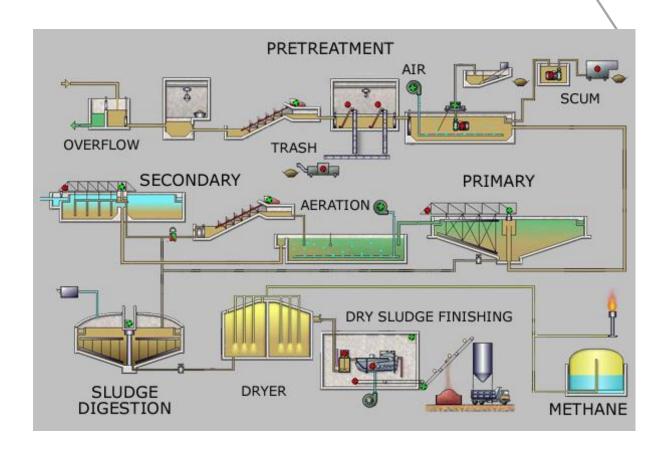


# Process, Theory, and Maintenance of Sewage & Effluent Treatment Technology Operation





## Financial analysis Modelling & forecasting

### **Course Objective**

- ➤ Understand the different waste water treatment systems available
- ➤ Understand National and local legislation
- ➤ Maintain and troubleshoot waste water treatment systems

#### **Target Audience**

- > Municipal Planner
- ➤ Sewerage Operators
- > Municipal Engineers
- ➤ Consulting Engineers
- ➤ Mechanical Engineers and Technicians

#### **Course Outline**

#### Day 1

#### Introduction

- ➤ Planning considerations -provincial and national government
- Economic, social and environmental goals of planning
- > Environmental assessment
- ➤ Need for health and safety
- > Factors in preparing municipal plans



- > Protection for stepped up demand
- ➤ Waste water fundamentals
- ➤ Basic terminology
- > Contaminant considerations
- ➤ Biological, phosphorous, ammonia
- > Pathogens

#### Day 2

- > Effluent objectives
- ➤ Alternate discharge options
- > Receiving water capacity-provincial water quality objectives
- > Surface discharge
- ➤ Subsurface discharge
- > Design considerations
- ➤ Collection of sewerage
- > Aerobic and anaerobic treatments
- Critical design parameters for communal sewerage treatment systems
- > Treatment technologies
- ➤ Suspended solids removal
- ➤ Bod removal
- > Nitrification and denitrification
- ➤ Phosphorous reduction
- > Treatment systems

#### Day 3

- ➤ Conventional septic tank as the treatment system
- > Enhanced septic tanks as a primary for other bioreactors
- **>** Bioreactors



- > Fixed film
- > Rotating
- > Suspended
- > Batch
- Filters-sand, peat, stone, synthetics
- ➤ New technologies targeting specific contaminants
- > Recirculating sand filters year round treatment
- ➤ History experimental design
- **➤** Construction
- **➤** Operation
- ➤ Subsurface discharge
- > Filter bed

#### Day 4

- > Shallow trench
- > Leaching bed
- > "constructed wetland"
- > Recycle, reuse
- ➤ Direct discharge
- > Stream assimilative capacity
- ➤ Mixing zone
- **▶** Disinfection
- Biosolids disposal
- > Hauled waste
- **≻** Compost
- ➤ Lime stabilization
- ➤ Management of communal waste water systems



#### Day 5

- Financial and legal issues
- > Funding sources
- > Approval process
- ➤ Regulatory compliance
- ➤ Municipal and owner liability
- > Design and installation of your own system
- ➤ Simple design rules
- ➤ Implementation of your system
- > Tips and tricks
- ➤ The thirteen golden rules of working with waste water systems
- > Regular monitoring
- ➤ Long term satisfactory performance

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