

1.1 Where does your water come from?

(Word Processor, internet)

10 points

Name _____

Due Date _____

In this assignment you will look at the source for your household drinking water.

1. Where do you live? Give a city and a zip-code.
2. Are you on a public water supply (like a water district), a private water system, or a personal water source (typically a well on your property)?

The following questions assume you are on a public water supply (most people are). If you are not, skip to question 8

3. Who provides your household water? Give the name of the agency, district or company.

Go to your water company/district's website or call your water company and answer the following:

4. What is the source of your district's (and your) water? What percentage is from surface sources? What percentage is from groundwater? Where are the wells that provide the groundwater? Where are the surface sources?
5. How many customers does your water company serve?
6. Who is responsible for your water company and how are they chosen? (i.e. is it run by an elected board or set of commissioners, by the mayor... etc.?)

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7. Every large water supplier is required to produce an annual "Consumer Confidence Report", which includes information about water quality. List the variety of units that these numbers are in and explain what those units mean. For example, what does ppb mean?
8. Which is larger ppm or ppb? (Think back to fractions).
9. For each of the contaminants listed, give the amount in your water supply and the allowable amounts. Is your water in compliance with EPA requirements?
10. If you are on your own well water or a very small water system, please determine 1) when the last time your water quality was tested, what the results were, and what the current threats to your well water quality are. How deep is your well? How much does it produce? Have you ever had water quality problems?
You may want to use the resources at <http://dnr.metrokc.gov/wlr/wq/groundwater-data.htm>)

Type the answers to Q 3, 4, and 7 or Q 8 and submit along with the other answers to your instructor by the due date.

Type and submit the correctly formatted sources of any information from this assignment

1.2 Water Use at your Home and beyond

(Word Processor, bucket)

20 points

Name _____

Due Date _____

In this assignment you will look at your use of water both in your residence and in other ways.

1. Where do you get your water? _____ (e.g. Highline Water District, well on property, etc.)
2. How many people live in your household?
3. Do you water a lawn or irrigate gardens or crops? How much area do you irrigate? Describe how you determined this area.

Next, you will determine your total water usage. You can do this one of 3 ways. You can look at a water bill, read your water meter, or do a complete audit. It will be far easier to do one of the first two options, but if you live in an apartment building it is often not possible to use these first two methods.

Calculating Water Use From Your Water Bill

If you obtain water from a community water system, you probably receive a water bill that tells you how much water you use. Many water utilities provide customers with bills that contain information regarding the amount of water consumed and average daily consumption during the billing period. If the average daily consumption is not provided, you can calculate it by dividing the total amount of water used by the number of days in the billing period. Determine whether your water is measured in cubic meters (m³), cubic feet (ft³), gallons (gal), or liters (L) and convert to gallons.

For converting into gallons, use the following conversion factors:

m³ x 264 = gal

ft³ x 7.48 = gal

L x 0.264 = gal

There are several conversion tools available on the Internet that can be used to make your calculations easier. (<http://www.onlineconversion.com/volume.htm> or <http://www.mathconnect.com/volumel.htm>)

Calculating Water Use With A Water Meter

If your water bill does not provide water consumption data, then you can read your water meter to obtain this information. Water meters measure the total amount of water used in your home and are usually located at the property line or on the house. The meter may measure in cubic meters, cubic feet, gallons, or liters. To obtain your water use over the course of a 24-hour day, read your meter at the same time on two consecutive days. You may want to measure water use for several days and then calculate a daily average.

Estimating Water Use Without A Meter

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If you do not have a water meter you can estimate your water use. It will be important to measure all water use, indoor and outdoor, to accurately estimate the quantity of water used. To determine how much you consume water in your home it is necessary to measure water flow from each fixture in your house:

- ☒ To calculate flow for faucets (indoor and outdoor) and showerheads, turn faucet to the normal flow rate that you use, and hold a container under the tap for 10 seconds and measure the quantity of water in the container. Multiply the measured quantity of water by 6 to calculate the gallons per minutes (gpm).
- ☒ Toilet flows are usually marked on the toilet as a certain number of gallons per flush (gpf) or liters per flush (lpf). (note you will do this on a question below)
- ☒ If your appliances or fixtures are relatively new, you may be able to obtain the flow rate from the manufacturer's specifications. Otherwise, use the following averages:
 - Washing machine . 41 gal per use
 - Dishwashing machine . 9 gal per use
- ☒ Next, measure how many times per day or how many minutes each day you use each fixture or appliance. Multiply the water flow per fixture by the minutes per day the fixture is used. Multiply the flow average for each appliance by the number of times the appliance is used each week. Don't forget to include the amount of time you use outdoor faucets each day. There are water audit spreadsheets available online that will be helpful.

4. Type a statement of what your daily household water use is and how exactly you determined this number. It needs to be clear how you got your daily use.

Shower use:

5. Hold a container under your showerhead for 10 seconds and measure the volume of water that goes into the container. _____
6. Multiply the above amount by 6 to get the flow rate in gallons per minute.

7. The next time you take a shower, measure the time you spend in the shower. If there are others in your household, measure for them as well.
8. Average time per shower: _____
9. How many showers are taken per week in your household? _____
10. Calculate the amount of water per week used by the shower by multiplying the flow rate you calculated above (#6) by the time in each shower (#8) and the number of showers taken (#9).
11. What is the average amount of water used in your household in the shower each day?

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12. What percentage of your household total daily water use is consumed by the shower?
13. Baths typically use about 20 gallons. Which uses more water, a shower or a bath?

Toilet use:

14. How many gallons are used per flush (gpf) in each of your toilets? _____
15. If they are pretty close to all the same (they usually are), go ahead and calculate an average gpf for your household
16. How many times a day are your toilets flushed? (note: If you have very different gpf in your house keep track of flushes for each toilet)
17. How much water is used by your toilet each day? What percentage of your household water use is this?

Drips

18. Do you have any drips or leaky faucets in your house?
19. If so, measure how much water is dripped in an hour and multiply by 24 to get the lost water per day.
20. If you do not have a leak, turn on the water ever so slightly to simulate a leak. Measure how much water is leaked in 15 minutes and multiply by 96 or measure how much water leaks in an hour and multiply by 24 to get the daily water lost if you had a leak like this.
21. What percentage of your water use is the leak/would a leak be?

Water drinking:

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22. How many cups of water do you drink in a day?

23. How many gallons is this?

24. What percentage of your household water use is from drinking?

25. Is drinking less water a good way to save water? Why or why not?

26. Write ~4 paragraphs about your home water use. Include

- ☐ How much water you use and how you determined it
- ☐ What activities you do that consume water
- ☐ Which things consume the most water in your household
- ☐ Where you think you could conserve the most water
- ☐ Do you think you are a heavy water user or a light water user (average is ~70 gallons per day in the winter)? Why?
- ☐ Do you think your water use would be significantly different in the summer? Why or why not?

1.3 Where does your household waste water go?

(Word Processor, internet)

10 points

Name _____

Due Date _____

In this assignment you will look at where your waste water goes.

1. Where do you live? Give a city and a zip-code.

2. Are you on a sewer system or a septic system?

The following questions assume you are on a public sewer system (most people are). If you are not, skip to question 7

3. Who is your sewer company? Give the name of the agency, district or company. Please note that many cities collect their sewage and pass it along to King County Wastewater treatment. A list of these cities and communities is at <http://dnr.metrokc.gov/WTD/mwpaac/index.htm>

Go you your sewer company/district's website (or call your sewer company), and answer the following: (Note that you may have to go to not only your city's site, but also King County's to get these answers).

4. Where does your sewage go? What treatment plant is it processed by? How much sewage is treated by that plant? Where is the water released to after it is treated?

5. How is your sewage treated? Describe the processes used.

6. Think about the location and elevation of your residence and the location and elevation of the water treatment plant. Can your sewage flow directly to the treatment plant or does it need to be pumped? (You may be able to find a map of the sewer lines). Can you find where the pump station is? What would happen if that pump station failed? If you find a map, print it and show the path your sewage takes.

If you are on a septic system, answer the following

7. Describe how your septic system works. Do you have a one or two tank system?

8. Where is your drain field? Do you have an area for a reserve field if that one fails?

9. If you have an as-built drawing, photocopy it and attach it.

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10. How would you know if your septic system failed?

Please type the answers to questions 3-6 or 7-10 and attach any relevant maps or diagrams.

11) Type, in correct style, a list of resources you used for this assignment.