# Lab 17 Response: Water Use and Pollution Audit

## Part 1: Domestic, Agricultural, and Industrial Water Footprints

**Table 17.1. Domestic (personal) water use audit**Use the information provided in the instructions for Part 1 to calculate your domestic water use in the table below. Show all your calculations.

|  |  |  |
| --- | --- | --- |
| **Sources of Water Usage** | Number of uses or minutes of water usage (per person, per day) | Calculate amount of water usage (per person, per day) |
| **Flushing toilets**  gallons/flush: |  |  |
| **Bathing / showering**  Shower—water flow for shower in gallons/minute:  Bath—water flow for bath in gallons/minute: |  |  |
| **Handwashing / brushing teeth**  water flow for faucet in gallons/minute: |  |  |
| **Laundry**  gallons/load: |  |  |
| **Dishwashing**  Dishwasher—gallons/load:  Handwashing—water flow for faucet in gallons/minute: |  |  |
| **Cleaning / cooking / drinking**  water flow for faucet in gallons/minute: |  |  |
| **OTHER** including lawn / garden / car washing / pets / leaks |  |  |
| **Total domestic water use =**flushing toilets + bathing / showering +hand washing / brushing teeth + laundry + dishwashing + cleaning / cooking / drinking + other | gallons/person/day:  Convert to liters: consumption of water in gallons/person/day x 3.785 = consumption of water in liters/person/day  liters/person/day: | |

### Questions

1. Using the information provided in the lab directions about the United Nations Resolution 64/292, which recognized the human right to clean drinking water and sanitation, discuss how your water supply measures up in terms of

* Availability:
* Accessibility:
* Affordability:
* Quality and safety:
* Acceptability:

1. Which of the following measures do you take to conserve water? Check yes or no as appropriate. If the measure does not apply to you, explain why in the “comment” column, or use that column to make any additional remarks. Space has been provided for you to include water conservation measures you employ that were not included in the list.

|  |  |  |  |
| --- | --- | --- | --- |
| **Water Conservation Strategies** | Yes | No | Comment |
| I have installed low-flow shower heads to reduce water use. |  |  |  |
| I take a shower for less than 5 minutes and turn off the water while I am soaping up to reduce water use. |  |  |  |
| I conserve water by shutting the tap as I brush my teeth, shave, or wash my hands. |  |  |  |
| I have installed faucet flow restrictors to reduce water use. |  |  |  |
| I have installed water-saving toilets, gray-water systems, or toilet dams to reduce water use. |  |  |  |
| I do not have any leaky faucets or pipes on my property. |  |  |  |
| I wash only full loads of laundry (or I have a washer with multiple water level settings). |  |  |  |
| I use the dishwasher only for full loads. |  |  |  |
| I use the dishwasher on the shortest possible cycle. |  |  |  |
| When hand-washing dishes, I turn off the water while soaping the dishes. |  |  |  |
| I keep a reusable jug of water in the refrigerator, so I do not waste water when getting a drink. |  |  |  |
| I do not use a garbage disposal. |  |  |  |
| I do not water my lawn. |  |  |  |
| I employ water saving strategies in my yard by planting drought resistant plants and/or planting native plants. |  |  |  |
| I employ water saving strategies in my yard such as using drip irrigation and/or irrigating plants with captured rainwater or filtered gray water. |  |  |  |
| I do not use a lot of water in washing things like my car, patio furniture, etc. |  |  |  |
| Other (describe): |  |  |  |
| Other (describe): |  |  |  |
| Other (describe): |  |  |  |

1. Report your agricultural water footprint calculations from the water footprint calculator as follows:

Your annual agricultural footprint:

agricultural water use in cubic meters/person/year x 1,000 = agricultural water use in liters/person/year

\_\_\_\_\_\_\_ cubic meters/person/year x 1,000 =\_\_\_\_\_\_\_ liters/person/year

Your agricultural footprint on a per-day basis:

agricultural water use in liters/person/year divided by 365 = agricultural water use in liters/person/day

\_\_\_\_\_\_\_ liters/person/year divided by 365 = \_\_\_\_\_\_\_ liters/person/day

What item in your food consumption has the largest water footprint?

1. Report your industrial water footprint calculations from the water footprint calculator as follows:

Your annual industrial footprint:

industrial water use in cubic meters/person/year x 1,000 = industrial water use in liters/person/year

\_\_\_\_\_\_\_ cubic meters/person/year x 1,000 = \_\_\_\_\_\_\_ liters/person/year

Your industrial footprint on a per-day basis:

industrial water use in liters/person/year divided by 365 = industrial water use in liters/person/day

\_\_\_\_\_\_\_ liters/person/year divided by 365 = \_\_\_\_\_\_\_ liters/person/day

1. Reflect on your *water use*:
   1. Considering all your water use—domestic (i.e., personal use), agricultural, and industrial—are you/should you be concerned about your level of water use? Which areas of your water use concern you most? Explain your thinking.
   2. How could you reduce your water footprint especially in the areas of water use that do/should concern you? Identify two ways.

## Part 2: Contributions to Water Pollution

**Table 17.2. Contributions to water pollution.**Use the information provided in the instructions for Part 2 to identify and describe activities that result in your contributing to water pollution (from home, work, school, recreation, etc.) and analyze the effects of your pollution in the table below.

|  |  |  |
| --- | --- | --- |
| **Category of Pollutant** | **Personal Contributions**  Describe your activities that contribute to each category of water pollution (describe at least 2 activities and identify whether contributions are direct or indirect) | **Effect of Pollutant**  Describe the effects of each type of pollutant (describe specific effects of each pollutant on ecosystems as well as for human health) |
| Nutrient pollution |  |  |
| Waterborne pathogens |  |  |
| Toxic chemicals |  |  |
| Oil pollution |  |  |
| Sediment |  |  |
| Thermal pollution |  |  |
| Plastics |  |  |

### Questions

1. Explain the mechanism of natural selection. How would you respond to someone who tells you not to worry about water pollution because species will develop adaptations to deal with the negative effects of pollution through natural selection? Explain your thinking. Include examples in your response.
2. Reflect on your *contributions to water pollution*:
   1. Are you/should you be concerned about your contributions to water pollution? Why or why not? Which of your contributions to water pollution concern you most? Explain your thinking.
   2. How could you reduce your contributions to water pollution especially in the areas of water pollution that do/should concern you? Identify two ways.