

## Biochemical Oxygen Demand Notes

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### Biochemical Oxygen Demand

- Objective: to determine the amount of oxygen necessary to biodegrade, biochemically, the organic material in a body of water.
- Typically we measure  $BOD_5$ , i.e. oxygen consumed within 5 days; however, the 'ultimate' goal is to determine the ultimate BOD or  $L_0$ , the total amount of oxygen consumed to degrade the organic material in a body of water.

- For the measurements to be reliable, the following conditions must be satisfied:
  - 1) The DO left after the test must be at least 1 mg/L
  - 2) At least 2 mg/L of oxygen must be consumed during the test.
- To meet these requirements, concentrated waste must be diluted, otherwise all available oxygen will be used up and there will be no oxygen remaining.

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- For this experiment, we will be using only Aggie Pond water, no primary or secondary effluent, as mentioned in the handout, and therefore we will not be doing any dilutions (we'd be lucky to measure any BOD in this water, because remember that Aggie Pond water is basically just drinking water and therefore is not really expected to have any BOD to speak of.

## Procedure:

- 1) fill BOD bottle with sample completely so there is no head space left -



Measure DO with DO meter.  
Note serial number of DO meter.

- 2) Add a little amount of water by the stopper, to prevent any oxygen from

the stopper, to prevent any oxygen from diffusing in or out of the BOD bottle.

- 3) Seal the bottle with with a strip of stretchy Parafilm, as an extra barrier to oxygen diffusion
- 4) Label BOD bottle and place in incubator (square, little refrigerator looking piece of equipment by the lab door. Make sure that the incubator is set at  $20^{\circ}\text{C}$ ).
- 5) In a week, take the sample out of the incubator and using the same, calibrated DO meter, measure the DO of the sample.

6) Determine the  $BOD_7$  as the difference between the two DO values in mg/L. (Initial - Final).