



MIT - BRAZIL GROUP

Design of CEPT Wastewater
Treatment Facility in a Small
Brazilian City



OUTLINE

- DEFINITION OF PROBLEM & SOLUTION
- CEPT OVERVIEW
- OBJECTIVES
- FIELD TRIP OVERVIEW
- DESCRIPTION OF PRESENT FACILITIES
- THE 3 PROPOSED DESIGNS



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Background

- Overloaded Municipal WWTP's
 - ◆ Simple Biological Lagoon Treatment
- Area constraints limit possibilities
- Limited Financial Resources



Aims

- Design Upgrade for Current Facility
- Improve Cost-Effectiveness
- Improve Predicted Efficiency
- Provide Sludge Handling



CEPT

- The addition of chemicals to enhance solids removal
 - ◆ Alternative to secondary biological treatment
 - ◆ A solution for an overloaded biological treatment plant
 - ◆ An improvement on existing primary treatment



OBJECTIVES

- Assess present lagoon system efficiency
 - ◆ Field trip
- Design upgrade of system using CEPT
- Promote the use of CEPT in Brazil



FIELD TRIP

- Visit Wastewater treatment Plants in Sao Paulo
- Establish Laboratory in Tatui
- Assess Efficiency of Present Facilities
- Tests to find Optimum CEPT Dosage
 - ◆ Jar Tests



LAGOONS IN TATUI



LAGOON SAMPLING

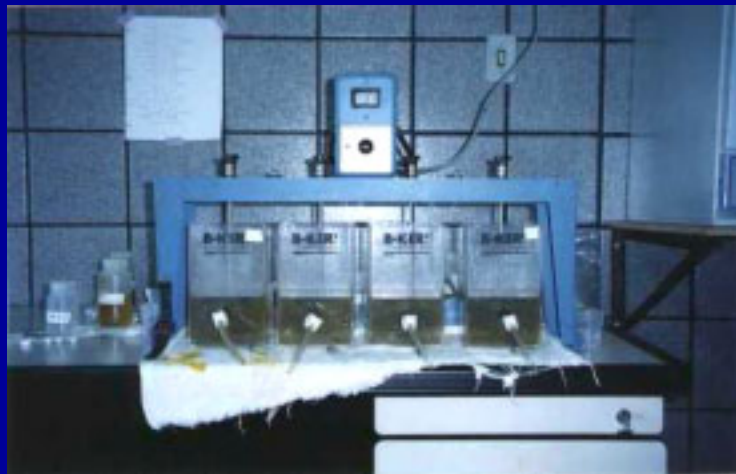




LAB SAMPLE



JAR TESTING





TSS ANALYSIS

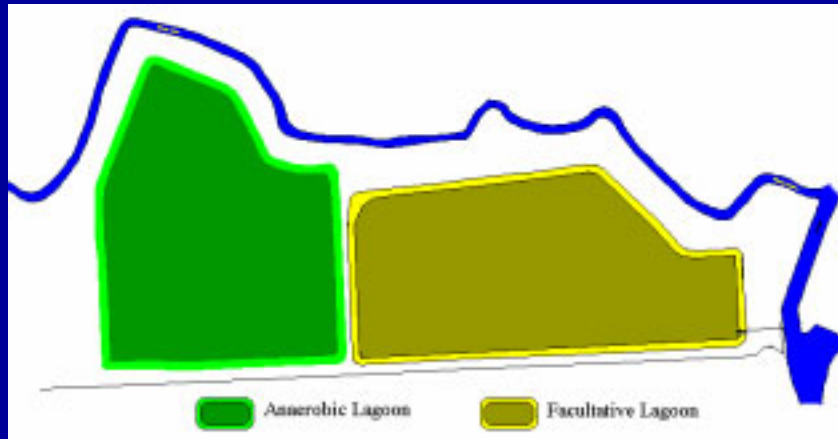


SPECTROPHOTOMETER

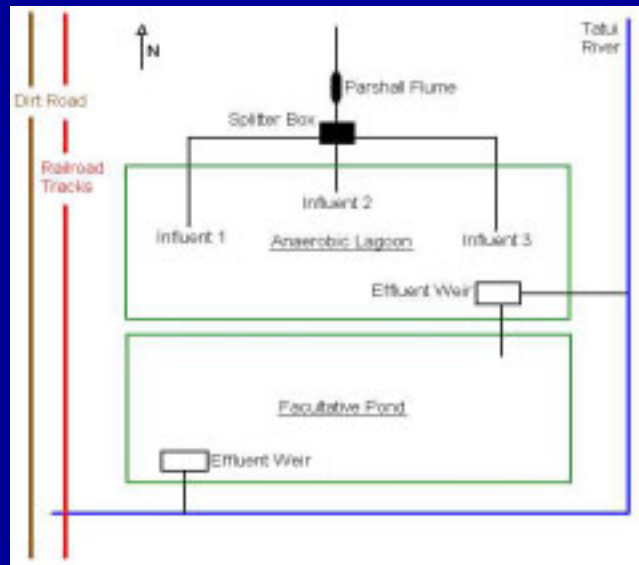




PRESENT FACILITIES



SCHEMATIC





CHARACTERISTICS

- Severely Overloaded System
- Poor Maintenance
- No provision for Sludge Handling
- Low Efficiency
- Short-Circuited Lagoons
- Portion of Anaerobic Pond Effluent to River

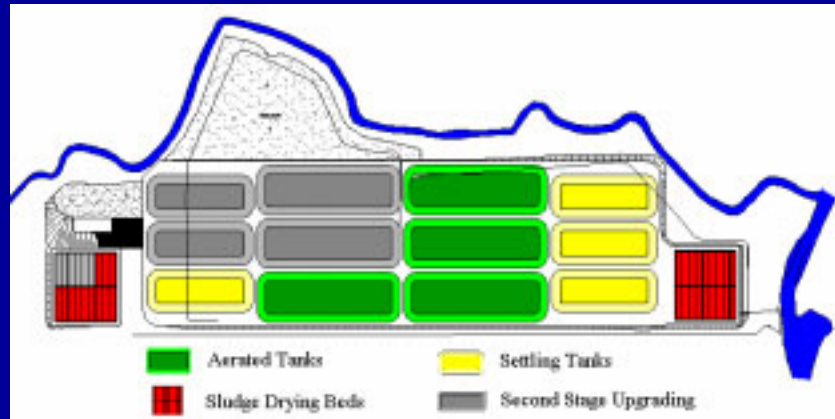


3 ALTERNATIVES

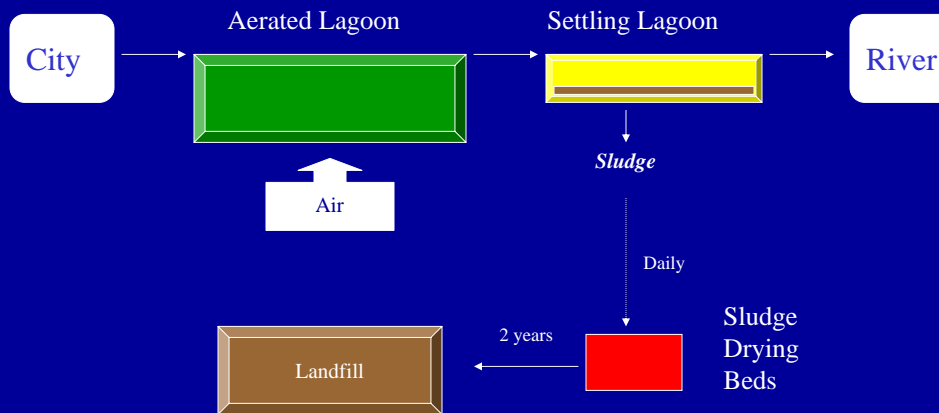
- Proposed SABESP Design
- CEPT Tank Design
- In-Pond CEPT Design



SABESP DESIGN



SABESP Design



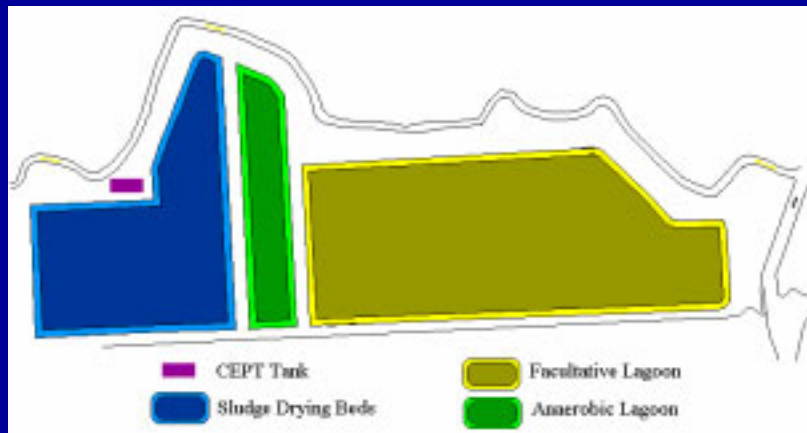


CHARACTERISTICS

- Low sludge production
- Use of available area
- High energy consumption
- Odor problems
- Questionable efficiency
- High Operational Requirements
- High Capital Costs

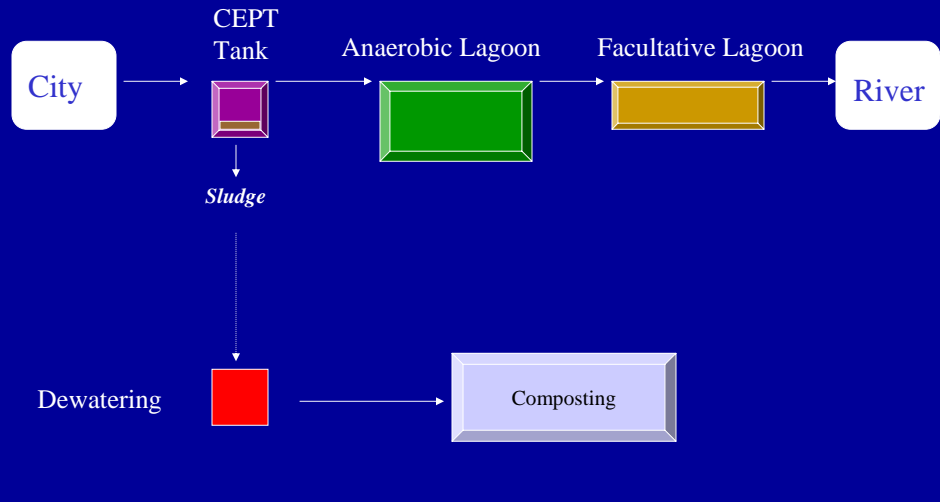


CEPT TANK DESIGN





CEPT Tank Design

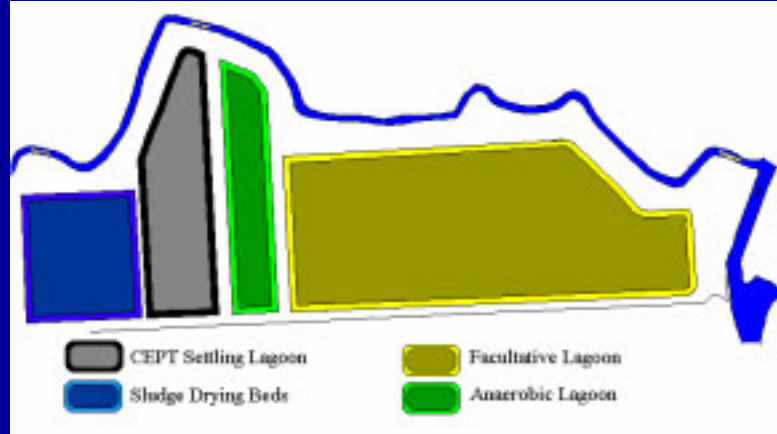


CHARACTERISTICS

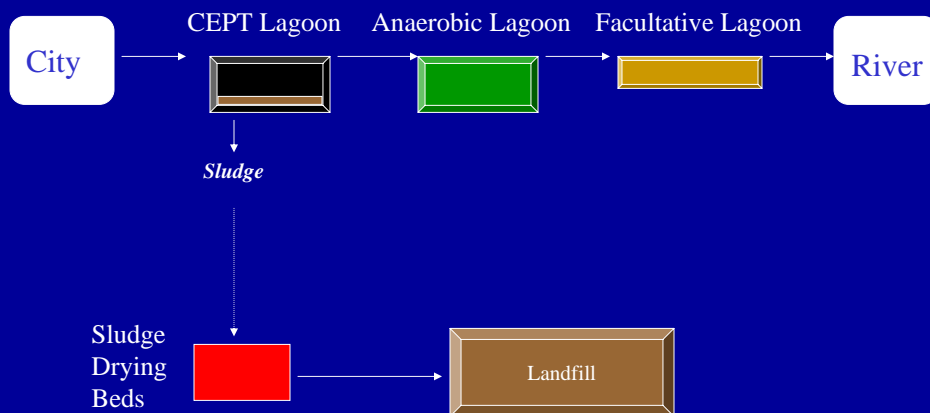
- High sludge production
- Cost of composting
- Reuse of Composted Sludge
- Use of available area
- Odor problems
- Medium Operational Requirements
- High Capital Costs



IN-POND CEPT DESIGN



In Pond CEPT Design





CHARACTERISTICS

- Digestion of Sludge in Lagoon
- Low Operational Cost
- Low Capital Cost
- Use of available area
- Low Operational Requirements

CONCLUSION

