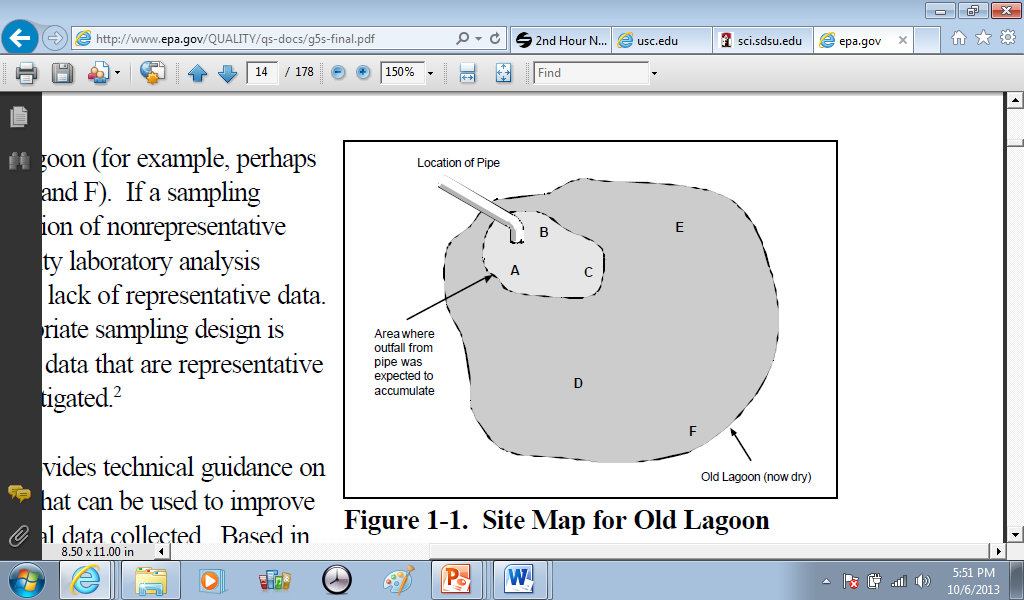
Environmental Sampling Worksheet   
By C. Kohn, Agricultural Sciences, Waterford WI

Group Names (first/last):

Hour Due: *at the end of the hour* Why late? Score: + ✓ -  
 If your project was late, describe why

**Directions**: use the accompanying PowerPoint (available online) to complete the questions as group. Each person is responsible for answering an equal share of the questions (e.g. if you have 4 people in your group, the first person should answer #1, #5, #9, etc.). Those not writing should work together to create the answer for the writer to write.   
+ = exceed expectations (full sentences, legible handwriting, etc.). ✓= met but did not exceed expectations.

1. In environmental science, what could constitute as the “field?
2. In order for their data to be accurate, a scientist must collect as much as possible. How do they do this without measuring every possible thing in an area?
3. Summarize what “representativeness” means in the space below. Use all lines given.
4. What would be necessary in order to collect a representative sample from this lagoon?
5. Define target population:
6. Define sampled population:
7. Define sample:
8. What is a measurement protocol?
9. What is the difference between a probability-based measurement and a judgmental measurement?
10. Describe a situation in which a judgmental measurement would be a better option than a probability-based measurement.
11. Describe a situation in which a probability-based measurement would be a better option than a judgmental measurement.
12. Define simple random sampling:
13. What are the benefits of simple random sampling?
14. Why wouldn’t this method always be used?
15. Summarize quadrat sampling in the space below:
16. Summarize systematic and grid sampling and transect sampling in the space below:
17. What is the composite sampling technique?
18. What are the Scientist’s Questions?
19. In what two ways is data like target practice?
20. How do data and variability relate to each other?
21. What does “reliability” mean in regards to data?
22. Summarize the two things that affect the reliability of data:
23. What is standard deviation?   
      
       
    1. How is standard deviation and data like butter?
24. What is the margin of error?
25. What is standard error?
26. How does standard error differ from standard deviation? List two ways:
27. What are error bars? What do they tell us?
28. In the space below, draw two graphs. One graph should be where the data is too similar to determine if two groups are different (i.e. they are statistically the same). The other graph should show data that indicates two groups are significantly different from each other. Error bars are needed to show this.