

# Protocol for School Water Audit

## Purpose:

The purpose of this audit is to examine the school's indoor water use, specifically where and how to use less drinking quality water.

## Information/supplies needed:

- Protocol
- Stopwatch for calculating the flow rate of faucets and toilets, etc.
- Graduated cylinder for each student/group to measure the water
- Digital camera
- Inventory spreadsheet
- Field notebook
- Pen/Pencil

## Procedure:

1. Complete the data table on the following page with information about the water using devices throughout the school building.
2. Place the number of each device found at each location on the chart, and after that number, indicate the number that are leaking in parentheses.  
Example: If bathroom 1 has 10 faucets and two are leaking, write 10 (2).
3. Use the following notations in the chart to record your information.

Abbreviation	Definition
A	Automatic (equipment that must be turned on manually but turns off automatically.)
S	Sensors (equipment that turns on and off based on the movement of a person.)
M	Manual- (equipment that must be physically turned on and off by a user)
GPM	Gallons per minute (faucets and showers)
GPF	Gallons per flush (urinals and toilets)

4. To measure gallons per minute for the flow of sinks:
  - Use stopwatch to calculate how long it takes to fill a liter bottle.
  - Calculate liters per minute.
  - Convert liters to gallons to find the gpm.

\*Conversion: 1 liter=0.264172051 gallons

Example: If it takes 5 seconds to fill our 1 liter bottle then...

$60 \text{ seconds} / 5 \text{ seconds} = 12 \text{ liters per minute}$

$12 \text{ liters} \times 0.264172051 = 3.2 \text{ gallons per minute}$

**To estimate gallons of water saved for faucet installations:**

The calculator determines the difference in gallons used by a WaterSense labeled faucet (or the retrofit of an old faucet with a WaterSense labeled aerator) versus the faucet being replaced. It is assumed that installation of a WaterSense labeled faucet, or the retrofit of an old faucet with a WaterSense labeled aerator, results in a savings of about 0.6 gallons per person per day. The calculator then multiplies the savings by the number of households, the number of people in each household, and the time period specified by the user.

**To estimate energy savings associated with the installation of WaterSense labeled faucets, or the retrofit of old faucets with a WaterSense labeled aerators:**

The calculator determines how much it would cost to heat the water saved based on the selected energy source (e.g., natural gas or electricity). It is assumed that 73 percent of water that comes out of the tap in a typical household is heated. It is also assumed that the average cost of 1 cubic foot (cu ft) of natural gas is \$0.013 and that the average cost of 1 kilowatt-hour (kWh) of electricity is \$0.104 based on national averages.



**If a faucet has a motion sensor, it is located near the base of the fixture.**

**To estimate gallons of water saved for toilet installations:**

The calculator determines the difference in gallons used by a WaterSense labeled toilet versus the toilet being replaced. WaterSense labeled toilets use 1.28 gallons of water per flush or less. It is assumed that toilets installed before 1980 use about 5 gallons per flush. Toilets installed between 1980 and 1994 use about 3.5 gallons per flush, and toilets installed after 1994 use about 1.6 gallons per flush. The calculator then multiplies the savings by the number of households, the number of people in each household, and the time period specified by the user. The calculator also assumes an average of 5.05 flushes per person per day.

5. If there is no indication of gallons per flush on toilets, then assume 3.5 gpf



The gpf used by a toilet is usually indicated near the rear of the

6. If there is no indication of gallons per flush on urinals, then assume 2 gpf



The gpf used by a urinal may be indicated on the side of the fixture.