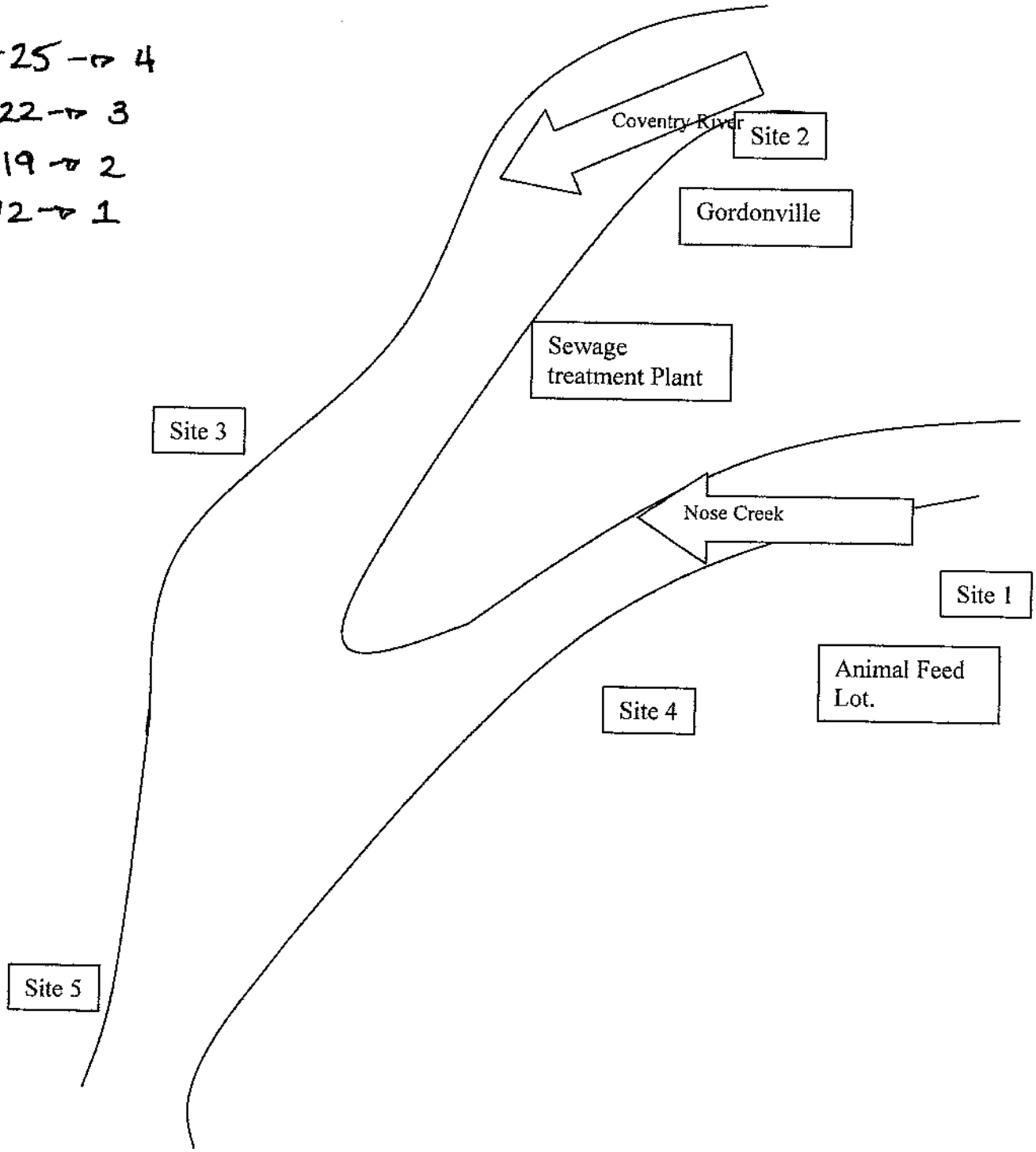
/25

Name: _____
Date: _____
Class: _____

Coventry River:
You will be looking at a river that may have been polluted. The river has 5 sites that information was gathered at. You will be observing the information gathered and answering questions about the environmental quality of the river.

For all questions refer to the picture of Coventry River below.

23-25 → 4
20-22 → 3
13-19 → 2
0-12 → 1



Observations:

Table A: Coventry River and Nose Creek Chemical and Physical Data

	Turbidity (mg/L)	Phosphates (mg/L)	Dissolved Oxygen (mg/L)
Site 1	50	12	10
Site 2	55	11	10
Site 3	60	18	8
Site 4	73	29	2.5
Site 5	70	27	3.5

Table B: Biological Data Obtained From Coventry River and Nose Creek

Site	Mayfly	Stonefly	Caddis Fly	Beetle	Midge	Leech	Other Worms
Site 1	280	193	51	15	125	17	21
Site 2	275	185	47	14	123	15	19
Site 3	230	173	41	12	115	14	17
Site 4	5	2	12	2	252	85	121
Site 5	10	5	10	3	231	79	111

Questions:

1. At what site did the water have the most undissolved solid in it (dirtiest water). Why?

/1 At Site 4. This is based on the Turbidity level being the highest.

2. Why does the level of undissolved solids increase at site 4?

/1 It is downstream from the Animal Feedlot.

3. What stage in water treatment removes undissolved solids?

/1 The Primary Stage of wastewater Treatment.

4. What do you think is the major polluter of undissolved solids in Coventry River and Nose Creek?

/1 The Animal feedlot adds the most undisolved solids but #3 also go up @ site 3 showing that Gordonville or the water treatment plant also contribute.

5. What are two possible sources of phosphate pollution in any water system?

/2 Any 2 of
- → Farms (such as animal feed lots) → Golf courses.
- → Residential Runoff (fertilizers) → Sewage Treatment Plants

6. Where is the highest level of phosphates? Why?

/2 Site 4. Phosphates are in animal feces. (Site 4 is next to the animal feedlot).

7. Why does site 5 also have a high phosphate concentration?

/1 It is ~~down~~ downstream & Phosphates are taken these from both Coventry River & Nose CREEK.

8. What level of dissolved oxygen is necessary for the survival of a large variety of aquatic organisms?

1 According to the data, Biodiversity increases @ 8 mg/L of Dissolved oxygen. 8-10 mg/L or 8-10 PPM.

9. What site has the lowest level of dissolved oxygen?

1 Site 4.

10. Explain why the level of dissolved oxygen at this site seems to be very low.

1 Bacteria would feed on the waste from the animal feedlot & cause algal bloom. Algae dies & stops O_2 from entering the water.

11. At site 5 the level of dissolved oxygen increased slightly. What might cause the level of increase slightly.

1 As water travels downstream O_2 is mixed in.

12. What does the high level of midge, leech and other worms indicate about site 4?

1 The water is non-Potable/dirty/ not healthy.

13. If you had frogs living at each of the five locations in the river, what site would you expect to have the most unhealthy frogs (provided they don't move around a lot).

1 Frogs indicate a healthy water system & so would not be healthy @ site 4.

14. Of all the creatures listed in the information which one is the best indicator of water quality and why?

/2 Mayfly have the greatest variance in #. For example, @ a Dissolved oxygen level of 10mg/L these are 280 Mayflys while @ a D.O. of 2.5mg/L these are only 5 (a difference of 275). 280-5 = 275

15. Of the three kinds of information about the water – turbidity, phosphate, and oxygen – which is the best water quality indicator? Which is the worst? Why?

/2 Oxygen is the best. @ Times water can have dirt mixed in but many organisms can still thrive because of high oxygen levels. This also makes turbidity the worst indicator.

16. On the map there are 2 major sources of pollutants. Are they point sources, or non-point sources?

/2 The sewage treatment plant is a point source (water is added to the river via a pipe). The animal feedlot is non-point source as it is spread out.

17. What kinds of non-point source pollutants should also be taken into account in this study?

/1 (Need @ least 2) Could be: Nitrates
: Potassium
: Toxins
: Heat
: OTHER RELEVANT IDEAS that are Pollutants.

18. What other kinds of water quality testing should be done to provide more information? What other kinds of things should be tested for? List at least 3 and explain why you should test for them.

/3
- PH - To see the acidity range.
- TEMP. - To see if heat is being added.
- Nitrates - To monitor fertilizer runoff.
- Aquatic Plant survey - to check on health of water system.
- OTHER Relevant example.