

PURIFICATION BASED ON PHYTO TECHNOLOGY – DIVERSITY FOR SUCCESS

Lars Kylefors

Vatten och Samhällsteknik AB, Sweden

ABSTRACT

Through research and development since 1985 purification of polluted waters based on phyto-technology has gone from science to practise. Today most scientists and engineers as well as authorities agree on the possibilities and that it is even necessary to use such technology to achieve environmental quality targets set up by the society. The technique is assumed to be useful to:

- purify waters polluted by nutrients
- purify leachate from landfills
- purify storm water
- polish sewage water

Using phyto-technology (nature given purification systems) means that you have to have information about relevant conditions regarding the status of the water, climate, soil and existing plants in the area. The construction of the system must follow relevant experience. Still there are risks with such systems as relative small disturbing factors in the assumed conditions can cause troubles, e.g. “canalisation” of water in a wetland can lead to shorter dwell time than assumed and this will be fatal.

To eliminate risks of bad purification results the system should be constructed in a robust way to be able to stand strong to changes. The system should preferably consist of several parts which each can be interesting components and at the same time be a “back up” for each other.

Example Moskogen

In Kalmar Kalmar Vatten och Renhållning AB, a company owned by Kalmar municipality, has the responsibility for waste management. Since 30 years Kvrab runs a modern landfill at Moskogen. Since 20 years the leachate is pre treated locally before some of the remaining water is pumped to the waste water treatment plant in Kalmar. The pre purification consists of large dams (3 dams, total volume 130 000 m³) and part of the leachate is loaded on 9 ha energy forest. In the first of the three dams the water is aerated by floating aerators. Based on experiences from running this plant a full scale permanent system now has been constructed and has been approved for according to Swedish environmental laws. The development is based on the running experiences from Moskogen as well as some others in Sweden and also important research carried through by Kalmar University (PhD student Lars Törneby and Prof William Hogland). The constructed full scale plant is shown below in a *Figure 1*. It consists of 6 different parts

which are good at purifying different pollutions and also are partly “back up” for each other.
Assumed results:

- more than 90 % reduction of N
- more than 90 % reduction of BOD
- 70-90 % reduction of metals
- more than 90 % reduction of specific organic substances, measured as COD
- important reduction of the amount of water (evaporation)

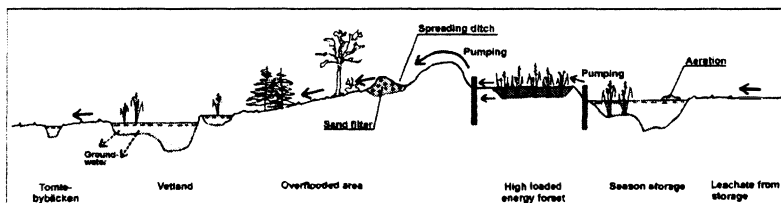


Figure 1. Full-scale constructed wetland.