Waste Water Lagoon Maintenance "Quick Guide"

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Routine Maintenance

The maintenance requirements of ponds are very simple, but must be carried out regularly otherwise, there may be serious odour, fly, mosquito and environmental nuisances.

Pre maintenance Knowledge and investigation.

1. Know the type of lagoon you have.
    a. They will be either Anaerobic, Facultative or Aerobic.
    b. Usually the first/primary lagoon will be either facultative or Anaerobic, and the last lagoon with be aerobic. **Note**: that everyone's Lagoon system will differ in setup, and it is your responsibility to become familiar with the design and process you have. UltimateEngineering.com.au staff and also the regulator DEHP can help you with this information.

Routine Maintenance tasks are as follows:

1. Make sure waste water flows through all lagoons in the treatment system, in the order the system was designed to work, before release as final effluent.
2. The removal of screening and grit from the preliminary treatment process.
3. Cutting the grass on the embankments and removing vegetation (and also the cut grass) so that it does not fall into the pond. This is so that the wind can reach the pond surface to help with aeration in the treatment process, and also to stop mosquito breeding grounds etc.
4. a) The removal of floating scum and floating macrophytes such as "duckweed" from the surface of facultative and aerobic treatment lagoons. (This is required to maximize photosynthesis and surface aeration).

    b) In anaerobic lagoons the floating scum should not be removed, as it aids the treatment process. But the scum can be sprayed as necessary with clean water or lagoon final effluent, or a suitable biodegradable larvicide, to prevent fly/mosquito breeding.
5. The removal of any accumulated solids in the inlet and outlets.

6. Repair any damage to embankments caused by rodents, rabbits, crocodiles, kangaroo's and any other animals. As this can cause them to become unstable, and also any underground borrowing could damage the lagoon lining.
7. Repair any damage to external fences and gates to stop animals and crocs entering the lagoon areas.
8. Check sludge levels in your lagoons – see next section

Desludging and Sludge disposal

Anaerobic and facultative ponds require desludging when they are around one-third full of sludge.

While an anaerobic pond must be desludged when it is one-third full of sludge which may occur every 2-3 years, It may be operationally easier to desludge it partially in the same month of every year.

A task that is to be carried out every February, for example, has better chance of being carried out than one to be done every 2-3 years, as it is often forgotten exactly when the task was last undertaken.

Sludge can be readily removed by using a raft- mounted sludge pump. These are commercially available, but it may be more practical for council to use a specialized contractor, which can be arranged through UltimateEngineering.com.au, towho can then undertake the desluding process.

The removed sludge can be discharged to sludge drying beds/lagoons, or tankered away to a landfill site, agricultural land or other suitable disposal location. NOTE: Sludge disposal must be carried out in accordance with local regulations governing sludge disposal. The department of environmental heritage protection, who is also the wastewater regulator, can help you with the regulations and guidelines you need to meet, UltimateEngineering.com.au can also help you in finding this information feel free to contact us Info@UltimateEngineering.com.au .

The whole sludge depth testing and desludging can be undertaken by a specialized contractor, but it may be cheaper for council to undertake as much of the testing and works as is possible with the resources they have, as long as all regulatory specifications and standards can be met. UltimateEngineering.com.au can provide training in testing or provide testing services for council.

Monitoring and Evaluation of lagoons

A routine monitoring program should be established so that the actual quality of final effluent can be determined, and also to meet regulatory guidelines set by the wastewater regulators.

Two levels of effluent monitoring are recommended.

LEVEL 1.

Representative samples of final effluent should be taken regularly. I would suggest daily sampling if council can do testing internally. Weekly is suggested if council does not have the technical staff available, but at least monthly. The sample should then be analysed for those parameters for which regulatory effluent discharge or re-use requirements exist. Contact the regulator or UltimateEngineering.com.au for these parameters.

LEVEL 2.

When level 1 testing show that a pond/lagoon effluent is failing to meet its regulatory discharge or re-use quality, a more detailed study is necessary. Contact the regulator and UltimateEngineering.com.au at this point for further advice.

Monitoring and Evaluation of lagoons

It is advisable to store all data in a PC using a spreadsheet such as Excel, so that simple data manipulation can be performed, and also to meet guidelines set out by the waste water regulator for which storage of data is necessary. If the inflow to lagoon and the effluent outflow from lagoon are measured by flow meter, this flow data can be combined with the lab test data and lagoon performance can be calculated.

It is recommended to measure both inflow to your lagoons and outflow from your lagoons with data logging flow meters, or flow meters with a telemetry connection to your SCADA system.

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