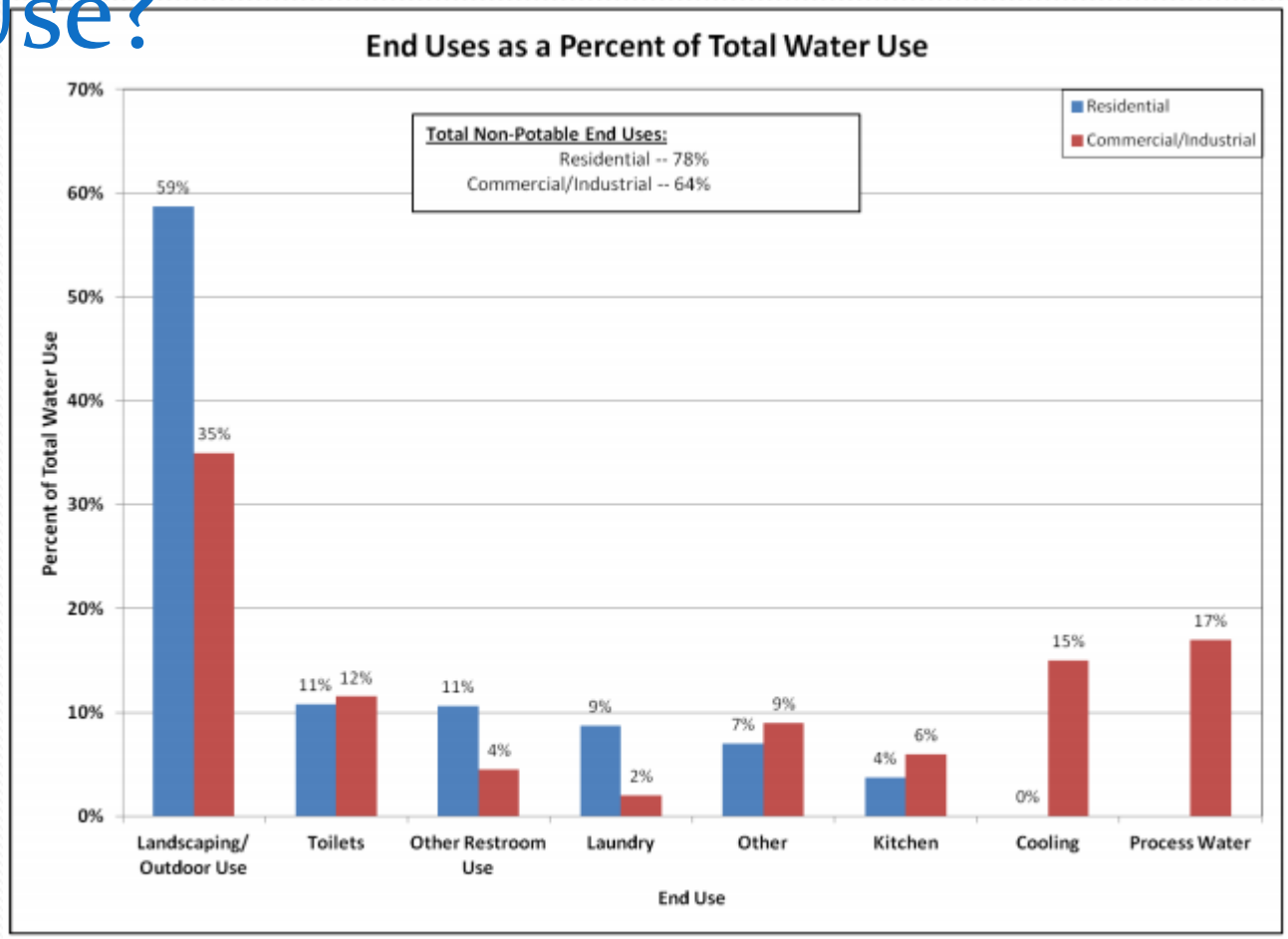
# Setting Up Your Rainwater Harvesting System

# How Much Water Do We Use?




1 – Residential end uses based on AWWA (1999).

2 -- Commercial/Industrial end uses based on Pacific Institute (2003).

# Is Your Roof Suitable?

- Not all roofs are ideal for rainwater harvesting
- Materials can contain contaminants
- Some areas have restrictions on the slope of your roof

# Pollution Concerns

| Roofing Material | Pollutants of Concern | Suitable end Uses |
|---|---|---|
| Asphalt shingles | Lead, Mercury | Contaminants vary by product. Sample water quality prior to use. |
| Galvanized metal | Cadmium, Nickel, Zinc, Phosphorus | Contaminants vary by product. Sample water quality prior to use. |
| Green roof | Nutrients, COD | Suitable for irrigation and other non-potable end uses |
| Copper flashing, downspouts | Copper | Not suitable for human consumption, including drinking water, vegetable gardening, or swimming pools. |
| Lead flashing, solder | Lead | Not suitable for human consumption, including drinking water, vegetable gardening, or swimming pools. |
| Wood shingle | Copper, Arsenic, Nutrients | Not recommended for rainwater harvesting. |
| Cement and terra cotta tiles | Lead, Copper, Cadmium, Bacteria, Asbestos | Not recommended for rainwater harvesting. |
| Aluminum roofing | none | All uses |
| Rubber membrane | none | All uses |

(EPA, 2013)

# Any roofed structure can be used to collect rainwater

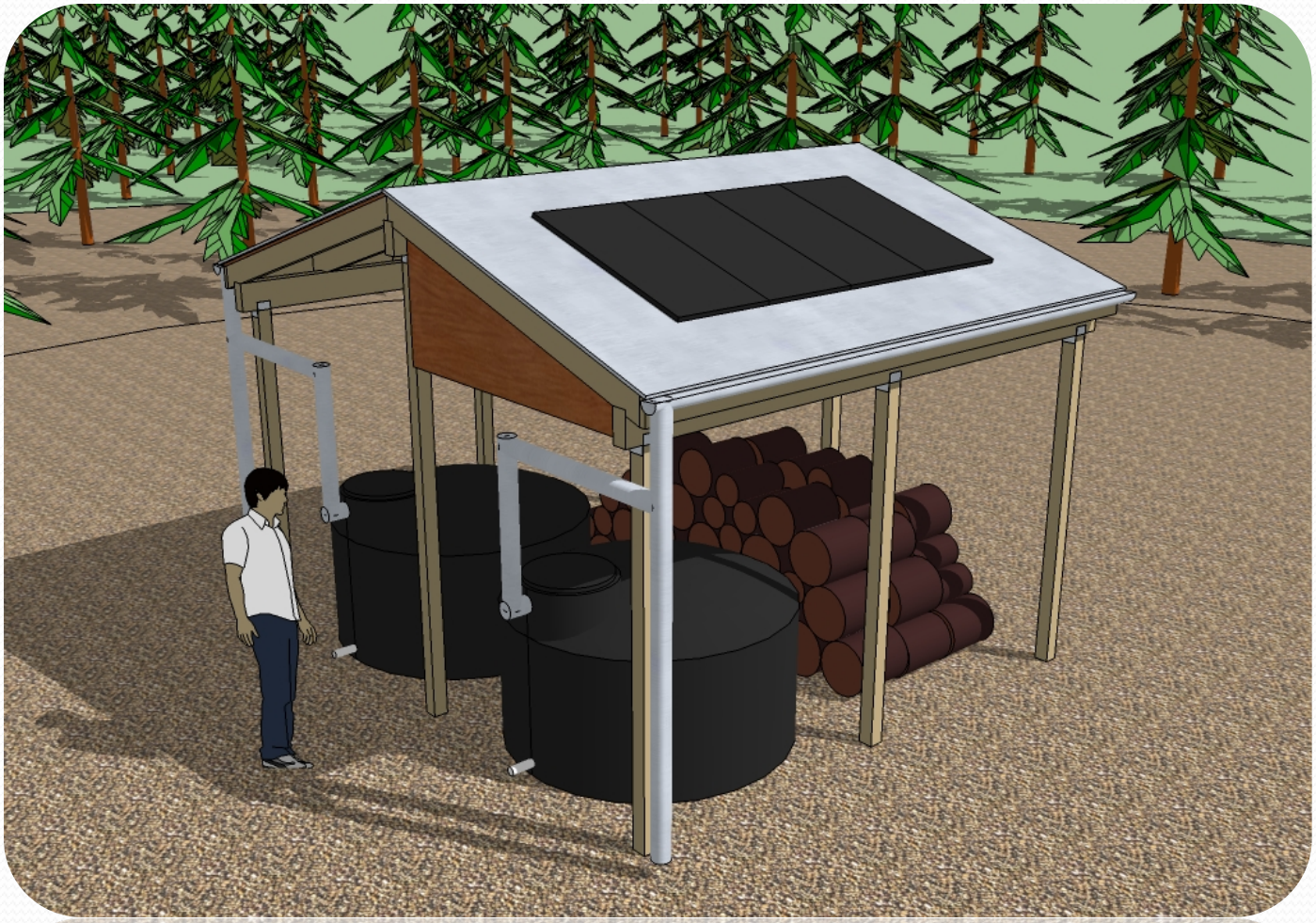


Image retrieved from http://www.tinyhousedesign.com/how-to-make-unbuildable-land-buildable-rainwater-collection/

# The Basic System

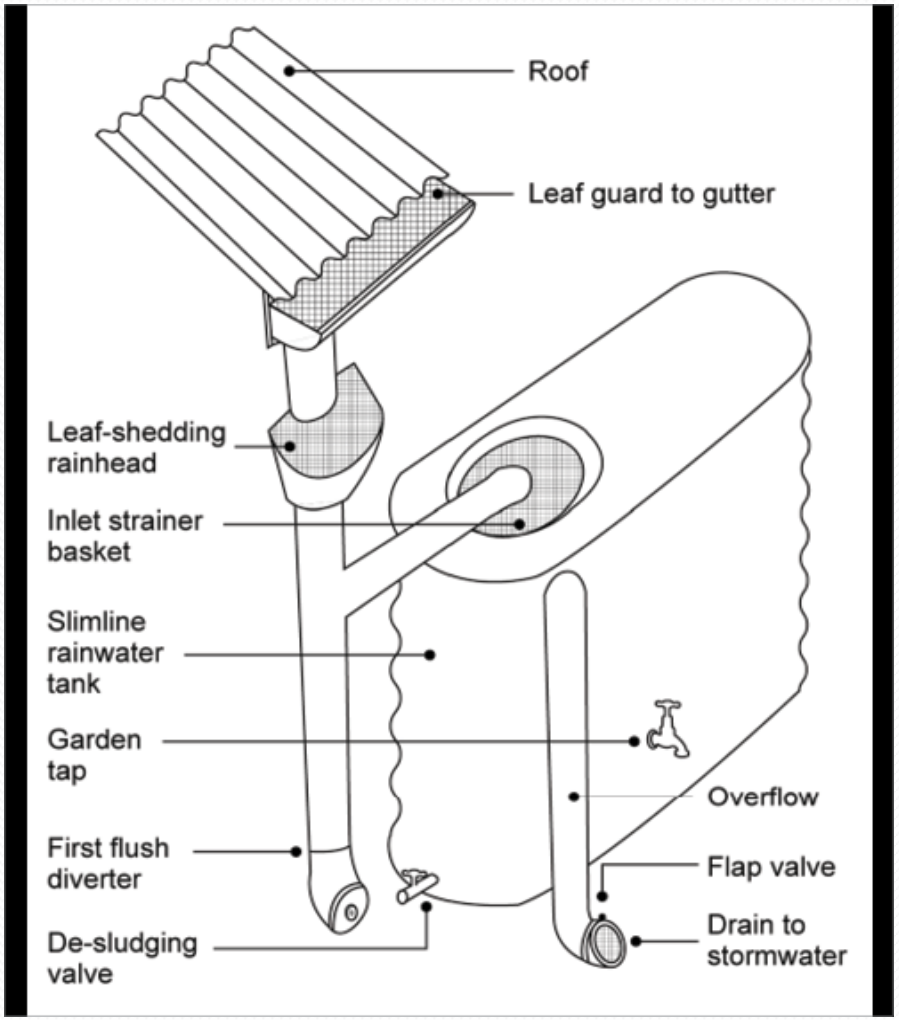



Image from http://www.yourhome.gov.au/water/rainwater

# Filtering Large Debris

Image retrieved from http://www.thisiswhyimbroke.com/gutter-filter

Image retrieved from http://www.yourhome.gov.au/water/rainwater

# First-Flush Diversion

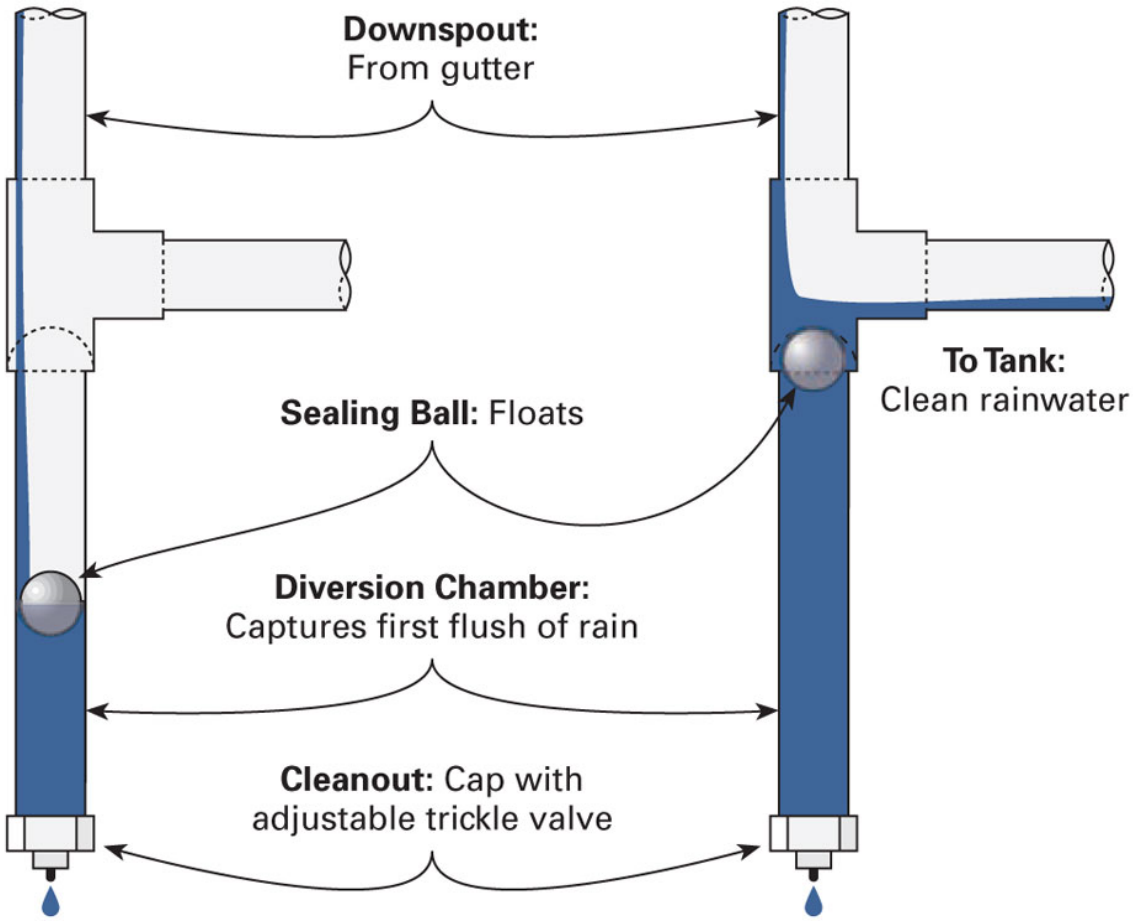
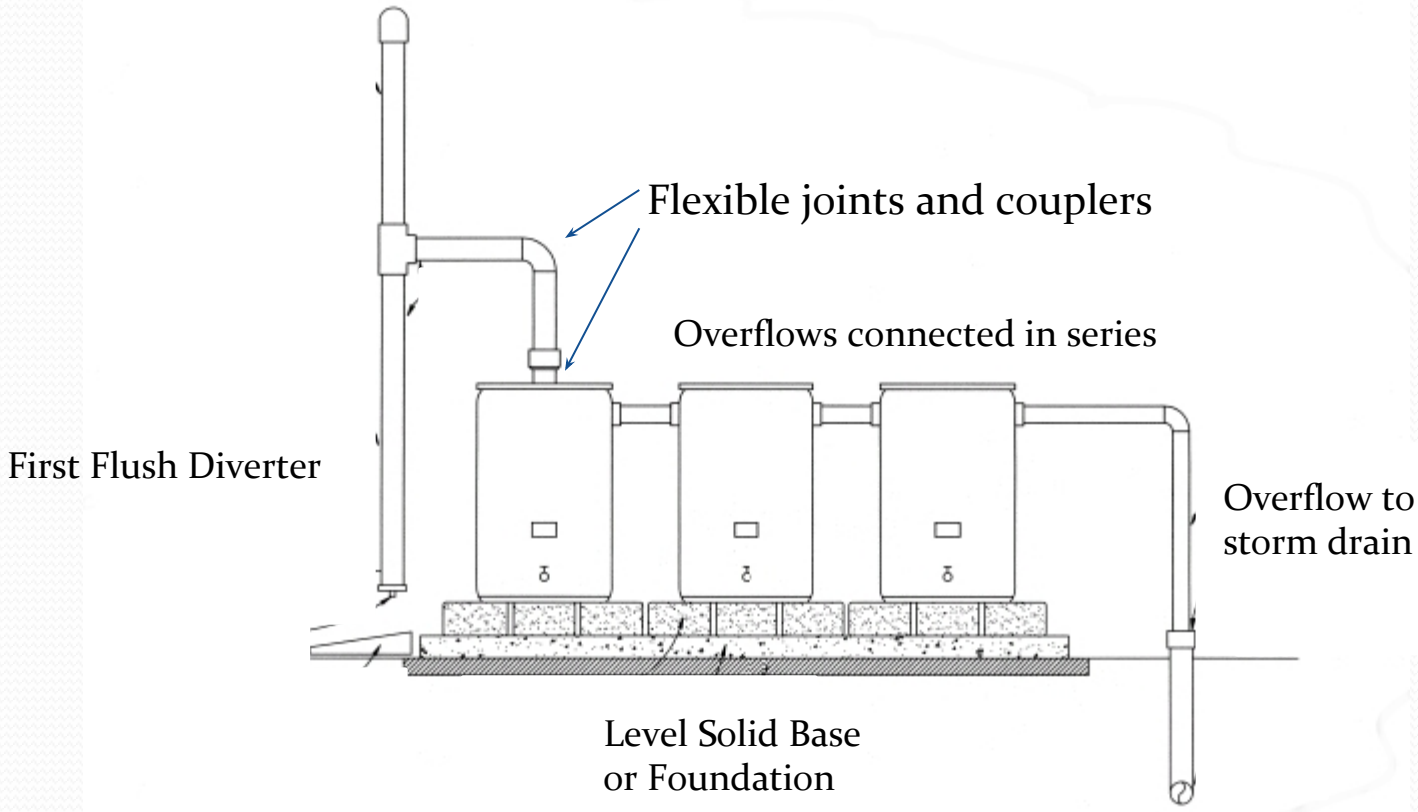



Image retrieved from http://www.homepower.com/articles/home-efficiency/equipment-products/catching-cloudburst

# Simple Rainwater Harvesting System: Barrels



# Other Water Storage Options

# Visually Pleasing Designs


# How to Get Water Pressure

- Gravity Fed: The higher the tank, the more water pressure at the tap
- Water Pump: Either Submersible or Freestanding
- The hybrid: A header tank and a low powered pump

# Integrating Into Your Home

- If using rainwater for toilet flushing or washing clothes, no additional filtering required
- For all other uses, additional filtering is required
- For drinking water, filtering and treatment is required
- If integrated into existing plumbing, a reduced-pressure principle backflow preventer is required

# Filtering for Inside the Home

- First filter: Five micron or less fiber cartridge filter
  - Removes particulate
- Second filter: Three micron or less activated charcoal
  - Removes very fine particles
  - Improves taste
- Final Treatment: Either chemical injection, ozone generator, or UV light
  - Disinfects water to be safe for drinking
  - UV light preferred for best taste

# Maintenance of Your System

Monthly:

- Check screens and leaf shedding rain head
- Check and clean first flush diverter

Annually:

- Check roofs and gutters and remove debris
- Check filters annually and replace if necessary
- Remove overhanging vegetation where possible

3-5 Years:

- Desludge your tank

Video link