

Teacher _____
Land Use _____

Student _____

RiverWeb Jigsaw 1

Part I. Using a Time Series Graph to compare and contrast two variables.

- Go to the RiverWeb site (<http://mvhs1.mbhs.edu/riverweb/index.html>)
- Click on the Login button. Enter your Login and Password.
- Click on the Pristine Forest.
- Select Air Temperature for the top display.
- Select Water Temperature for the bottom display.
- Click on Change Display.
- Answer the questions below.

1. The graph of air temperature demonstrates seasonal variation. Describe the evidence that supports this claim.

2. What is the relationship between water temperature and air temperature? Describe the evidence that supports your claim.

Part II. Comparing your Station with the Pristine Forest

A. Table of Averages of Indicators-Land Use

- Click on your land use area
- Using RiverWeb locate the average for each of the indicators within your land use group. Use the Table of Averages of Indicators to organize your data.

B. Table of Averages of Indicators-Pristine Forest

- Click on the Pristine Forest
- Locate the average for each of the indicators within the Pristine Forest. Use the chart provided to organize your data.

C. Data Analysis

- Calculate the difference for each indicator between your station and station 0.
Example: [Mixed Agriculture Average Value-Pristine Forest Average Value.]
- Calculate the percent change for each indicator. [(indicator at your station-indicator at Pristine Forest) divided by indicator at Pristine Forest] x 100.

D. Data Analysis: Entire Group

- Discuss the percent change for each indicator. Hypothesize why you see these changes. Predict where these changes might be coming from.
- Order the percent change of indicators from smallest to greatest % change, and start with 1.

E. Individual Response

- In a few sentences describe the quality of water at your station vs. the water quality at the pristine forest.

At this point you have completed chart 1. Prepare to move into your specific expert/indicator groups.

Write down your assigned indicators.

Teacher _____

Student _____

Indicator 1 _____

Indicator 2 _____

RiverWeb

Jigsaw 2

During this activity you will work in groups according to your assigned indicators. At the end of this jigsaw you will become an “expert” on how land use impacts the different indicators within a watershed. Before meeting with your indicator group, make sure you have completed your Table of Averages of Indicators from Jigsaw 1.

1. Starting with land use 1, each group member will report the % change (or Difference) for the two indicators so that each group member can record the values on Jigsaw 2 Individual Chart
2. Discuss your results within your group.
 - Order from smallest to greatest
 - At what station do you see a greater % change (difference)?
 - At what station(s) do you see less of a change?
 - Explain how land use impacts water quality.
3. Individual Response: Please write your response on your individual chart.

Write a paragraph in which you describe how land use impacts water quality as demonstrated by these two indicators.

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Jigsaw 3

During this activity you will work in groups according to your assigned Land Use. Obtain a copy of RiverWeb Jigsaw 3 Individual Indicator Relationships Chart (make sure you have a copy with your indicators).

A. Indicator Relationships using Scatter Plots (Chart 1)

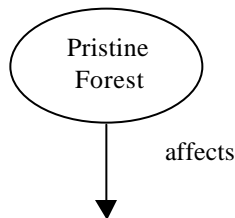
1. Work with your partner on RiverWeb WQS.
2. Click on your land use station
3. Select the first pair of indicators found in your chart. (Chart 1)
4. Click Change Display
5. Click on Draw Scatter Plot
6. Observe the graph & Sketch on your chart
7. Do you see a strong (S) relationship, weak (W) relationship or no relationship?
8. Do you see a positive (+) relationship, negative (-) relationship or no relationship?
9. Record your observations in the space provided. (Chart 1)
10. Close the Scatter Plot.
11. Select the next pair of indicators.
12. Repeat steps 4- 11 for each pair of indicators in your chart.

B. Indicator Relationship Comparison

1. Meet with your designated Land Use Group.
2. Each group member should have their completed copy of Indicator Relationships using Scatter Plots (chart 1).
3. Take out the Indicator Relationship Comparison (chart 2).
4. As a group, complete the Indicator Relationship Comparison chart. An example is provided for you on the chart. You will need to ask everyone in your group for the names of the indicator pairs which fall into each column; strong, weak and no relationship. This will allow you to look at all of the pairs of indicators, which have a strong relationship, weak relationship or no relationship.
5. You are now ready to create a concept map.

C. How Does Your Land Use Impact Water Quality?

- Individual Activity
- You will draw a concept map depicting how your land use affects water quality. Start with your land use. Example



- Use as many of the indicators as you can from Chart 2 (Indicator Relationship Comparison). Link the indicators to your land use group using arrows. Start by linking those with a strong relationship first. Add the pairs of indicators with weak relationships next. Finally look at the indicators in the “no relationship” column. Can you link some of these pairs of indicators? (use your prior knowledge to make your final decision).
- Add a descriptor to each arrow drawn. This describes the relationship of the indicators linked.

D. Land Use Group Collaboration

- Once each individual has created their concept map, meet with all of the members in your land use group.
- Share your maps. Discuss your similarities and differences.
- Working together as a group, create one concept map for your land use. All members in the group must agree on the terms used in the concept map (this includes the descriptors).
- Assign one person to draw the Final Concept map on large paper.
- Assign one person to present the map.

E. Final Concept Map Presentation

- Each Land Use group will present their concept map to the entire class.
- One person from each group will be selected to present the map.
- After all maps have been displayed, the entire class is charged with creating a Final Water Quality Concept Map.