rust getting into the tank, even though that never happened in 20 years of use.

On a side note, I did have an unrelated turbulence pump begin to leak a good bit of rust into the tank but I didn't see it happening until it was too late. I turned off the ATS for a few weeks because I was testing something else and I lost a large clam. I went looking for the cause and I saw the trail of rust leading into the tank. Then, I realized that this small stream must have been dripping into the tank for many months so the ATS was preventing the loss until I took it off line.

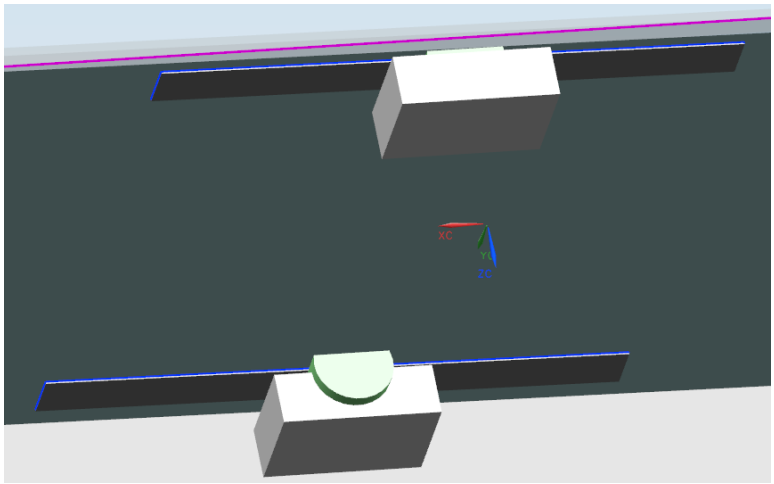
Fulcrum

I designed the fulcrum to be on the outside bottom of the dump bucket because I could not predict exactly where the tipping point would be and I wanted to be able to tune it after installation.

There are lots of things that you could use for the fulcrum. It could be simple or complex. A simple triangular shaped block would work.



I happened to use something like Teflon called UHMW because it was slick. I found some 1 inch cylindrical stock laying around from some other project and cut it into two 1 inch long pieces. Then I found some rectangular leftovers and drilled a 1 inch hole most of the way down into it. Then I cut hat piece in half so that each half would be a cradle for one of the first cylinders. Then I went back to the cylinders and cut a little flat place on them. These flats are where I place the bottom of the dump tray.

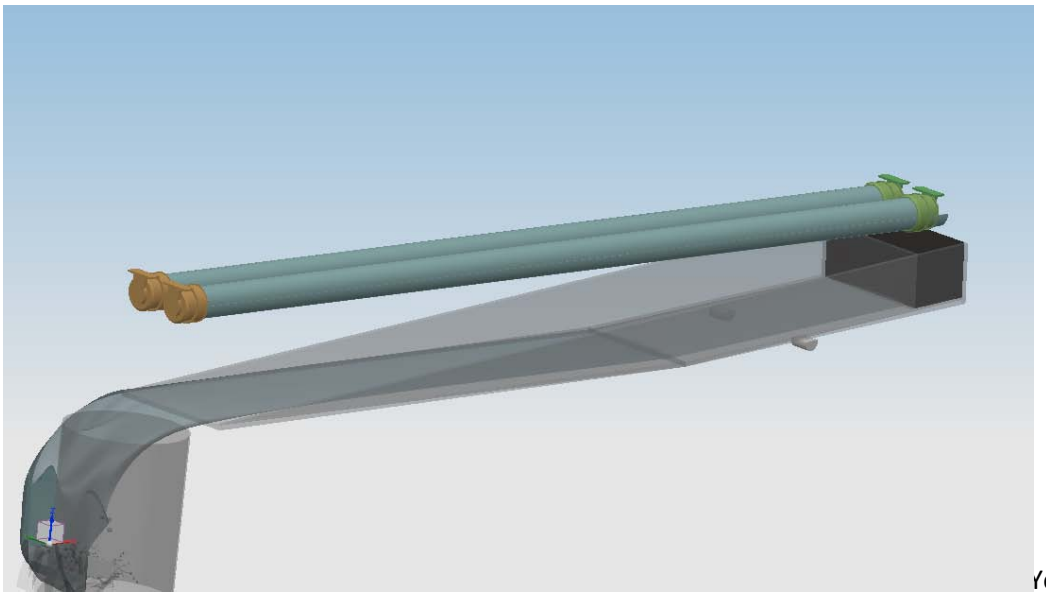


I glued Velcro pile along where the fulcrum might be so that there would be more friction at the cylinder flats. This held position very well.

I added computer mouse wrist pads as cushions at both ends of the tray where they came down when the bucket dumped and when it reset. Before that, I just used sponges.

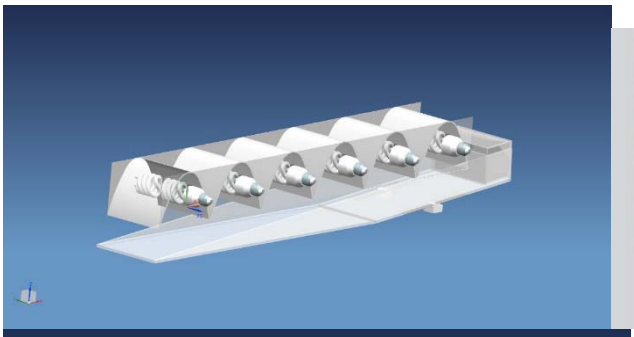
These are a few of the ways that you can light an ATS.

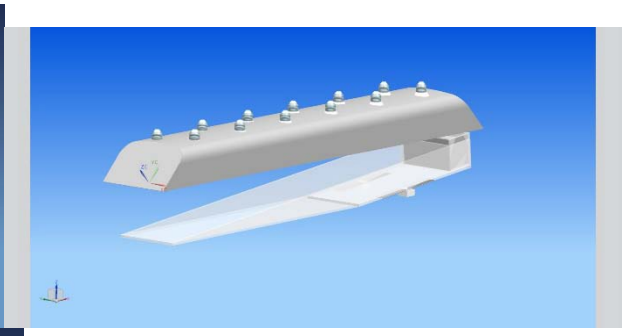
My first Build, used a 300 watt halogen flood light because it was cheap and it worked quite well. It did however, cause about a gallon of evaporation per day. It did not cause higher temperatures in the tank because evaporation actually causes cooling of the water.

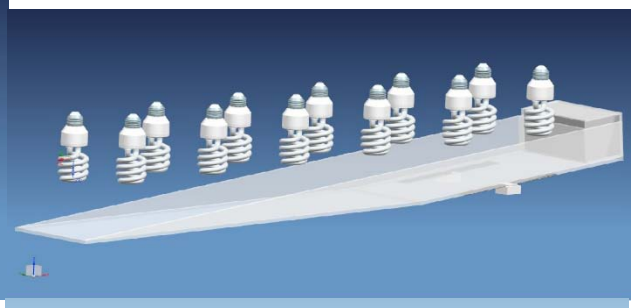


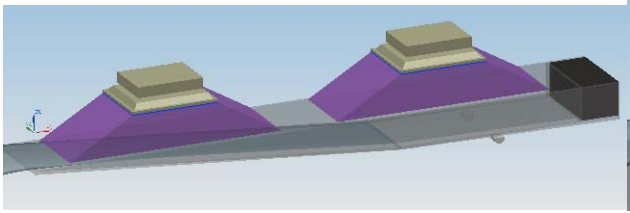
You could use VHO's or T5's.

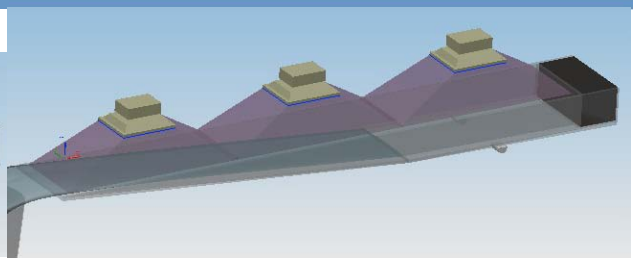
Shown below are CFL lights orientated in various ways and finally LED lamps. (flood lights simulated at bottom.



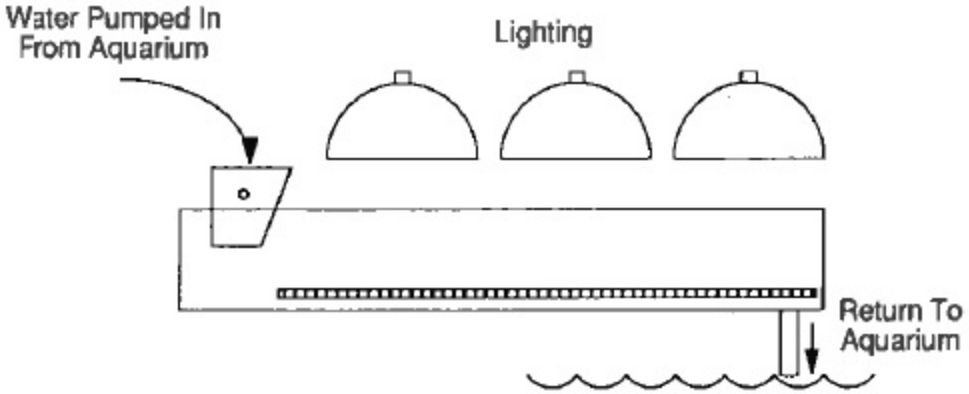




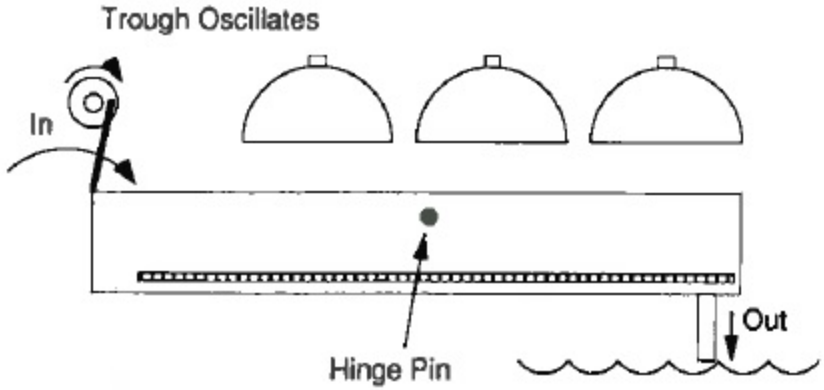




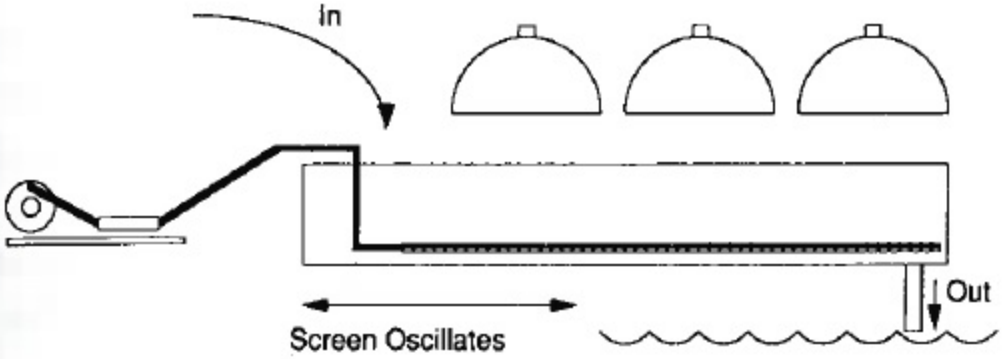
Standard Dump Bucket



Directly Driven Wave Oscillator



Directly Driven Screen Oscillator



"Perpetual-motion" Scrubbers