TREATMENT TECHNOLOGIES
NATURAL TREATMENT SYSTEMS

AQUA TREATMENT TECHNOLOGIES INC.

The 'AQUA Wetland System '

Treatment of Mushroom Farm Leachate Water

In the summer of 2003 AQUA Treatment Technologies Inc. was retained by the Canadian Mushroom Growers' Association to assess the efficacy of using the AQUA Wetland System (AWS) for treatment of ~ 85,000 L/d of wastewater generated by mushroom growing activities at a mushroom farm in Ontario. The AWS is a modified vertical flow constructed wetland. The wastewater treated by the AWS is generated by the day to day mushroom farming activities on the site and is produced year-round. The wastewater consists of irrigation leachate water used to irrigate the mushrooms, run-off from barn cleaning activities and run-off from the outdoor composting facilities.

Treatment approach

All of the wastewater is directed into a flow balancing/pre-treatment pond. Water from this pond is applied to a 3 cell AWS by means of a submersible pump controlled by electronic timer. Each cell measures 21m X 21m and is 1.2m in depth. Treated water is directed back into the barns to be re-used for irrigation, barn cleaning and other activities. Water in excess of re-use is used in the compost making process.

Performance

Average monthly performance data from September 3, 2003 to December 30, 2004, n = 13.

Parameter (mg/L)	*Wetland pond influent*	*Wetland pond effluent*	*% reduction by pond*	*Vertical flow wetland effluent*	*total % reduction*
CBOD5	176.50	19.23	89.10	1.86	98.94
BOD5	181.90	23.31	87.18	2.50	98.62
TSS	354.50	96.08	72.89	3.21	99.09
phosphorus	5.44	2.30	57.72	0.08	98.52
TKN	19.97	11.52	42.31	3.31	83.42
ammonia	12.29	6.82	44.50	0.77	93.73
Un-ionized NH4	0.0797	0.0291	63.48	.00369	95.37
nitrate	1.28	.41	67.96	4.25	N/A
DOC	46.10	30.68	33.44	14.43	68.69
E.coli (cfu/100 mL)	4409	2340	46.92	2	99.95
colour	225.88	326.82	N/A	60.83	73.06

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