

# water wise innovations

Friends of the Teton River

Water Wise Series

February 18, 2009



**meagan hill**  
kingswood co., llc

[www.kingswoodco.com](http://www.kingswoodco.com)

**meghan powers**, architect  
natural dwellings design

[www.naturaldwellings.com](http://www.naturaldwellings.com)

in the world...

in our community...

in our homes...



# the big picture

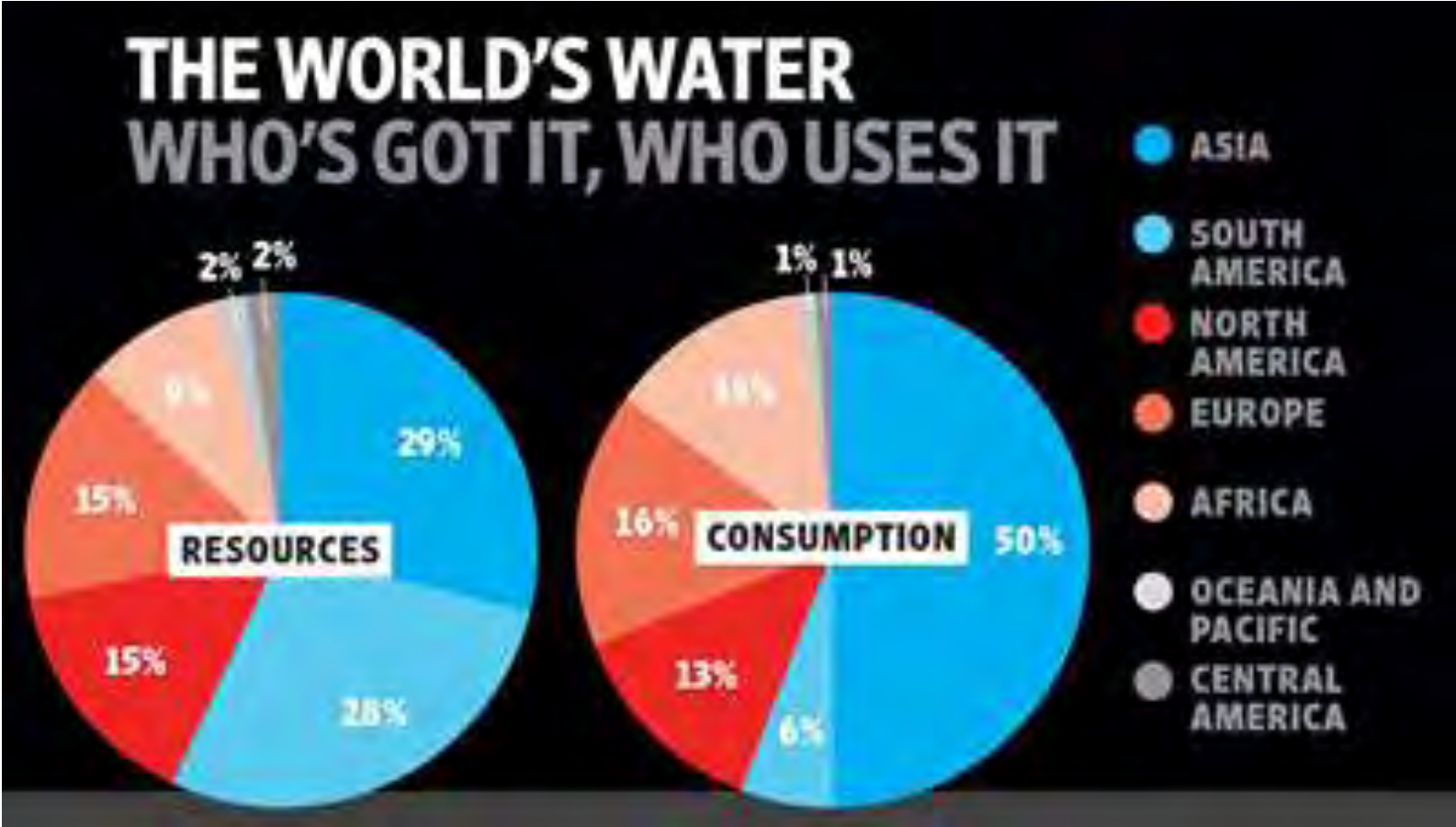


97% of the earth's surface is water

< 1% of that water is fresh water

2/3 of the human body is water

# global stats



Source: Portland Water Bureau

# how does the US use our water?

## domestic

withdrawals for public supply systems total more than **43 billion** gallons per day (**12.5%**)

self-supplied water to households totals nearly **4 billion** gallons per day (**1.5%**)

## power plants

power plants use **136 billion** gallons of fresh water per day (**39%**)

## agricultural

agricultural irrigation accounts for more than **142 billion** gallons of fresh water per day (**41%**)

## industrial & mining

industrial facilities withdraw more than **20 billion** gallons of fresh water per day (**6%**)



# national stats

**public water supply and treatment facilities consume**

56 billion kilowatt-hours (kWh) per year;

which is enough to power more than 5 million homes for an entire year

**if 1 % of US homes replaced their inefficient toilets it would**

save more than 38 million kWh of electricity;

which is enough to supply more than 43,000 homes for one month

# national stats

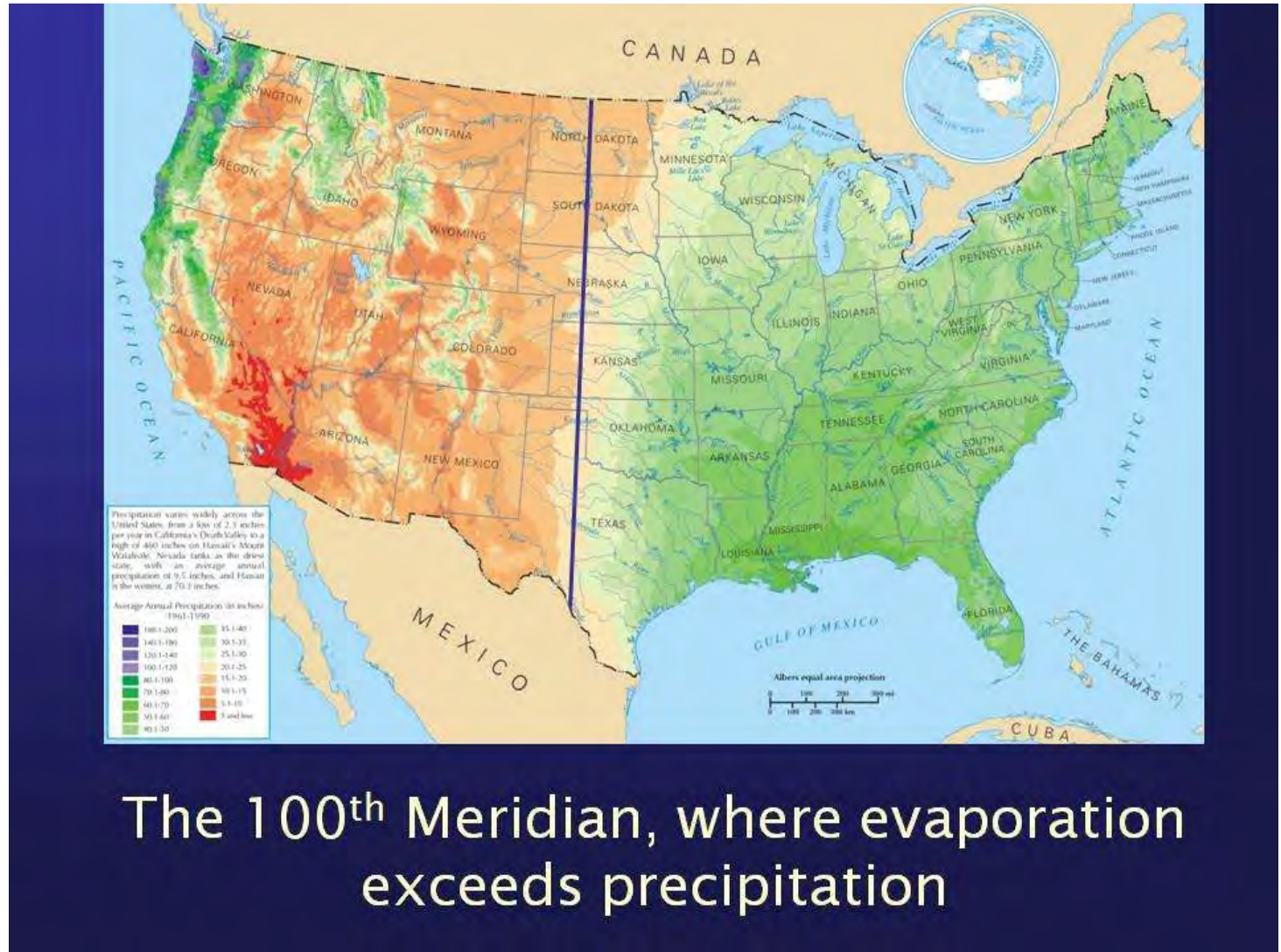
**if 1 in 100 US homes was retrofitted with water efficient fixtures it would**

save about 100 million kWh of electricity per year;

which avoids 80,000 tons of greenhouse gas emissions;

which is the equivalent of removing 15,000 automobiles from the road for one year

# semi-arid region





# key design principles

protect natural systems

integrate storm water treatment into the landscape

protect water quality

reduce runoff and peak flows

add value while minimizing development costs

# where teton valley gets its **water**



# a day in the life of drop

 DWR 912-F-08-09a • May 2016 

## A DAY IN THE LIFE OF A DROP

### Worksheet #2

 This exercise is designed to show how each member of your family uses water in the bathroom. The bathroom is a small room where many of us waste a **HUGE** amount of water! Using this worksheet, you will learn to calculate each family member's average daily water use (about how much they use each day) for the bathroom sink, the shower, the bathtub and the toilet. Follow the instructions below to calculate each person's average daily water use.

**Preparation**

1. Prepare one **Water Use Table** for each day of the week. You will need one sheet for each day (and one for each bathroom). Enter the day of the week at the top of the sheet where it says "Today is" and fill in each person's name across the row called "Family Members." Post today's table in the bathroom with a pen or pencil and either a timer or clock. (Try to find a spot where the sheet will stay relatively dry, but remember that you should never put paper on hot things such as heaters, vents, radiators, curling irons, etc.) Once you get the OK from your parents about where you're going to keep the sheet, make sure everyone is aware of where the sheet is for each bathroom.
2. Ask each member of your family to record the **number of minutes** they use the faucet and the shower and the **number of times** they flush the toilet or take a bath. (Note that for the toilet and the bathtub, you are recording the actual number of times you flush the toilet or take a bath, **not** the number of minutes you are using them.)

**IMPORTANT NOTE FOR ROW D:** The cells in Row D are split so you can fill out information for more than one bathroom, if you need to. Study the diagram below so you'll know where to put your answers.

The top half will be the total # of gallons of water used by one person for the whole week for ONE bathroom.

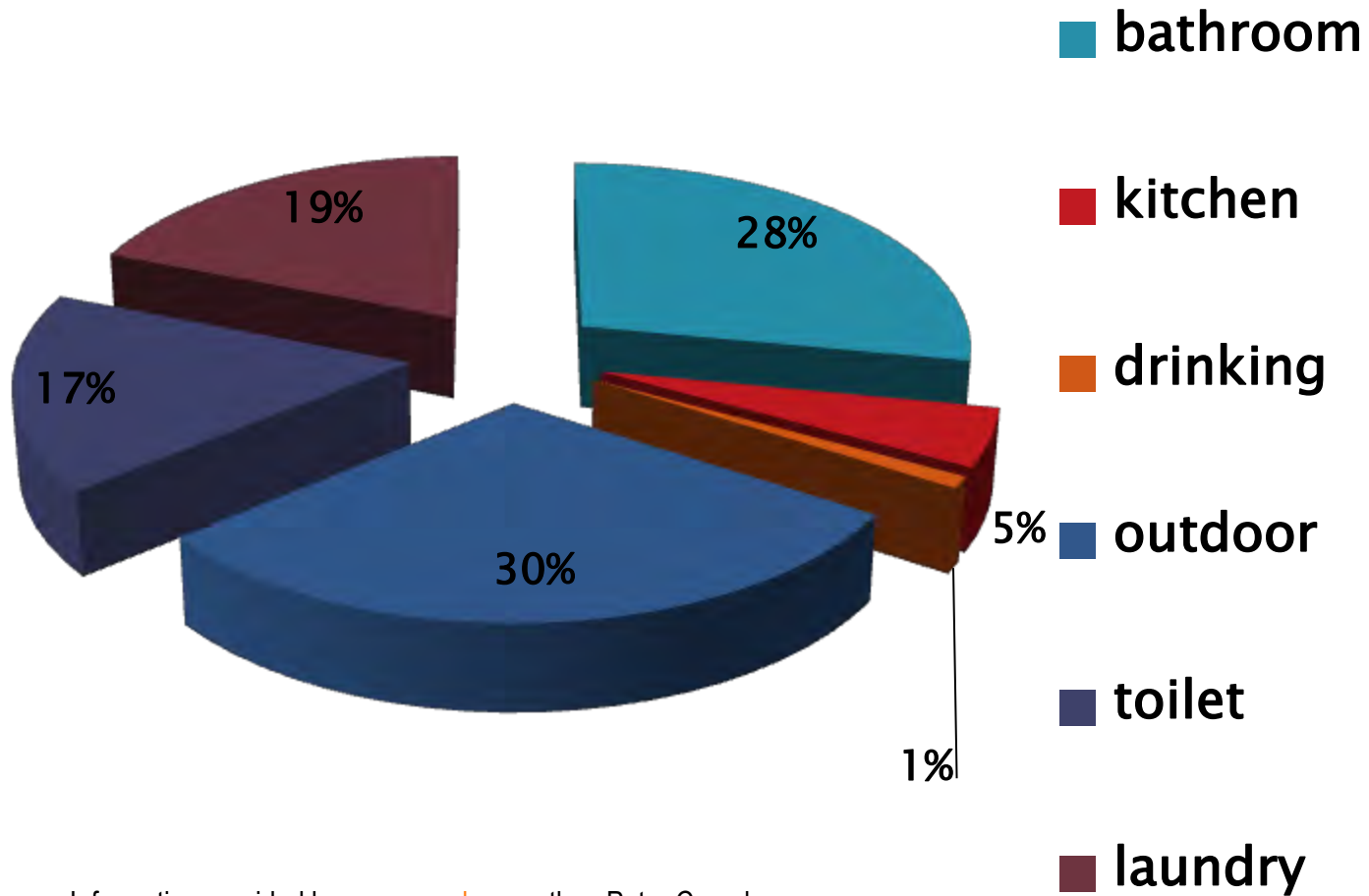


The lower, right half will be for the total # of gallons of water used by that person for the whole week for ALL bathrooms.

**Figure 1**

If you only have one bathroom in your home, you can leave the lower, right half of the cells in Row D blank.

# household consumption stats



Information provided by [www.wsud.org](http://www.wsud.org) author, Peter Coombs

# barnyard consumption stats

cattle .....	2 gallons per day per cow
dairy cattle.....	35 gallons per day per cow
horse.....	12 gallons per day per horse
mule.....	12 gallons per day per mule
hog.....	4 gallons per day per hog
goat.....	2 gallons per day per goat
sheep.....	2 gallons per day per sheep
chickens.....	5-10 gallons per day per 100 chix
turkeys.....	10-18 gallons per day per 100 turkeys





# water conservation is a national priority

a recent government survey showed at least 36 states are anticipating local, regional, or statewide **water shortages by 2013**

the average household **spends** as much as **\$500 per year** on its water and sewer bill

by making just a few simple changes to use water more efficiently, you could **save** about **\$170 per year**

# national water consumption

**do you know how much water a family of four uses every day in the US?**

not 50 gallons, not 100 gallons, but 400 gallons!

you could take up to 10 baths with that much water,  
but who would want to do that?

fortunately, there are many things we can do to save

# idaho water consumption

each DAY Idaho uses **22,000,000,000 gallons** of water

80% comes from surface sources (rivers and reservoirs)

20 % is groundwater

idaho is the 2nd-largest water user in the United States (California uses more)

idaho is the nation's top water user -- 22,000 gal / day on a per capita basis

idaho is also the country's fourth largest user of groundwater

groundwater accounts for nearly 95% of our drinking water



# epa watersense

## **bathroom sink faucets**

save more than 60 billion gallons of water/year

## **showerheads**

more than 1.2 trillion gallons of water/year

## **toilets**

save nearly 2 billion gallons per day

## **urinals**

80 percent of the urinals in use today (9.6 million fixtures) exceed the maximum allowable flush volume set by federal standards





# epa watersense

## toilets

high efficiency toilets: 1.2 gal or less (save 22,000 gal per toilet)

## waterless urinals

## showerheads

1.75 gpm or less

## faucets

1.5 gpm low flow aerators

## clothes washers (ENERGYSTAR)

save 7,000 gallons of water a year / 11 year life of the washer

# united states green building council



# LEED

Leadership in  
Energy and  
Environmental  
Design



# LEED-H

Innovation & Design Process (ID)

Location and Linkages (LL)

Sustainable Sites (SS)

**Water Efficiency (WE)**

Energy & Atmosphere (EA)

Materials & Resources (MR)

Indoor Environmental Quality (EQ)

Awareness & Education (AE)



# water reuse

## GREYWATER SYSTEM DESIGN



## Water Efficiency (WE) LEED-H

Clivus Multrum

# irrigation system



**Water Efficiency (WE) LEED-H**



# indoor water use



## Water Efficiency (WE) LEED-H

# manufacturers to look for

American Standard

Caroma

Kohler

Sterling

TOTO

Delta

Moen

...Many More.....



# a new direction for teton valley

greywater collection + re-use

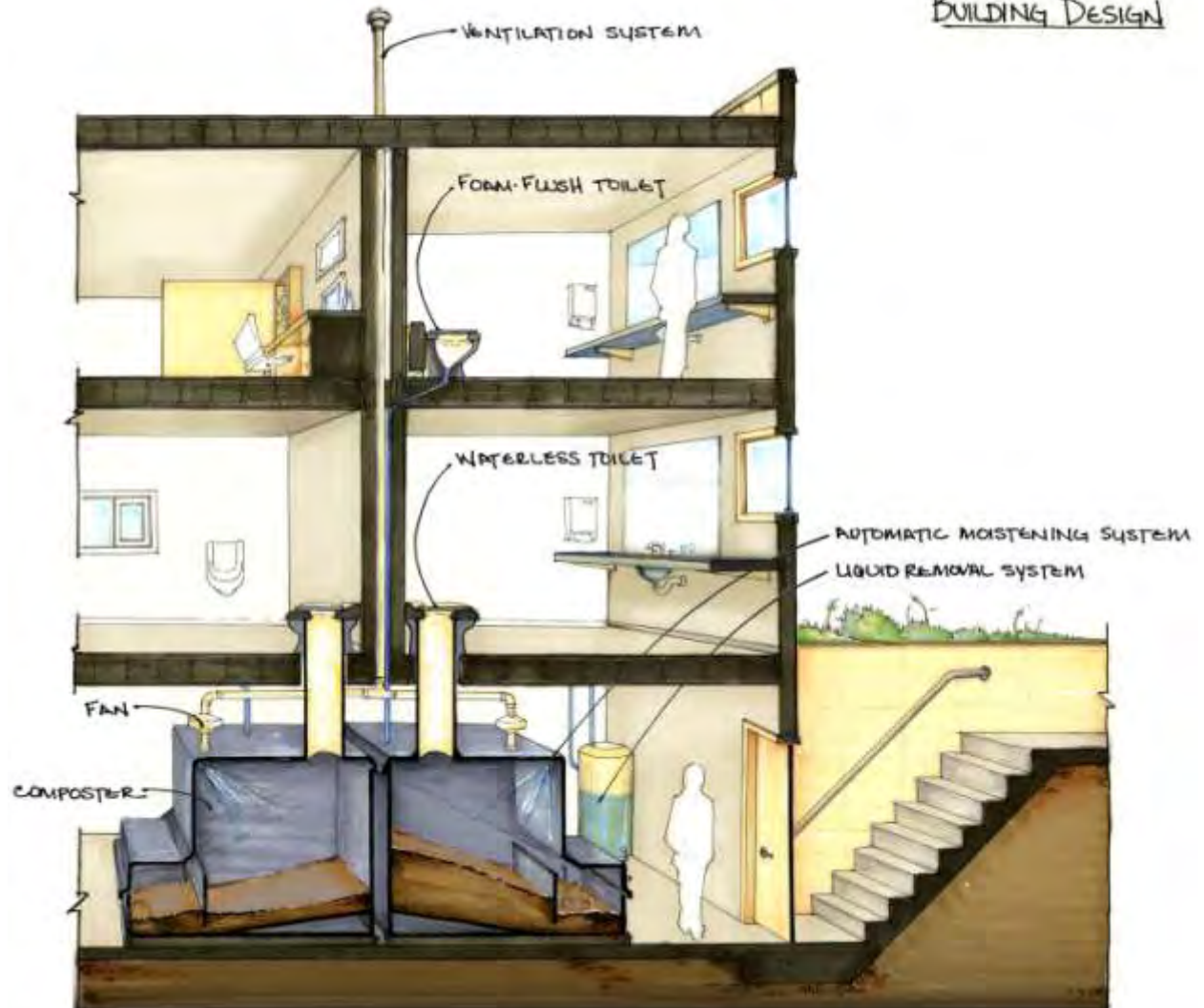
blackwater collection + re-use

composting toilets

rainwater collection + re-use for all water use

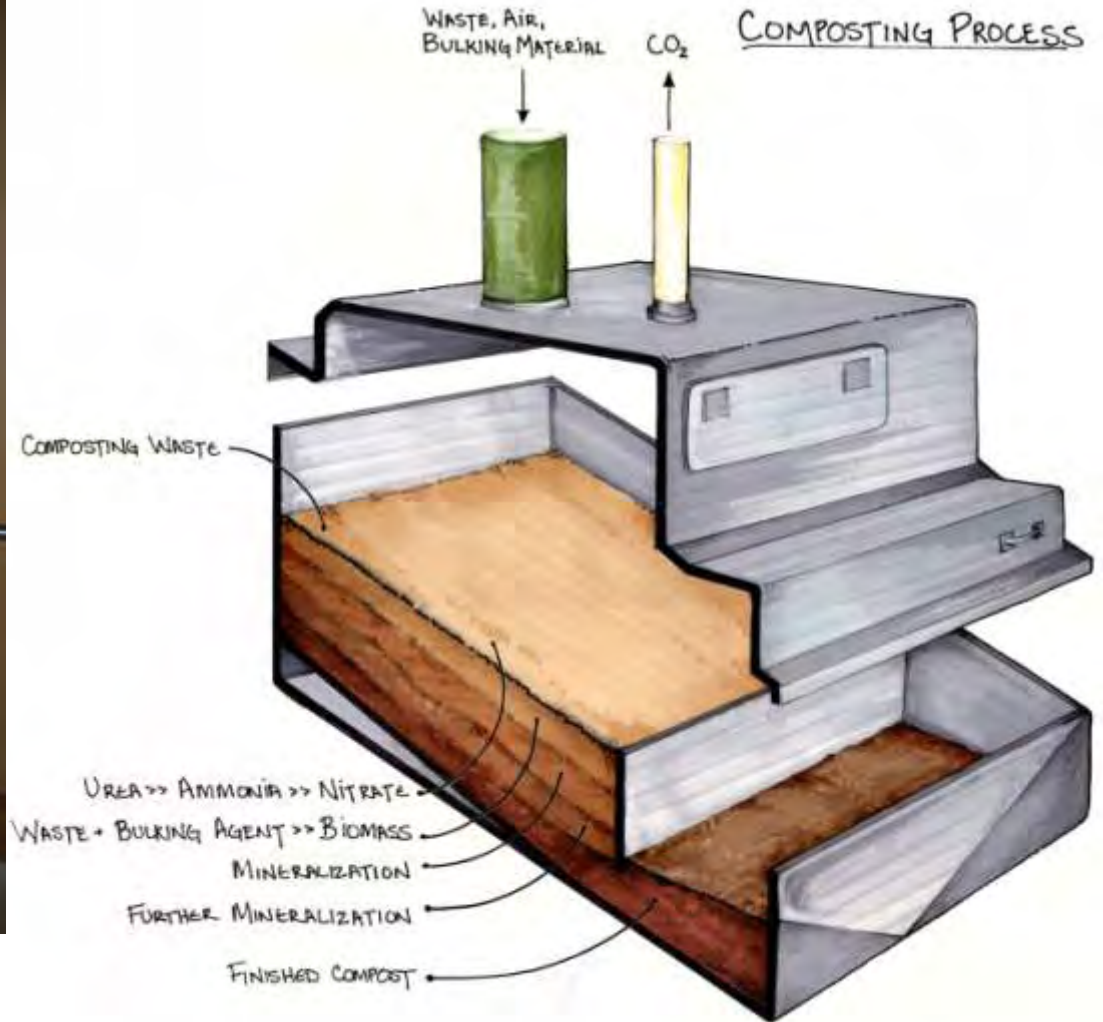
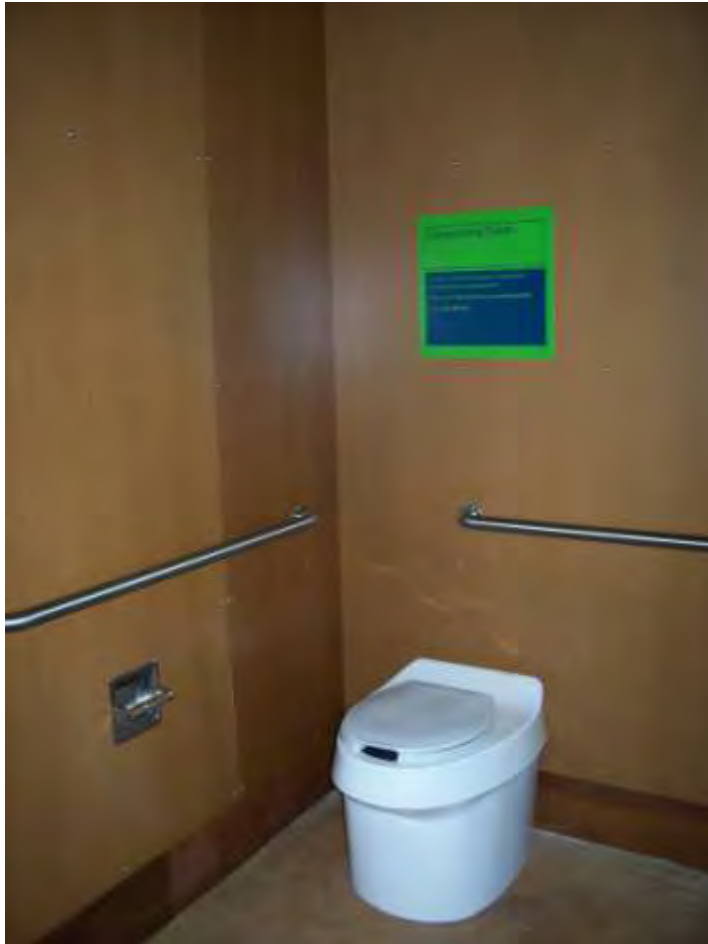
# composting systems

BUILDING DESIGN



Clivus Multrum

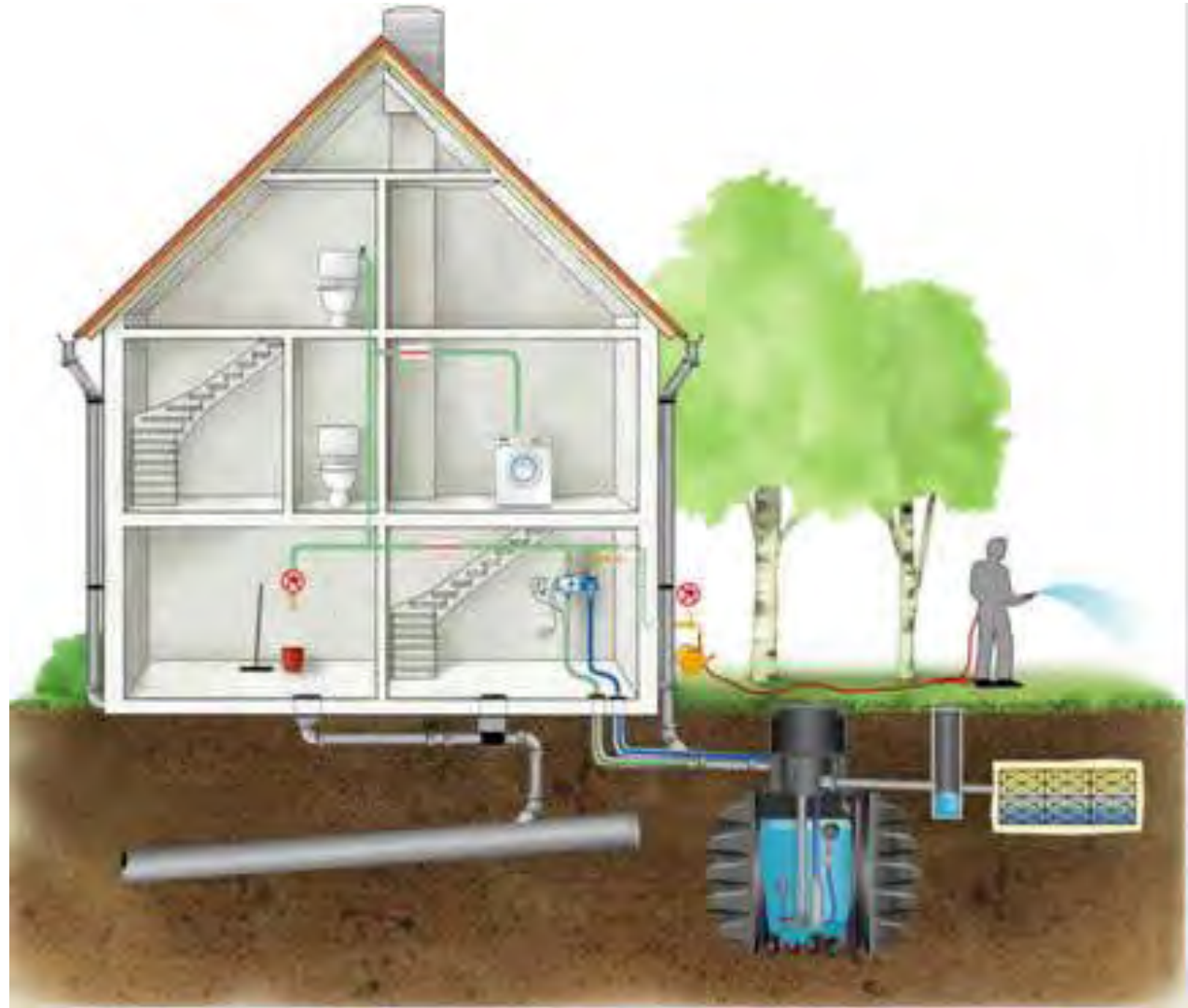
# composting systems



Clivus Multrum



# rainwater collection



Source\_wwwpimgroupcoukimagesrwh.jpg



# residential water use summary

## **1. stop those leaks!**

more than 10% of household water is lost due leaks

## **2. replace your old toilet**

## **3. replace your clothes washer**

Energy Star™ rated washers that also have a Water Factor at or lower than 9.5, use 35-50% less water and 50% less energy per load

## **4. plant the right plants**

## **5. water only what your plants need**

Information courtesy of H2ouse.org



"It's time we face reality, my friends. ... We're not exactly rocket scientists."

# water wise innovations

Friends of the Teton River

Water Wise Series

February 18, 2009



**meagan hill**  
kingswood co., llc

[www.kingswoodco.com](http://www.kingswoodco.com)

**meghan powers**, architect  
natural dwellings design

[www.naturaldwellings.com](http://www.naturaldwellings.com)