

Name: _____

Land to Sea:

Searching for the Source of Pollution

1. Name some types of pollution that can move from land to the ocean.
2. Definition of pollutants

Type of pollution	What is it?	Source (where does it come from?)	Which animal does it harm?
<i>Toxoplasma gondii</i>			
Domoic acid			

3. What evidence did John Snow use to show that the source of cholera was the water pump on Broad Street?
4. Write the title of the map that shows the locations of healthy and sick animals.
5. Using a dry erase marker on your map, circle the river that brought the pollutant to the ocean. Explain how you know which river the pollutant came from.
6. Name the drainage area that provides water to the river that you circled (name the watershed).
7. Write the title of the map that you used to identify the watershed.

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8. What is the definition of a watershed?

9. Based on what you know about watersheds, where could the source of the pollutant be within the watershed? Why? (Hint: Do you know an exact location?)

10. Use your marker to outline the watershed on the Land-Use Map in order to determine which watershed is the source of your pollutant.

11. Using visual observation, estimate what percentage of land is used for cities (urban), farming (agricultural), and nature (natural) in the three displayed watersheds using the color legend.

Watershed	% agricultural land	% urban land	% natural land
Pajaro			
Bolsa Nueva			
Carmel River			

12. If you are studying sea otters, is the source of *Toxoplasma gondii* more likely to be domestic or wild felids (hint: are there many urban areas with domestic felids in this watershed)? If you are studying sea lions, what is the most likely source of nutrients that causes algal blooms and domoic acid (hint: which type of land-use is most common in the watershed)?

Explain how you found your answer.

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13. Decide with your partner how you will present your conclusion to another group. Make sure to support your conclusion using evidence. Your evidence should include:
- a. The map that shows the locations of sick animals with the source river *circled*.
 - b. The land-use map with the source watershed *outlined*.
 - c. The *table* of the percentages of land-use within the polluted watershed.

Graphic Organizer for Discussion

Fill out the graphic organizer for your investigation before sharing your conclusions with another group. As the other discussion group tells you about their investigation, fill out the other side of the graphic organizer.

Sea otter	Sea lion
I want to argue...	I want to argue...
My evidence includes...	My evidence includes...
I know this because...	I know this because...