

# **RELIANT** Water Technologies

Technical Bulletin – TB LM-1

## How do the ***LAGOON MASTER™*** Sludge Activating Aerator work?



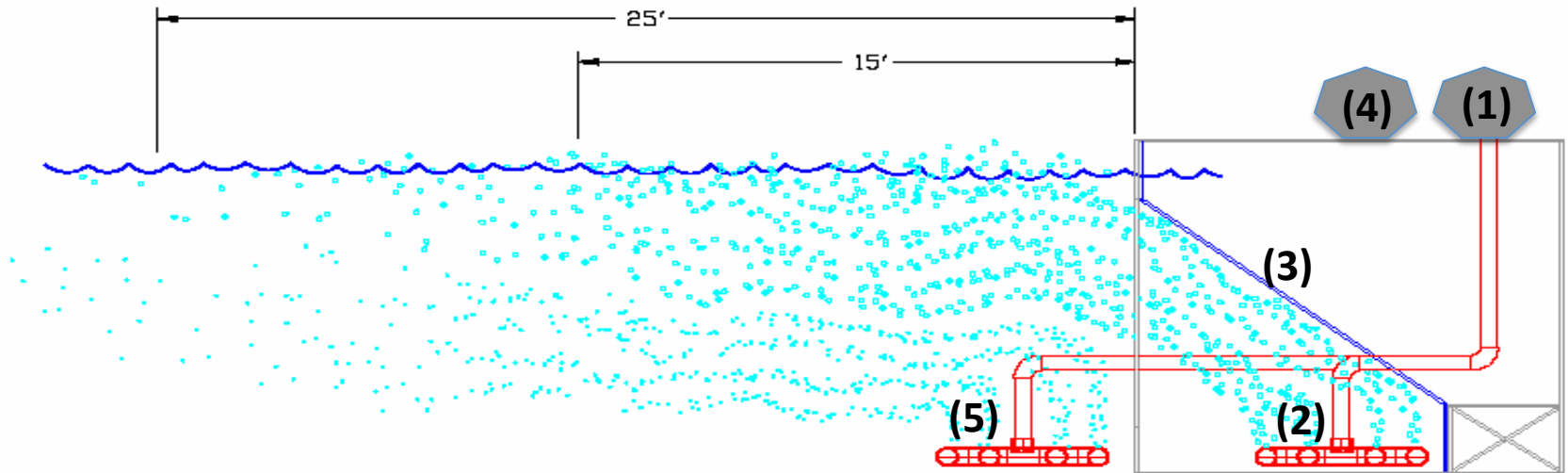
An Innovative Technology for Shallow Ponds, Lagoons and Other Water Bodies

# HOW DOES IT PROVIDE FLOW AND DISSOLVED OXYGEN

There are two, 2 HP (1.5 kW), regenerative blowers on top of the *LAGOON MASTER*; each is connected to a set of bubble forming diffuser grids.

The Phase 1 blower (1) feeds air to the coarse bubble diffuser grid (2) which produces large 1-2 cm bubbles that rise quickly into a baffle (3), pushing water at a velocity capable of moving over 9 million gallons of water per day. This moving water stays on the surface until its weight forces it to drop down to the sludge.

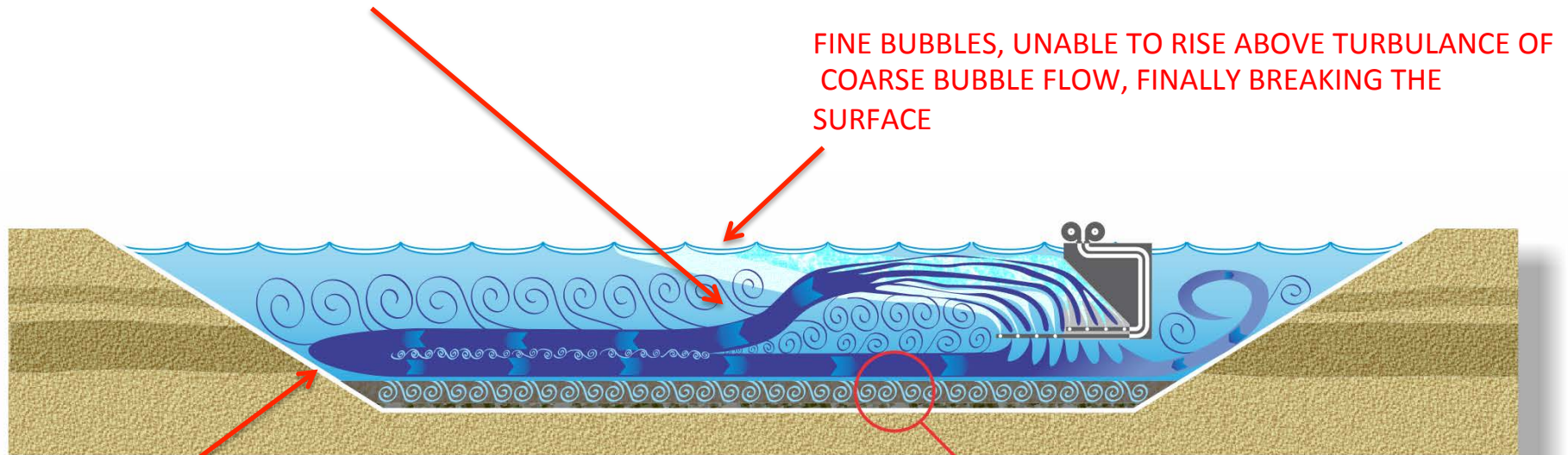
The Phase 2 blower (4) feeds air to the industrial grade fine bubble diffuser grid (5) located forward of the coarse bubble diffusers. The fine bubbles are <1 mm in diameter, and are carried underwater for up to 35' (10.6 m) due to their inability to rise through the fast moving turbulence of the water above them. The 25'+ (7.6 m+) of residence time for the small bubbles. at 1 atmosphere of pressure. provides 15 lbs (6.8 kg) of



OVER 9 MILLION GALLONS OF WATER PER DAY FLOW THROUGH THE MODEL WQA

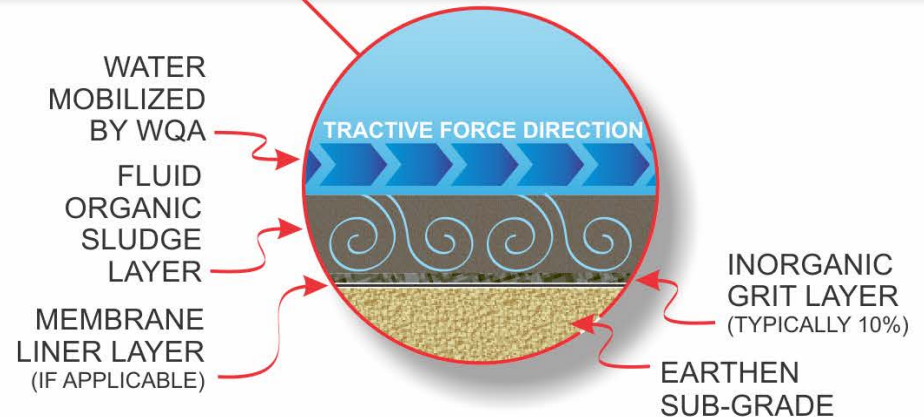
# HOW THE *LAGOON MASTER* IS DIFFERENT FROM OTHER SURFACE AERATORS

QUIESCENT WATER FORCES TURBULANT SURFACE FLOWING WATER TO FALL UNTIL IT HITS THE SLUDGE ON THE BOTTOM. THIS TURBULENCE ON THE BOTTOM BEGINS SLUDGE FLUIDIZATION. (Note how the falling flow of water drops through the oxygenated bubble plume and brings dissolved oxygen to the sludge)



FINE BUBBLES, UNABLE TO RISE ABOVE TURBULENCE OF COARSE BUBBLE FLOW, FINALLY BREAKING THE SURFACE

OPPOSITE SHORE TURNS WATER BACK TOWARD THE INTAKE OF THE AERATOR, WHICH PULLS 9 MILLION GALLONS OF WATER THROUGH ITSELF PER DAY. THIS FLOWING WATER COMPLETES THE FLUIDIZATION OF THE SLUDGE



# WHAT ARE THE ADVANTAGES OF THIS UNIQUE TECHNOLOGY

- ❖ Fluidization of the sludge –
  - ❖ Releases trapped nutrients for oxidation
    - ❖ Improves water quality in the water column
  - ❖ Provides the natural bacteria in the sludge with continuous, fresh organic food for total breakdown
  - ❖ Discourages, and eliminates, sludge buildup
  - ❖ Supplies dissolved oxygen to the sludge
- ❖ Slow, continuous bottom flow, causes surface undertow –
  - ❖ Total mixing of the water column
    - ❖ Never experience seasonal turnover again
  - ❖ Thinning of algae
    - ❖ Reduces or eliminates globular, odor causing floatables
- ❖ Reduces energy use by 50% to 60% minimum.