

# Environmental Hydraulics

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## Main Objective;

Introducing Some Basic Knowledge of  
Environmental Hydraulics in Theoretical Aspects.

## Especially,

- Review of Fundamental Equations for Environmental Hydraulics Study.
- Introduction of Affects of Spatial Difference of Water Density.  
(Appearing as Salt Wedge in Estuary, Thermal Stratification in Lakes,...)

# Contents

## §1 Review of Governing Equations for Water Flow Dynamics.

- > Derivation of “Transport Eq.” Governing the Transport Phenomena Caused by Flow.
- > Physical Meaning of “Transport Eq.”
- > Incompressibility of Water.
- > Derivation of Governing Eq. for Diffusion Phenomena.
- > Derivation of Basic Set of Eqs. to be used in Environmental Water Flow.

# Contents

## §2 Features of Flow caused by Spatial Difference of Water Density.

- > Origin of Water Density Change.
- > Governing Equation Specialized for Flow with Density Change – Boussinesq Eq.
- > Feature of Density Stratification in Steady State – Behavior of Interface
- > Feature of Dynamics of Density Stratification – Oscillation & Stability of Stratification