**ES473 Reading Review Questions – Keller Environmental Geology, Chapter 12, Waste Management**

Instructions: visit the ES473 class web site and download a digital MS word document version of the text review questions. Review and read the relevant textbook chapter posted on the ES486 moodle site (moodle.wou.edu) and answer the following questions. Answers should be word-processed with MS Word using figures and pasted images from the text book or favorite internet resources. Your work should look complete and professional.

1. Define ”integrated waste management”, provide some examples of why it’s necessary.
2. What is the concept of “dilute and disperse” or “dilution is the solution to pollution”? explain.
3. What are the “three R’s” of integrated waste management.
4. List and describe the goals of “materials management”
5. What is solid waste, provide some examples, what are the common methods of disposing of solid waste?
6. What are the primary components of Municipal (or urban) solid waste in the U.S.
7. Discuss the pros and cons of solid waste incineration.
8. Summarize the characteristics associated with sanitary landfills.
9. What is “leachate”, how is it formed, what are some of the handling methods and what risk does it pose to humans and the environment?
10. List the five geologic factors that are most important with respect to site selection for location of sanitary landfills.
11. True or False: western Oregon and the Willamette Valley are associated with ideal geologic and climatic conditions for the location of large-volume sanitary landfills? Explain your reasoning.
12. What types of groundwater aquifer systems are most are risk for landfill contamination. Explain your answer.
13. Draw a cross-sectional sketch and label all components associated with double-lined landfill with leachate collection system.
14. Draw a cross-sectional sketch and label all of the primary pathways for hazardous pollutants to escape from a solid-waste disposal site and impact the environment.
15. What monitoring systems are required assess the quality of environmental fluids associated with the landfill environment.
16. Discuss three case study examples of environmental contamination scenarios that can be associated with old abandoned landfills that pre-date modern environmental protection laws that we enacted in the 1970’s and 1980’s.
17. Briefly define and describe the following acronyms for environmental laws that regulate solid waste landfills:
    1. RCRA
    2. CERCLA
    3. “Superfund”
    4. SARA
18. Draw a cross-sectional sketch and label all of the parts and pieces associated with a “secure landfill” that is designed accordingly to modern environmental control standards.
19. What is the purpose and difference between “surface impoundments” and “disposal wells”, draw sketches to support your answer. What are the environmental drawbacks associated with each type of system?
20. List and discuss five environmental issues that are associated with high-level radioactive waste.
21. Write a one paragraph rebuttal to the statement that “given current trends in population growth on planet Earth, ocean dumping of solid and industrial waste is the best management practice for the future of civilization.”