Name(s):

Date:

Stream Site Name / Number:

Telling Your Stream Story: Analyzing Your Data

Now that you have collected a full year of monitoring data, it's time to put your mathematical and computational thinking skills to work! Use the plots for your stream site to spot patterns, notice unusual results, and build explanations for your stream's water quality.

Start by looking at the plots for the seven water quality measurements your class collected during your sampling days in the fall and the spring (temperature, conductivity, salinity, pH, turbidity, flow, and TDS).

1. **Use the table below to compare your results to what you'd expect in a healthy stream. Do your measurements mostly fall within the normal range?**
   Hint: Use your Field Guide to find normal ranges for each parameter.

Water Quality Parameter	**Expected Range for a Healthy Stream**	**Did your measurements fall within the expected range for a healthy stream?** Yes	No
Conductivity			
Salinity			
Total Dissolved Solids (TDS)			
pH			
E. coli			

2. **What overall trends/patterns do you notice in your water chemistry results?**
   Think about:
   - Do any parameters seem to be connected or change together?
   - Are any values consistently high or low?

   Your Response:

3. **Do you notice any unusual or unexpected values?**
   Think about:
   - Are there possible errors in data collection or entry?
   - Are there outliers that stand out?
   - If any values are outside the expected range, what might explain that?

   Your Response:

4. **How do these results compare to what you expected?**
   Think about:
   - Do the results make sense based on your site conditions?
   - What was different from what you predicted?

   Your Response:

5. **What do you expect future measurements to look like?**
   Think about:
   - Would your results vary under different conditions (like season, time of day, or weather)?
   - What will you look for next time?

   Your Response:

Look at the plot that contains the *E. coli* measurements your class collected.

6. **What does the *E. coli* plot show you?**
   Think about:
   - Is it what you expected based on your site conditions?
   - Why or why not?

   Your Response:

7. **Do you see any unusual values, possible errors, or outliers?**
   Think about:
   - If something looks off, what might have caused it?

   Your Response:

8. **What do the horizontal-colored lines on the plot mean?**
   Think about:
   - How do they relate to safe or unsafe levels for different types of recreation?

   Your Response:

9. **What do you expect *E. coli* results to look like in the future?**
   Think about:
   - Could the numbers change with different weather, season, or stream conditions?

   Your Response:

Move to the macroinvertebrate and water quality plots.

10. **What does the macroinvertebrate plot show you?**
    Think about:
    - Are the quantities what you expected?
    - Do you see anything surprising?

    Your Response:

11. **How does the water quality rating (WQR) compare to what you expected?**
    Think about:
    - Does it make sense based on the bugs you found?

    Your Response:

12. **What do you expect macroinvertebrate data to look like in the future?**
    Think about:
    - Would you expect changes with the season, weather, or stream conditions?

    Your Response:

Drawing Conclusions

You've analyzed your data – phew! Now it's time to construct clear explanations and design ideas for what should happen next. This final report tells the last part of your stream's story. It explains what you learned, how you gathered evidence, and what your results mean for the health of your stream site. Your report will be posted on a Google Site, along with your stream data dashboard (the Google Sheet with your plots). Write it for an audience who hasn't done this work with you!

What to include:

Use these questions as a guide. Work with your team to write one clear report, starting on the next page.

Introduction:

- What phenomenon or driving question were you exploring?
- Where did your study take place?
- Provide a brief description of your field site.

Study Overview & Methods:

- What types of data did you gather to collect evidence for your question? (*Example: water chemistry, E. coli, macroinvertebrates – be specific*)
- How did you collect your data?
- What did you do with your data after collecting it? (*Example: entered it into the dashboard, made plots, calculated WQR*.)
- How did you analyze your data?

Discussion/ Conclusion:

- What claims can you make based on your evidence?
- What does the evidence mean for your stream ecosystem, including the plants, animals, and people who use the water?
- What recommendations can you make regarding effective actions watershed residents can take to help protect and improve water quality?
- Use reasoning to connect your evidence to your claims and explain the bigger implications.

Questions for Future Studies:

- What questions do you still have about the health of your stream?
- How could you plan and carry out an investigation to answer these questions?
- Why is it important to answer these questions for your stream and community?

Site Report for _____

(*Write your stream site name here – for example, Crockery Creek at Thatcher Park*)