Water Quality & Aquatic Ecosystems

SNC1W | Student laboratory assignment | 1 of 4

Prepare for your investigation

Name: _____ Date: _____ Class: _____

Research question

How do nutrient inputs, sediment and warming influence the condition of a freshwater ecosystem?

Learning goal: use the virtual model to gather evidence, explain water quality & aquatic ecosystems and communicate a supported conclusion.

Materials: WorksheetGalaxy virtual laboratory, this assignment, calculator or spreadsheet if needed. Virtual observations only; do not recreate hazardous procedures or perform physical fitness tests without teacher approval.

1. Define two relevant scientific terms from the Background Information tab. (K/U)

2. Write a prediction or hypothesis with a scientific reason. (K/U, T/I)

3. Identify the variable or feature compared, the measured outcome and constants or consistent observation criteria. (T/I)

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Perform the virtual laboratory

Open the corresponding virtual lab and read Background Information. Follow the investigation instructions below. Record authentic simulated results; do not invent data.

• Read the Background Information tab. Define each water-quality variable in your own words.

• Choose Pristine Lake . Run a baseline sample and record the results.

• Compare the three other sites using their preset conditions. Record at least four trials.

• Choose one site and vary only one factor at a time: nutrient runoff, sediment or temperature. Record at least three additional trials.

• Use the graph to identify the strongest change in the illustrative health index. Explain what you controlled.

• Propose two evidence-based conservation actions, noting trade-offs and uncertainty.

• Complete the formal Lab Report tab and export your work as JSON or print it to PDF for teacher submission.

Variables

Record each completed observation using the simulator’s record control when available. Use Data & Graphs to review results. Export CSV if available; attach additional rows or screenshots when needed.

Record the exact settings and any changes to the method.

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Observations & results

Enter the actual results. Keep trial IDs consistent between continued tables. Attach the full exported data or extra sheets when the procedure requires more rows. Include units as displayed.

Data table 1

Trial / item	Site	Runoff %	Sediment %	Warming °C	Buffer %

Data table 1 — continued (2)

Trial / item	pH	DO mg/L	NO_3 mg/L	PO_4 mg/L	NTU

Data table 1 — continued (3)

Trial / item	Health /100

Qualitative observations / sample calculation (show units where applicable)

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Analysis, conclusion & assessment

4. Present a labelled graph of a measured relationship, or an annotated diagram / comparison chart for qualitative investigations. Attach it separately. Explain the pattern using recorded evidence. (C, T/I)

5. Compare two contrasting observations from your investigation of Water Quality & Aquatic Ecosystems. Explain the difference using the background information. (K/U, A)

6. Use a specific recorded result to answer the research question. Explain the scientific reasoning behind it. (K/U, A)

Conclusion and evaluation: answer the research question, revisit the prediction using evidence, identify a model limitation and propose an improvement. (T/I, A)

Submit this assignment plus your completed Lab Report (printed or saved as PDF from the lab) and any supporting data/figures.

K/U: accurate concepts /10	T/I: method, data, reasoning /12	C: clear tables, units, report /8	A: explanation, conclusion, transfer /10

Total: /40