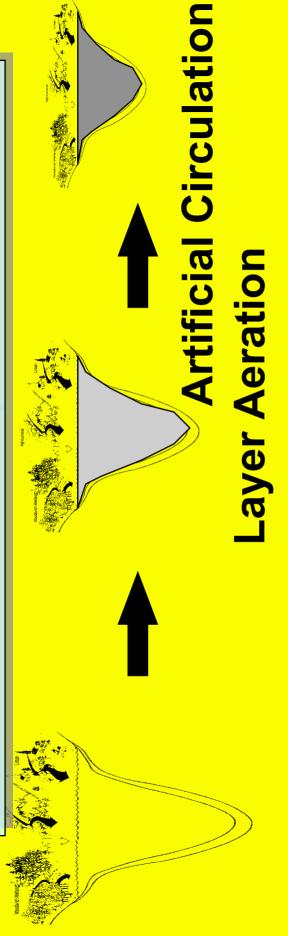
# **Aeration Technique Selection**



# **Hypolimnetic Aeration**

No Aeration Needed

Deep, Stratified, Oligotrophic;

No "Problematic Anoxia"

**Hypolimnetic Anoxia** 

Deep, Stratified, Mesotrophic, Increasing Oxygen Demand

**Good Habitat and Low Nutrients** Water Quality

Stratified, Eutrophic, Metalimnetic Anoxia Hypolimnetic And Moderately Deep,

Shallow, WeaklyStratified, **Anoxia Ascends into** Highly Eutrophic **Euphotic Zone** 

(Nutrient Control Not Feasible) Poor Habitat and High Nutrients Water Quality

**EUTROPHICATION** 

## Artificial Circulation

### Advantages:

- Good Control of Metals
- PhytoplanktonSpecies
- Aerobic Benthic Habitat
- Few In-LakeStructures

- Warming of Bottom
- Benthic Fluxes (Fickean)
- Continuous AlgalCulture
- Fouling & SedimentSuspension

# Hypolimnetic Aeration

### Advantages:

- Good Control of Metals
- Nutrient Control (Sometimes)
- Habitat (Cold)
- MaintainsStratification

- Metalimnetic Anoxia
- Thermocline Fluxes (Fickean)
- Gas-Solute Transfer Efficiency
- StructuralComponents

### Layer Aeration

#### Advantages:

- Good Control of Metals
- Nutrient Control (Sometimes)
- Habitat (Cool and Cold)
- Quality SupplyLayers
- Ambient O<sub>2</sub> Sources

- "Manipulates"Stratification
- DatabaseRequirements(Design)
- StructuralComponents

### Oxygenation

#### Advantages:

- Good Control of Metals
- Nutrient Control (Sometimes)
- Habitat (Cool and Cold)
- High DO can be accomplished

- Maintenance of UnderwaterMechanicals
- StructuralComponents, Cost
- Steep DO Gradients
- Very high DO is Toxic to many organisms.

# Specialty Aeration Functions

- AirStrip Aerator Function
- re: Henry's Law Constant of Organic
- Chemical Feed Injections
- re: Focused Algicide Application
- re: Nutrient Inactivation
- re: Front-End Treatment
- Pneumatic Skimming
- re: Floatables Removal
- Multiple FunctionAerators
- Enriched Air Feed