

BAE 452/552

Problem set 1

Please make sure you state any assumptions that you make.

1. We talked about NPS or diffuse pollution and I provided you with a definition. In this assignment I want you to identify NPS pollution sources for some sites in the vicinity of where you live, work or study, and list pollutants associated with the NPS source. Your assignment:

A. **(for BAE452/552)** Visit two sites and describe what type of NPS source you observed, and what pollutants you suspect are associated with this source. Also speculate on the mode of transport of each pollutant, and possible ways to minimize or eliminate pollution of the nearest water body. If you have access to a digital camera, please include pictures!!!

B. **(for BAE552 only)** Briefly describe how/why NPS pollution is important in your research project or to your discipline. If your research or discipline contributes to control of NPS pollution, describe how.

2. **(for BAE452/552)** Use an anion-cation balance to determine if the following sample analyses for water are acceptable:

Constituent Concentration (g/m ³):	Water Sample I	Water Sample II
Ca ²⁺	44.4	76.0
Mg ²⁺	15.5	26.8
Na ⁺	13.8	23.0
K ⁺	7.8	19.6
Cl ⁻	11.4	37.2
SO ₄ ²⁻	33.1	240.0
CO ₃ ²⁻	-	10.4
HCO ₃ ⁻	195.2	126.5

3. **(for BAE452/552)** Determine the alkalinity (eq/m³) of water found to have carbonate [CO₃²⁻], bicarbonate [HCO₃⁻], and hydroxyl ion [OH⁻] concentrations of 21, 478, and 0.16 g/m³, respectively.