

Water may be one of the most under appreciated natural resources we have because, so far, it has always been there when we have needed it. Michigan has vast freshwater resources that are not only contained within lakes and rivers. Michigan relatively high water table provides ample ground water in the form of aquifers throughout much of the state.

Our underground water reserves are not spread evenly throughout the state. Western Michigan has more water reserves, but it also has fewer people. Michigan's greatest water resource is also its most overused: the Great Lakes. These freshwater systems do not have the all of the problems associated with marine environments in the coastal states (salt water intrusion). Groundwater levels around the country are at their lowest recorded levels, and Michigan is no exception.

The only solution to this problem is conservation. We have to take the steps to more sustainable water use. It is estimated that more than 70% of indoor water use happens in the bathroom and additional more than 20% in the kitchen and laundry room. The average household water use in Oakland County is 225 gallons per day (about 30 gallons less than the national average).

ACTIVITY	NORMAL USE	CONSERVATION USE
Shower	25-50 gallons (5-10 gal/min.)	2 gal/min (low-flow device) 5 gallons (wet down, soap up, rinse)
Tub Bath	36 gallons (full)	18 gallons (half-full) 10-12 gallons (low level)
Toilet Flush	5-7 gallons (regular)	1.1 or 1.6 gallons ~3 gallons (regular tank displacement devices)
Brushing Teeth	5 gallons (running water)	1/8 gal (wet brush rinse briefly)
Hand Washing	3 gallons (running water)	1 gallon (fill basin, rinse briefly)
Shaving	3-5 gallons (running water)	1 gallon (fill basin, rinse briefly)
Dish Washing by hand	20 gallons (running water)	5 gallons (fill basin, rinse briefly)
Dishwasher	15 gallons/use	Use only when full
Washing Machine	55 gallons/use	Use only when full

Ways to conserve water:

#### Indoor

- Install a low-flow toilet or tank water saving device to save as much as five gallons of water a day.
- Install a low-flow showerhead and save up to 86 gallons of water a day.
- Install a sink aerator to save eight gallons of water a day.
- Turn off the faucet while you brush your teeth and save up to 10 gallons of water a day.
- Fix a leaky faucet and save as much as seven gallons of water a day.
- Only run the washing machine and dishwasher when they are full. You can save as much as 15 gallons per load for the dishwasher and 55 gallons per load for the washing machine.

#### Outdoor

- Don't water your lawn for more than a half-hour at a time or 45 minutes once a week, and only if it doesn't rain at least one inch. Water in the cooler hours, before 9AM or after 7PM.
- Provide natural landscape moisture by cutting the grass at the highest setting (about three inches). Taller grass helps protect the root systems by shading.
- Rake or sweep driveways, sidewalks, or decks instead of hosing them off.
- Use plants native to Michigan in your landscaping.

Go through the following calculations to determine your families water use. You should calculate a summer value and a winter value. You may write the summer values in the margin to the right of the provided blanks.

Answer the following questions about this activity.

How do your winter values compare to your summer values? What accounts for this difference?

How much water do you use compared to the Oakland County average and national average? What do you think accounts for this difference?

Complete the online water survey for Oakland County at <http://land.oakgov.com/watercalculator>. Compare your calculated results to those generated by the website. What do you think accounts for the difference?

## HOME WATER USE SURVEY - ANALYSIS

### Showers:

How many showers does your family take a day?  A

Approximately how long is each one (# of minutes)? (*Put 6.3 if unsure*)  B

How many baths does your family take a day?  C

### Toilets:

How many times does your family usually flush the toilet each day? (*Put 4 if unsure*)

D

### Brushing Teeth:

How many family members are in your household?  E

How many times per day does each person brush their teeth?  F

### Hand Dishwashing:

How many times a day does your family wash dishes?  G

How long does the water run each time?  H

### Dishwasher:

How many times *per week* does your family run the dishwasher?  I

### Laundry:

How many loads of laundry does your family wash *each week*?  J

### Outside Watering :

How many times *a week* does your family water the lawn?  K

For how many minutes each time?  L

How many times *a week* do you wash cars/boats/driveway?  M

For how many minutes each time?  N

### Other Uses:

Your family also uses water in other ways. LIST HERE: \_\_\_\_\_

What would you say is the average daily amount of water used in these activities?

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Your Results

<u>Water Activity</u>	<u>Average usage</u>	<u>Total: day</u> * = week	<u>Total: month</u>
Showers	2 or 5 gal/min	$A \times B \times (\#) = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Baths	12 or 18 gal/use	$C \times (\#) = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Toilet flushes	7, 5, 3, 1.6, or 1.1 gal/flush	$D \times (\#) = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Teeth brushing	3 or 1.8 gal/min	$E \times F \times (\#) = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Hand dishwashing	5 or 1 gal/min	$G \times H \times (\#) = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Dishwasher *	15 gallons/use	$(I / 7) \times 15 = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Laundry *	48 gallons/use	$(J / 7) \times 48 = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Lawn watering *	10 gallons/minute	$\frac{K \times L \times 10}{7} = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Car/Boat/Driveway	10 gallons/minute	$\frac{M \times N \times 10}{7} = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Other usage	10 gallons/minute	$O \times 10 = \boxed{\phantom{000}} \times 30 =$	$\boxed{\phantom{000}}$
Total gallons of water used each <b>day</b> ----->		$\boxed{\phantom{000}}$ P	
Total gallons of water used each <b>month</b>		$P \times 30$	$\boxed{\phantom{000}}$ Q
Gallons of Water Used in ONE YEAR		$Q \times 12$	$\boxed{\phantom{000}}$ R

**P / E** = individual water use for each member of the household... \_\_\_\_\_ S