

# FREYTECH INC.

## Algae Treatment & Nutrient Remediation Using EBD Technology

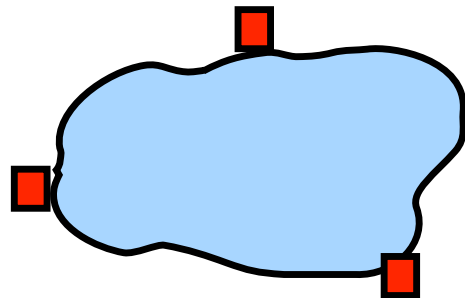
### INTRODUCTION

The **FREYTECH Environmental Balance Device System (EBD)**, eliminates algae and remediates nutrients (phosphates and nitrates) from lakes and ponds (“Lakes”) large and small alike. Our unique and proprietary methods are based on harnessing nature’s natural and organic processes to restore the balance and health of ecosystems. We proudly offer accessible, reliable and environmentally sustainable solutions which are fully backed by scientifically demonstrable data as well as by solid commercial guarantees.



**EBD Lake & Soil Pack**

(Lx W x H) 12 cm x 12 cm x 0.5 cm



**Sample Lake with EBD Devices**



**Before EBD Installation**



**One Month After EBD Installation**

The following table contains Lake water analysis data from two samples taken within one month of each other. The Objective Value measurements reflect the end result to be achieved after EBD System installation.

	Parameters	1 <sup>st</sup> Month	2 <sup>nd</sup> Month	Objective Value	Units
1	pH	7.22	8.26	6.5~8.5	
2	Temperature	26.7	30.72		°C
3	Conductivity	5470	4699	110~250	µS/cm
4	TDS	3362	2639		mg/l
5	Nitrites	< 0.02	<0.020		mg/l
6	Nitrates	< 0.10	<0.10		mg/l
7	Turbidity	3.21	2.26		UNT
8	Fecal Coliforms	20	11	0	UFC/100mL
9	Salinity	3.3	2.67		
10	Floating Material	Absent	Absent		
11	Biochemical Oxygen Demand	< 5	9.54		mg/l
12	Chemical Oxygen Demand	< 30	< 30	3~8	mg/l
13	Total Kjeldahl Nitrogen	< 2.3	< 2.3	0.1~0.033	mg/l
14	Nitrogen Amoniacal	<0.30	0.6		mg/l
15	Total Phosphorous	< 0.30	< 0.30	0.03~0.005	mg/l
16	Phosphates	< 0.92	< 0.92		mg/l
17	Total Suspended Solids	28	16	1~5	mg/l
18	Settable Solids	<0.10	< 0.1		mg/l
19	Dissolved Oxygen	-	7.34		mg/l
20	Oil & Grease	<4.2	< 4.2		mg/l
21	Arsenic	< 0.20	< 0.20		mg/l
22	Nickel	< 0.50	< 0.10		mg/l
23	Copper	< 0.20	< 0.05		mg/l
24	Chromium	< 0.50	< 0.05		mg/l
25	Mercury	< 0.10	< 0.10		mg/l
26	Cadmium	< 0.05	< 0.05		mg/l
27	Zinc	< 0.05	< 0.05		mg/l
28	Lead	< 0.30	0.12		mg/l

### A) Lake – Conditions

The water in the Lake reflected on Page 1 above was normally transparent and clean but after it was polluted by agricultural runoff containing high concentrations of nutrients (phosphates and

nitrates), it turned brown in colour and developed high volumes of algae. After some time transpired, some of the algae sank to the bottom and clogged the Lake's porous rock bed thus preventing normal flow conditions.

## B) Considerations

The occurrence of algae is dependent on the amount of nitrogen and phosphorus deposition in water. They are introduced by decomposing foliage, agricultural chemicals, fertilizers, herbicides and pesticides. The penetration of these substances into water can lead to the acceleration of eutrophication and the propagation of algae. During algae propagation, dissolved oxygen is consumed and used up. As a result, algae propagation then decreases and algae deterioration ensues. The deteriorated algae can emit foul odours and also clog porous rock and/or sink to the Lake bed in the form of residue.

As already indicated above, algae are dependent on the amount of organic nitrogen and phosphorus deposition in water. Algae propagation can be effectively controlled by reducing these nutritional substances. By installing **EBD Lake & Soil Devices** around the Lake's perimeter, the absolute amount of active oxygen present in and around the Lake will be converted into stable oxygen form. When the absolute amount of active oxygen is reduced, indigenous microorganisms which are present in and around the Lake, propagate exponentially preying and feeding on nitrogen and phosphorus. The excessive amounts of nitrogen and phosphorus are thereby reduced to the point whereby the EBD treated Lake and its corresponding bed, easily meet environmental standards regarding nutrient levels. If the Lake has recirculating pumps in operation, Freytech **EBD Water Packs** should be installed on each pump's discharge line. EBD units will continue to maintain the Lake free of algae and nutrients for numerous years from the date of installation.

Freytech also offers additional specialized EBD Systems to remediate organic pollutants such as raw sewage, industrial waste water etc., as well as inorganic pollutants such as heavy metals, Polychlorinated Biphenyls (PCB's) in Lakes, Rivers, Marshes, Ground Water and Soil.

## C) INSTALLATION INSTRUCTIONS

- Bury EBD Lake & Soil Packs **20~30cm** (8 to 12 inches) **below grade** at 40 meter (131 ft.) equidistant intervals around the perimeter of the Lake. Dig each hole within 1 to 5 meters (3.2 ft. to 16.4 ft.) from the water's edge. Dig each hole uniformly. Place each EBD unit **HORIZONTALLY** at the bottom of each hole. **Do NOT install vertically**. After burying each EBD unit, completely cover each hole with soil.

- Note: If the Lake installation area is prone to flooding and overflow conditions, bury each EBD unit in a straight line directly away from the lake's maximum flood plain level. The measurement variance should remain within 10 meters if possible although longer distances are acceptable. Please provide Freytech Inc. with variance measurements for each modified installation location.

- The presence of trees, vegetation, rocks, boulders etc. along Lake banks, can sometimes make it difficult to install each EBD unit at the required location and within the precise equidistant

intervals detailed above. If the exact installation point of any EBD is blocked, installation deviation not exceeding 10 meters (32 ft.) **AWAY FROM OR TOWARDS THE LAKE BANK** is acceptable. If possible, avoid deviations which significantly alter the required spacing intervals between each EBD unit. Any and all deviations exceeding 10 m (32 ft.) should be photographed, recorded by GPS (or marked by stakes) and communicated to Freytech Inc.

- Note: The EBD Lake & Soil Packs may be installed right side up or right side down. What is critical however, is that they be installed **HORIZONTALLY** not vertically in the ground (emphasis added once again).

- Note: Avoid ultra violet exposure on EBD units. Do not subject EBD units to temperatures exceeding 80 Celsius (176 Degrees Fahrenheit).

#### D) FACTORS AFFECTING EBD REMEDIATION:

- Human Population Density – Desired EBD Remediation results take longer to achieve in densely populated areas as compared to thinly populated areas.

- Longitude and Latitude – EBD Remediation speed remains constant in all areas situated between the Equator to 45 degrees North Latitude and/or South Latitude. EBD remediation speed is reduced in all areas situated towards the North Pole from 45 degrees North and towards the South Pole from 45 degrees South.

- Sea Elevation – EBD Remediation speed is constant in all areas situated up to 500 meters above sea level. EBD Remediation speed slows down commensurately with increases in elevation from 500 meters and higher above sea level.

- Geology – EBD Remediation speed is not affected by soil quality except in desert areas. Full remediation is achieved in desert areas as well, but the process takes more time.

- Climate – The warmer the climate, the quicker EBD systems will remediate.

- Fresh vs. Brackish/Sea Water - EBD Remediation speed is quicker in fresh water than in brackish/sea water applications.
- Scale & Size of Lakes – EBD remediation results are constant, regardless of the size, volume and flow rate (if any) of the Lake being treated.
- Natural vs. Artificial Lakes - EBD remediation speed is quicker in natural Lakes than artificial ones containing concrete banks and/or beds.

#### **E) EBD TEST PERIOD AND RECOMMENDATIONS:**

■ EBD Remediation will usually require 1 to 3 months for small Lakes and 3 to 18 months for very large lakes. Quantifiable reduction in organic and inorganic pollutant concentration levels, will be easily detected however, within the first few months following EBD System installation.

■ **EBD units will continue to remediate the Lake effectively on an ongoing basis, even while the same volumes and concentrations of pollutants continue to flow into it.** In the event however that pollutant effluent levels and concentrations increases over time, eventually causing BOD levels in the Lake to exceed 80 mg/l, it will be necessary to install additional EBD Lake & Soil units, in order to once again achieve and maintain acceptable water quality.

All materials contained in EBD units *comply with OSHA 29 CFR XVII-1910.1200 Section (i). Affidavit: EBD systems do NOT contain hazardous components under current OSHA definitions, or EPA listing. The EBD materials do NOT contain any ingredients that are on the NPT list or registered with IARC for carcinogens and the material mixture tested as a whole has been found to be: • Nontoxic • Non corrosive • Not an irritant • Not a sensitizer in oral, dermal and ocular tests (see US Federal Hazardous Substance Act 16 CFR 1500) Section 3. Physical & Chemical Characteristics.*

Thank you for your interest in Freytech EBD Lake Remediation Technology. Should you have any questions or queries, please do not hesitate to contact us.