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Case Study: Lake Rehabilitation Project

Case Study	Lake Rehabilitation Project
Location	Northern Greece
Target	Water Quality & Odour Control
Volume	280,000 m3
Flowrate	< 30m3 Per Hr
Treated wastewater	Surface & Treated Wastewater
Project Initiation	07/2017

Comments & Results

- Two lakes in series were treated.
- Lake No1 approximate volume 30,000 m^3 and Lake No2 of 250,000 m^3
- The inflow is surface water and effluent from a wastewater treatment plant
- The target of the implementation the overall rehabilitation of the two lakes
- A combination of Facultative Microorganisms were used throughout three months
- An increased dosage was used during the cultivation period (first month of application)
- The total microbial product quantity used was approximately 110 kg
- All monitored parameters (Turbidity, TN, TP etc.)were improved and the rehabilitation was achieved

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Case Study: Lake Rehabilitation Project – Lake 1

Lake No 1	Date	Temperature	Turbidity	COD	Total N	Total P
Sample Number		*°C*	*NTU*	*mg/lt*	*mg/lt*	*mg/lt*
1	28/02/17	9,5	3,68	15,8	4,50	0,545
2	09/03/17	10,4	23,10	36,2	4,08	0,533
3	16/03/17	12,4	3,74	17,8	2,84	0,499
4	23/03/17	17,3	4,98	23,5	2,07	0,622
5	29/03/17	13,7	8,49	24,1	1,83	0,684
6	10/04/17	15,4	14,10	30,8	2,02	0,433
7	19/04/17	19,8	7,97	23,7	1,66	-
8	27/04/17	19,2	10,30	26,8	1,71	-
9	04/05/17	23,6	2,89	29,8	2,47	-

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Case Study: Lake Rehabilitation Project – Lake 2

Lake No 2	Date	Temperature	Turbidity	COD	Total N	Total P
Sample Number		*°C*	*NTU*	*mg/lt*	*mg/lt*	*mg/lt*
1	28/02/17	10,6	9,40	30,5	4,12	0,47
2	09/03/17	11,5	11,70	35,4	2,86	0,46
3	16/03/17	11,8	5,66	22,2	2,85	0,45
4	23/03/17	17,1	21,90	32,0	2,36	0,37
5	27/03/17	17,5	8,56	25,9	1,78	0,32
6	29/03/17	14,2	8,23	25,3	2,07	0,35
7	10/04/17	15,9	7,77	24,2	2,46	0,35
8	19/04/17	20,6	2,93	20,4	1,22	-
9	27/04/17	19,8	1,81	23,5	2,37	-
10	04/05/17	23,8	2,48	24,7	1,63	-

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Case Study: Lake Rehabilitation Project – Conclusions

- The overall implementation was successful in the rehabilitation of the two lakes which were polluted with stored organic load for many years.
- The odours in the surroundings were eliminated and the water clarity was improved which was confirmed by hundreds of daily visitors.
- The Turbidity in both lakes had a decreasing tendency throughout the trial period. However, some increased values are due to rainfall which increased the incoming flows.
- The total Nitrogen and total Phosphorus values were initially low but also showed a decreasing tendency.
- All the controlled measurements were improved during and after the implementation even though the biggest incoming flow to both lakes is the output of a malfunctioning wastewater treatment plant creating a large instability of the incoming organic load.
- The Municipality of Thermi have officially approved the trial as a successful one and have signed a contract for the continuous implementation of the method in both lakes.

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Case Study: Lake Rehabilitation Project
Lake 1 - Before

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Case Study: Lake Rehabilitation Project
Lake 2 - Before

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Case Study: Lake Rehabilitation Project
Lake 1 & 2 – After