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EVE 290
Introduction to Environmental Engineering

Homework #3

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1. A pickle-packing plant produces and discharges a waste brine solution with a salinity of 13,000 mg/L NaCl, at a rate of 100 gal/min, discharged into a stream with a flow rate above the discharge of 1.2 million gallons per day and a salinity of 20 mg/L. Below the discharge point is a prime sport fishing spot, and the fish are intolerant to salt concentrations above 200 mg/L. What must the level of salt in the effluent be to reduce the level in the stream to 200 mg/L?

2. 5 MGD of a conservative substance, with concentration 10.0 mg/L, is released into a stream having an upstream flow of 10 MGD and substance concentration of 3.0 mg/L. Assume complete mixing.

   (a) What is the concentration just downstream?
   (b) How many pounds of substance per day pass a given spot downstream?

Hint: For both problems, keep in mind that you are tracking *mass*, and carefully consider the dimensions of the quantities C (concentration) and Q_v.