**ESCI 1301 *Understanding the Water, Carbon, Nitrogen and Phosphorous Cycles***

**Name of Your Group: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Group Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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*In your homework that was due before class today you should have noted how one of these biogeochemical cycles (water, carbon, nitrogen, phosphorous) was found in the ecosystem shown in the photograph we looked during our last class. You should have determined why this molecule or element was important for life, determined 2 reservoirs and 2 fluxes of this molecule or element in the ecosystem, and how human activities might influence these fluxes. You also should have made a sketch of how the reservoirs and fluxes interact and should have brought this with you today. If you turned in the homework, but forgot to bring a copy of it with you, please go on-line to look at your submission.*

*Each group member should take turns explaining the biogeochemical cycle they examined for the homework. Be sure to explain how your cycle is related to the Rio Grande and which fluxes come from geologic processes and which come from biologic processes.*

*Based on your knowledge of these four cycles please answer the following questions:*

*Which reservoirs do you think are sources (release more material than they accept)? Which are sinks (accept more material than they release)?*

*See actual figures in book. Rocks and soils act as good sinks (the material is buried away for a long time) for carbon, phosphorous, nitrogen and water in many situations. The atmosphere is a source of water, land plants can be a source of carbon, nitrogen, and phosphorous.*

*What seems to speed up the fluxes the most?*

*A lot of human activities speed up fluxes. Also rising temperatures can increase things like evaporation.*

*What seems to slow down the fluxes the most?*

*Slowing down human activity is one possibility.*

*Do there appear to be any connection between the cycles (e.g., how might an increase in vegetation affect all the cycles?)*

*These cycles are very interrelated. I’m hoping you found lots of connections!*

*What human activity seems to be influencing the cycles the most?*

*Your answers will vary. Use of fertilizer, burning of fossil fuels and using phosphorous for things like detergents all have impacts.*

*Make a new diagram on the back of this page that shows how you think the 4 cycles might be interrelated to one another.*

*Answers will vary.*

*Suppose that half of what you see in the photo becomes a housing development. What do you think will happen to the ecosystem and why?*

*You are definitely going to see some plants and animals disappear. If there is more concrete (in roads and sidewalks) then the water won’t sink into the ground but will run off and cause flooding during rains.*

*Suppose that the county decides to introduce more native plant species into the region You might see some types of animals come back to the area. This has happened in parts of El Paso where they have created parks and restored the land.*

*Why is this ecosystem important to humans in the El Paso area?*

*Answers vary – we get water from the river and breathe oxygen the plants make. We enjoy walking along the river, etc. See your book for more ideas.*