Water Quality Project Analysis

Field Biology

This report is an **individual** assignment. When you are done, e-mail your work to dan.bregar@corvallis.k12.or.us with the subject line "per *X your name* WQ analysis".

Results:

This section of your report will describe the information you found and include data tables (NOT graphs!) that summarize the measurements and calculations you made.

This section should consist of 2-4 Excel data tables. Two or three of these tables will be the individual daily data that you collected the week before Winter Break and last week. The other table will be a combined data table (if it makes sense to do this with your data). Make sure your units show up in the column headings, not along with your data itself.

Discussion:

In this section of your report, you will use your data to answer your question. This section will include graphs that show the trends in your data along with your interpretation of those graphs and an overall critique of your study.

You will need to have one graph for each of your data tables. That means you will have 2-4 graphs. The graphs should be X-Y scatter plots with your 2nd factor on the X-axis and one water quality parameter on the Y-axis. Use Excel to add a trendline to each graph showing the correlation between the water quality parameter and your 2nd factor. You will need to replace any verbal descriptions with numbers (Excel cannot create scatter plots from words).

For your written analysis, answer the following questions (in paragraph form) for EACH graph:

1. What was the correlation that your data shows – positive (up and to the right); negative (down and to the right); or none (horizontal line)?
2. What does this correlation tell you about the answer to your question for this water quality parameter?
3. What ecological factors do you think might have caused the correlation (or lack thereof) that you see? (You do not need to answer this for daily data graphs that show identical trends.)

Your response to these questions should be about 2-3 sentences in length for each graph in your report.

Here is an example of what your analysis should look like:

Results:

The data tables below summarize our findings:

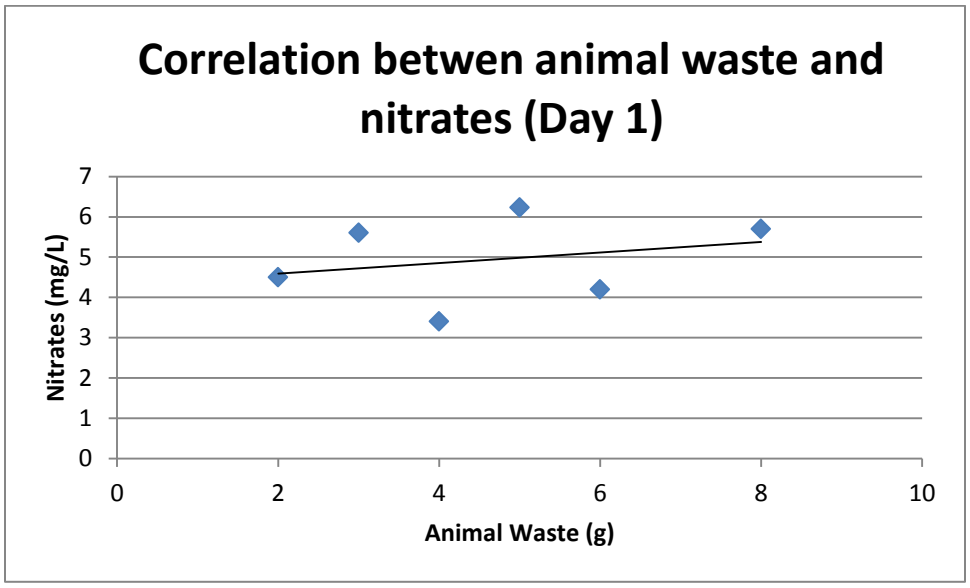
Day 1	
Animal Waste (g)	*Nitrates (mg/L)*
3	5.6
5	6.23
2	4.5
8	5.7
4	3.4
6	4.2

Day 2	
Animal Waste (g)	*Nitrates (mg/L)*
3	0.8
5	0.6
2	0.3
8	0.4
4	0.7
6	0.2

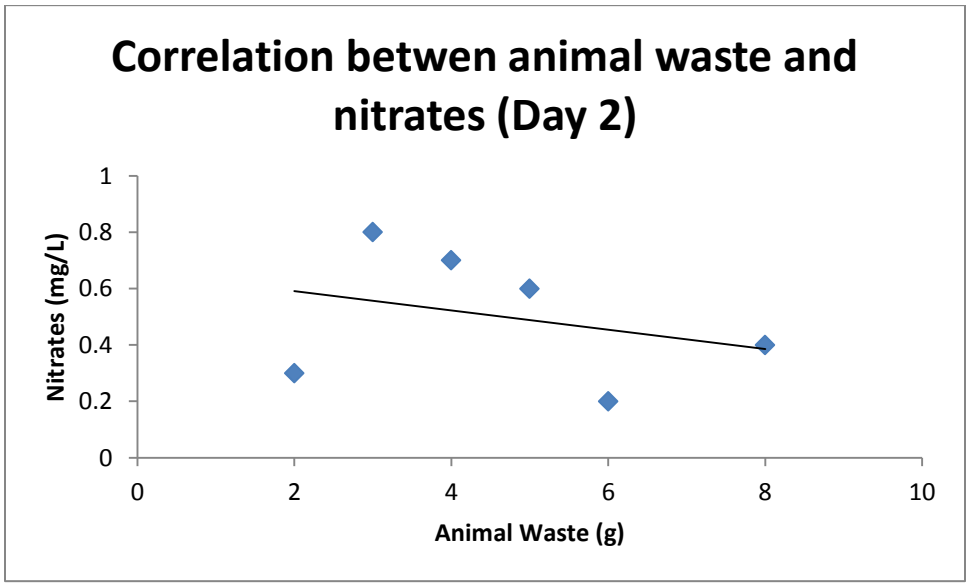
Days 1 and 2 combined	
Animal Waste (g)	*Nitrates (mg/L)*
3	0.8
5	0.6
2	0.3
8	0.4
4	0.7
6	0.2
3	5.6
5	6.23
2	4.5
8	5.7
4	3.4
6	4.2

Discussion:

The following graphs show the correlations we observed between the nitrates, conductivity, and visible animal waste.

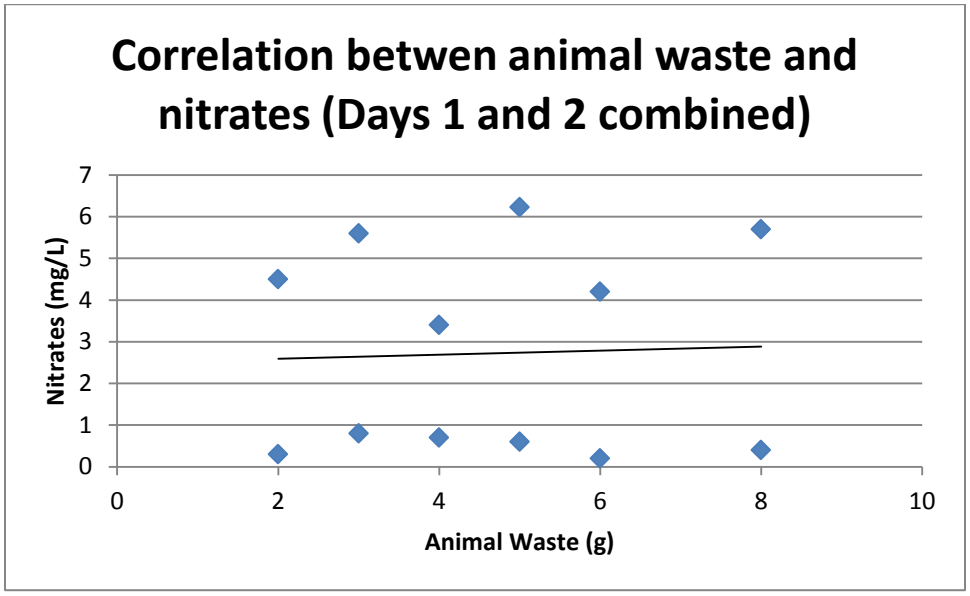


This graph shows that there is a slight positive correlation between the amount of nitrates we measured and the amount of animal waste in each location on this date. This indicates that as nitrate levels increase, the amount of animal waste increases as well. If this result is accurate, it seems to us that the most likely reason for this is that nitrogen from the animal waste wasted into the river, increasing the nitrate levels in the water.



This graph shows that there is a slight negative correlation between the amount of nitrates we measured and the amount of animal waste in each location on this date. This indicates that as the amount of nitrates in the water increases, the amount of animal waste decreases. If this result is accurate, it could be because the animal

waste interacts with some other chemicals in the soil, preventing the soil from releasing nitrates in the water.



This graph shows that all of our data combined shows a very slight positive correlation between the amount of nitrates we measured and the amount of animal waste in each location on this date. This indicates that overall, nitrates increase as the amount of animal waste increases as well. It seems to us that the most likely reason for this is that the animal waste contains chemical compounds that wash into the water, increasing the amount of nitrates in the water.