

12 October 2012

Department of Civil Engineering
2012 Autumn Semester
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Water Quality Dynamics

Outline #2: Mass Conservation

1. Example of water quality simulation
 - Radioactive substance in Pacific Ocean
 2. Important unit/dimension for water quality
 3. Mass balance
 - Control volume and its key elements
 - Mass balance equations
 - Mass balance of water in nature
 - Steady state / Unsteady state
 - Difference equation / Differential equation
 4. Exercise
 - Ex. 1-1. Mass balance of water in a lake
 - Ex. 1-2. Algebraic mass balance on toxic chemical in a lake
 5. Basics of transport phenomena
 - Advection
 - Dispersion
 6. Exercise
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