

Rain Barrels



Rain Barrel Workshop

April 2, 2011

GreenFest

- Welcome and Introductions
- Overview of Watersheds, Stormwater and Rain Barrels
- Question and Answer Session
- Workshop Evaluation Form
- Rain Barrel Pick Up

WATER BALANCE

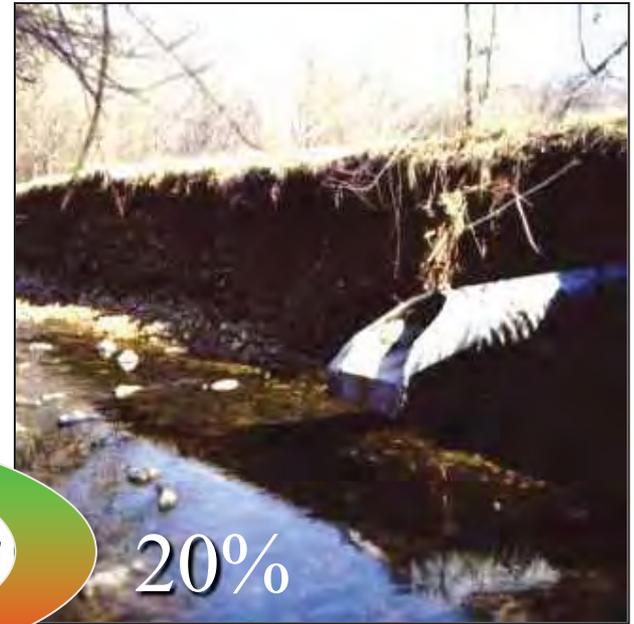
PRE-DEVELOPMENT



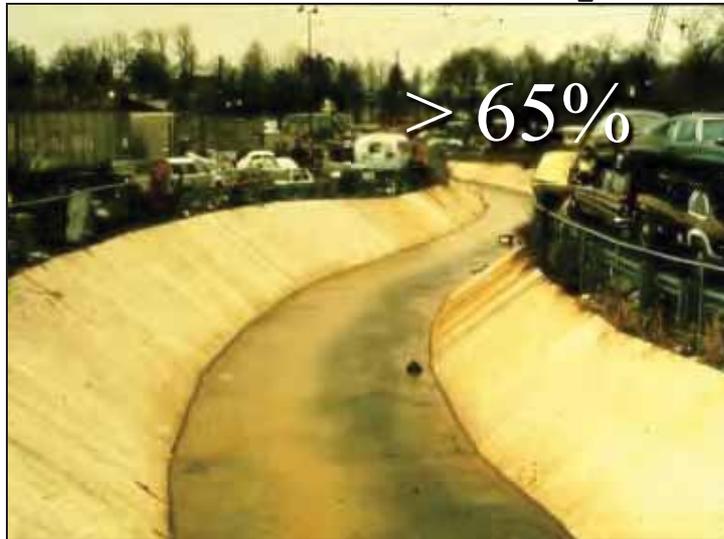
POST-DEVELOPMENT



Geomorphological Impacts



Impervious Cover



Impervious Cover Influences Water Quality

Pollutants build up on impervious surfaces and wash off into the stream system when it rains

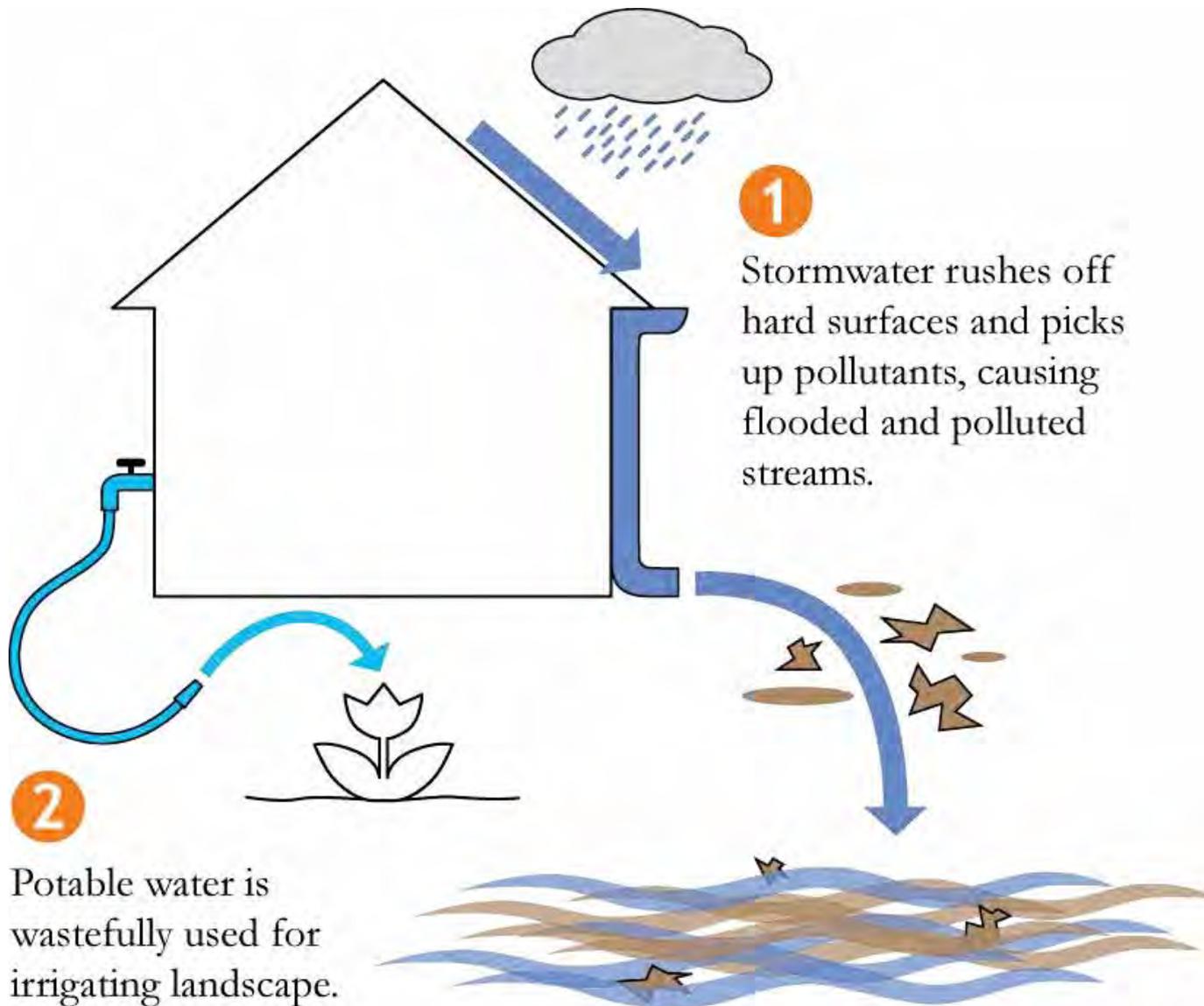


Impacts of stormwater runoff

- Flooding
- Erosion
- Sedimentation
- Pollutant transport
- Decreased baseflow



Typical residential scenario



Where does the water go?



Direct connection to storm drain



Drainage to paved surface

No-o-o-o-o-o-o!

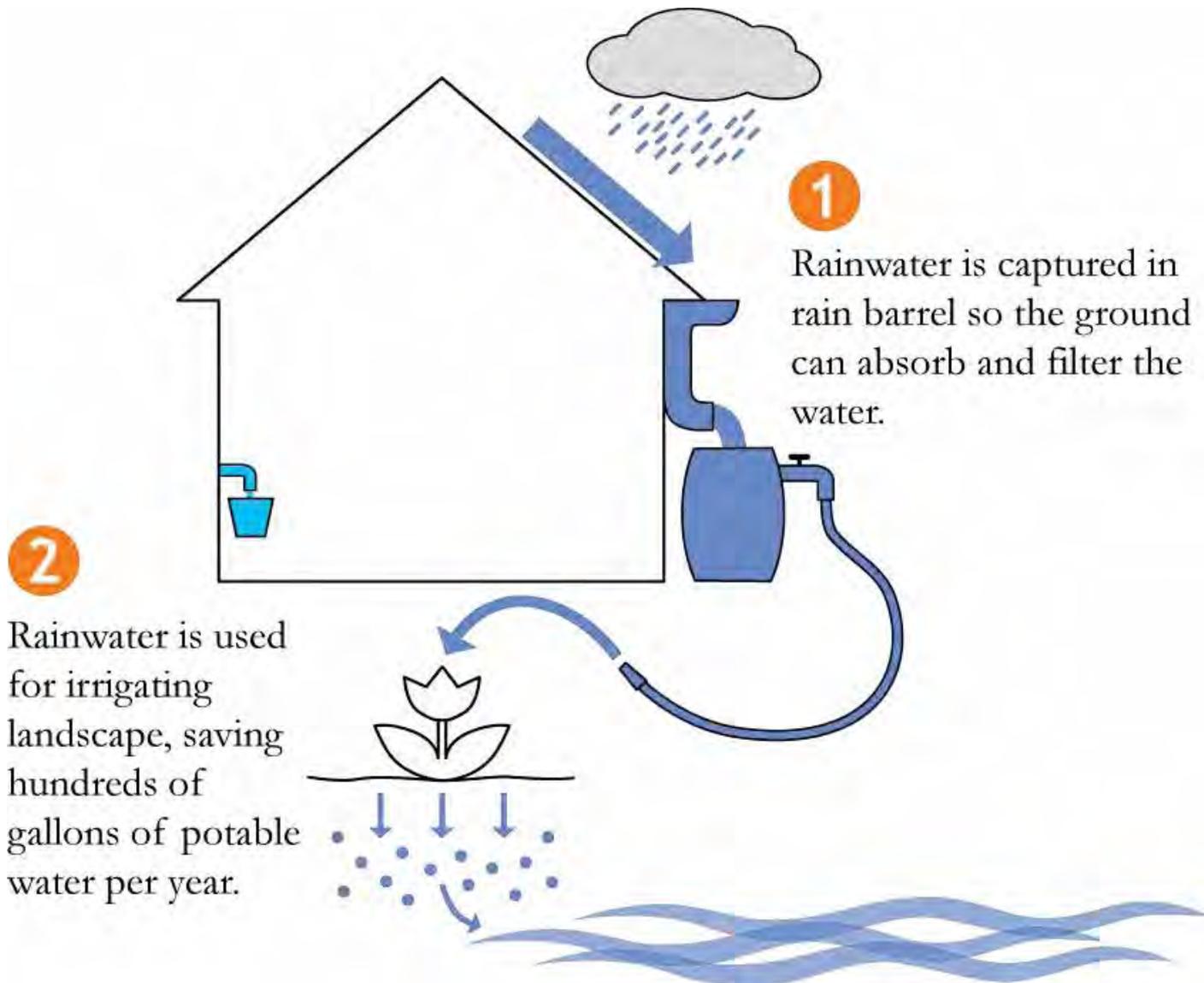


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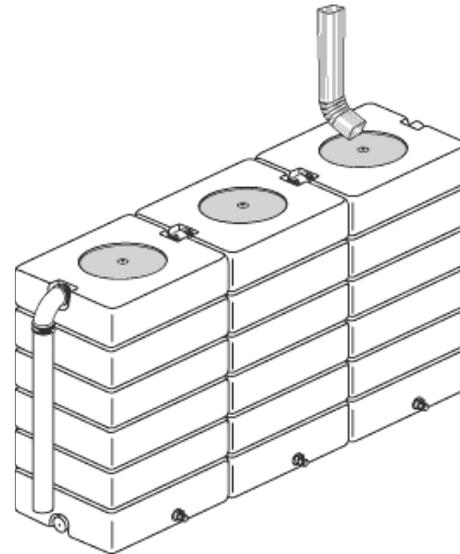
Downspout disconnection



Rain barrel benefits



Rain barrel designs



Sizing

- Consider roof area in relation to volume of rain barrel(s)
- How much water can you use?
- How much space is available?
- Rule of thumb:
1" rain over 1000 sq. ft. roof produces 600 gallons of rain runoff.



Sizing

Connect rain barrels in series for more storage



Aaron's Rain Barrels



Great American Rain Barrels

Interested in making your own?

Tools

If you build your own rain barrel:

- drill
- inch hole saw for overflow pipe
- one-inch spade bit for spigot
- tin snips or heavy-duty scissors for cutting screen
- adjustable wrench
- utility knife
- safety glasses

To disconnect your downspout to your rain barrel:

- hacksaw
- drill
- tape measure
- screwdriver or nut driver
- pliers or crimpers

Anatomy of a rain barrel



Making a rain barrel

Materials:

- One 55 to 90-gallon food grade plastic barrel (can be found online or at local restaurant suppliers, nurseries, or gardening supply stores)

Find the following items at most plumbing or hardware stores:

Overflow:

- 1-1/4" Adapter Insert MPT (SWP151)
- Size 24 25-50mm Metal Hose Clamp
- 1-1/4" Sump Pump Hose (Flotec FP0012-6F)
- Silicone sealer or teflon tape (opt.)

Inlet Grate:

- 6" NDS Green Grate
- 6-7" Metal Clamp #10
- 12" square Window Screen

Hose Bibb/Sillcock:

- Brass Sillcock/Hose Bibb 3/4" MPT
- Silicone sealer or teflon tape (opt.)



Making a rain barrel

Basic Instructions

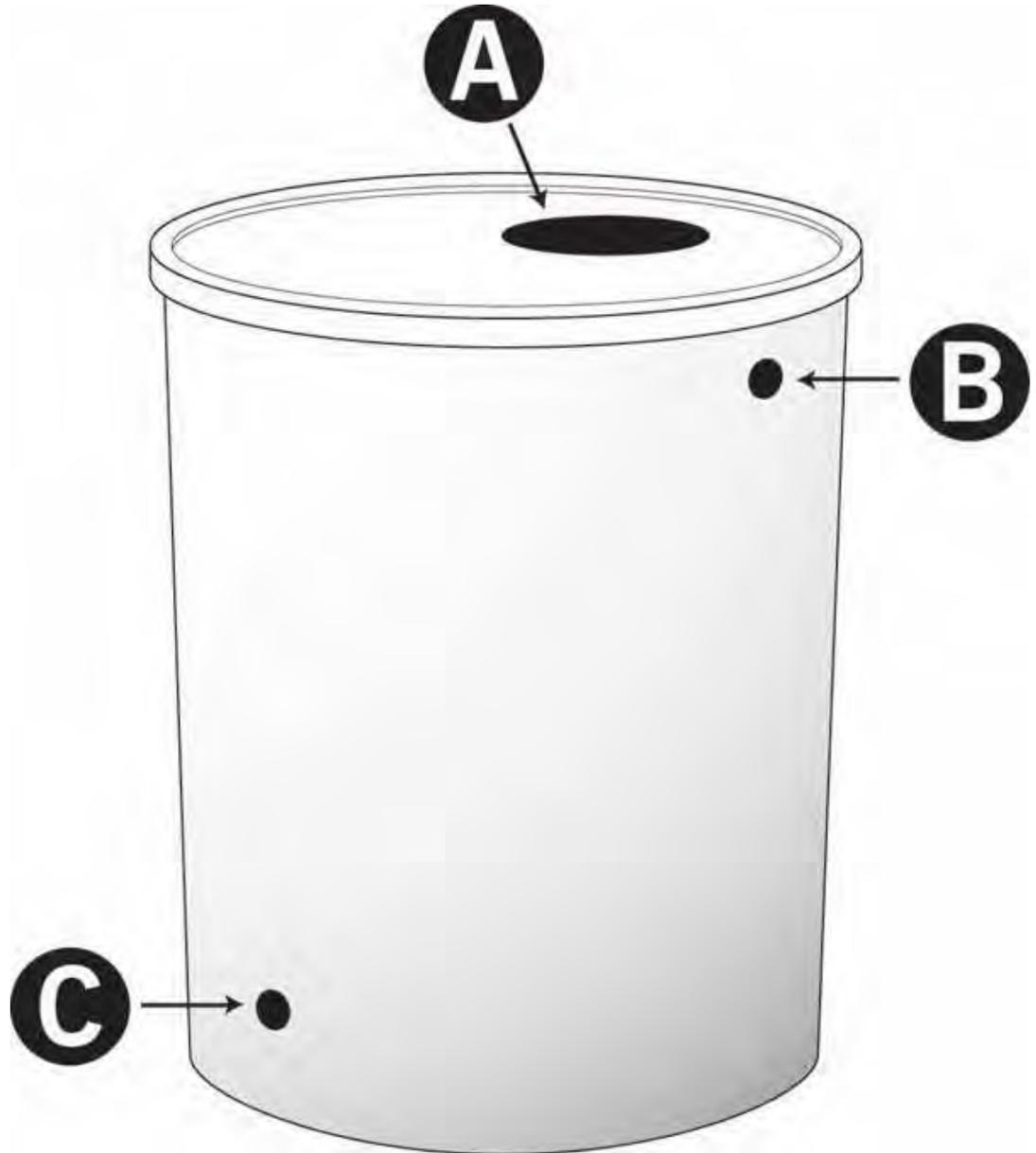
Step A: Cut a hole in the top of your barrel for the inlet drain.

The hole should only be large enough to allow the grate to rest on its flange. Cut the hole using either a RotoZip™ drill or carefully measure and mark the area to be cut, start a pilot hole, and cut out the marked area with a jigsaw.

Step B: Use a 1-1/2 inch keyhole bit to cut a hole to accommodate the 1-1/4 inch Overflow Adapter.

You may need to rasp or sand the hole somewhat larger to screw in the Adapter. Expect a snug fit.

Step C: Use a 15/16 inch drill bit to cut a hole for the 3/4-inch Brass Hose Bibb.

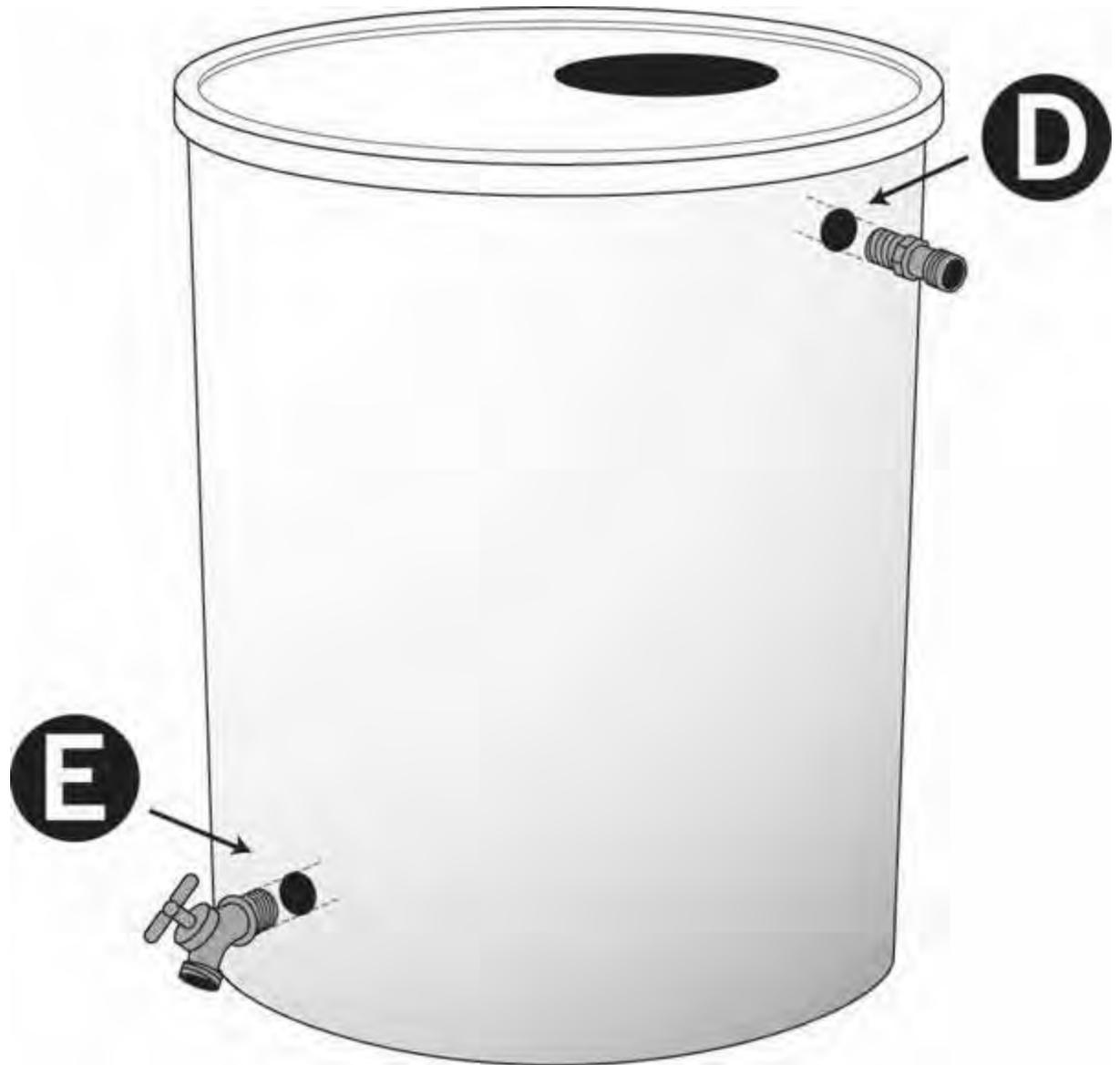


Making a rain barrel

Step D: Insert the threaded end of the Overflow Adapter Insert into the overflow hole. Keep the adapter straight as you screw it into the barrel.

Step E: Insert the threaded Hose Bibb into the already drilled hole.

Keep the hose bibb straight as you screw it into the barrel. You may also apply a bead of silicone caulk or wrap teflon tape around the bibb before inserting it to ensure a tight, drip-free connection.



Making a rain barrel

Step F: Use the larger #10

Metal Clamp to firmly attach the window screen to the bottom of the Green Grate. Tighten the clamp with a screwdriver or nutdriver. Place the Inlet Assembly into the barrel.

Step G: Slide the smaller size 25

Metal Hose Clamp over the barbed section of the Adapter Insert. Slide one end of the Sump Pump Hose over the Adapter and use the Hose Clamp to firmly attach the Hose to the Adapter.

Step H: Attach a garden hose or soaker hose to your Hose Bibb.

Step I: Use cinderblocks or similar pavers to elevate the completed Rain Barrel off the ground to ensure easier access to the Hose Bibb, and to facilitate gravity-fed drainage.

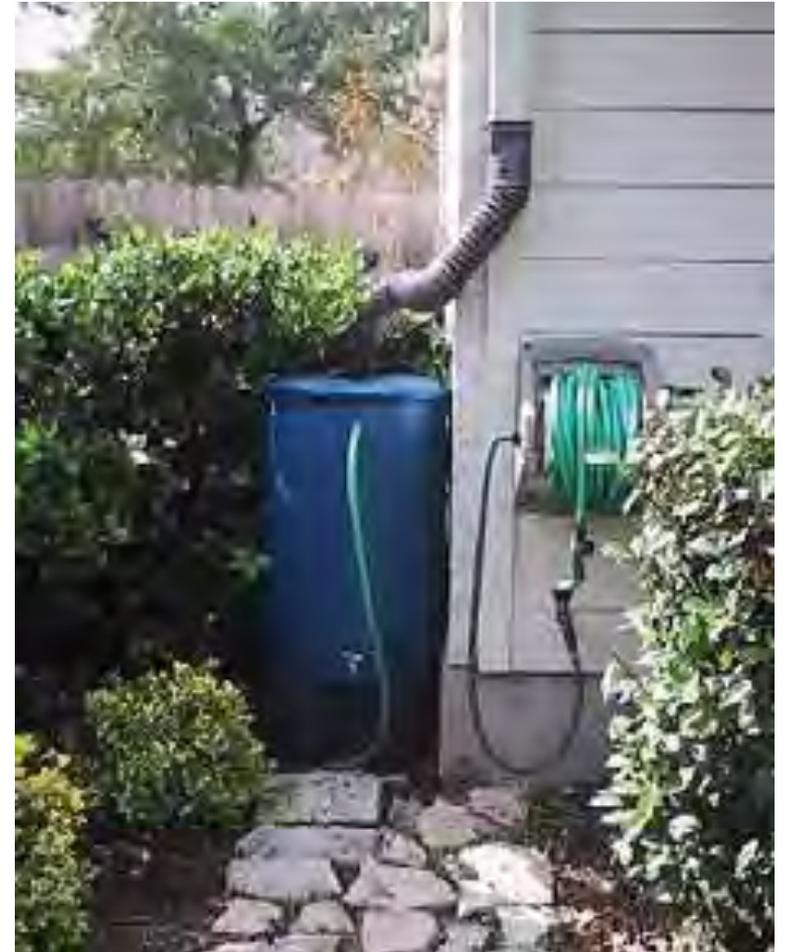


Installing a rain barrel

Choose a location



Gardenwatersaver.com



Aaron's Rain Barrels

Installing a rain barrel



Level the ground

Installing a rain barrel

Using a stand or concrete blocks



Woodland Carpentry



Aaron's Rain Barrels

Installing a rain barrel



Measure and mark where to cut downspout for adapter or diverter

Installing a rain barrel



Remove downspout and cut



Installing a rain barrel

Role of diverters

- Direct flow to barrel
- Take offline in winter
- Some designs have integrated overflow



Installing a rain barrel

Install diverter or adapter



Diverter



Adapter

Installing a rain barrel

Re-attach downspout, if necessary



Installing a rain barrel



Attach spigot if not already attached



Installing a rain barrel



Attach hose for outflow

Installing a rain barrel

Attach overflow hose, if used



sky-bolt.com



Aquabarrel



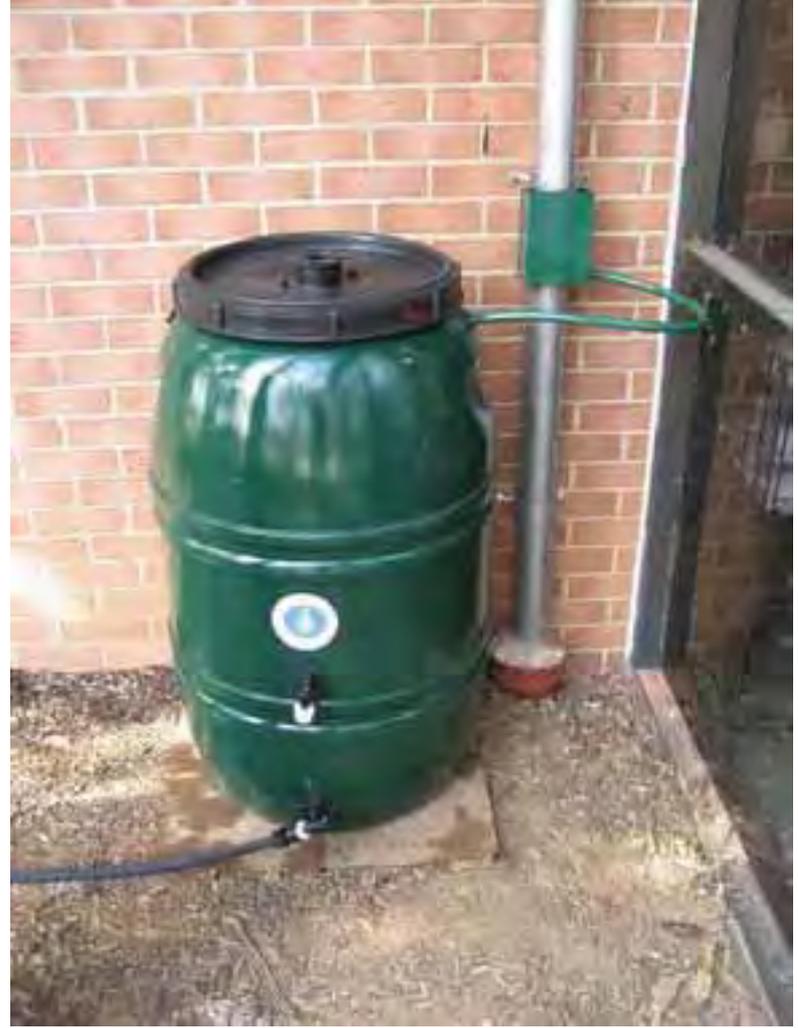
Univ. of Florida

Installing a rain barrel



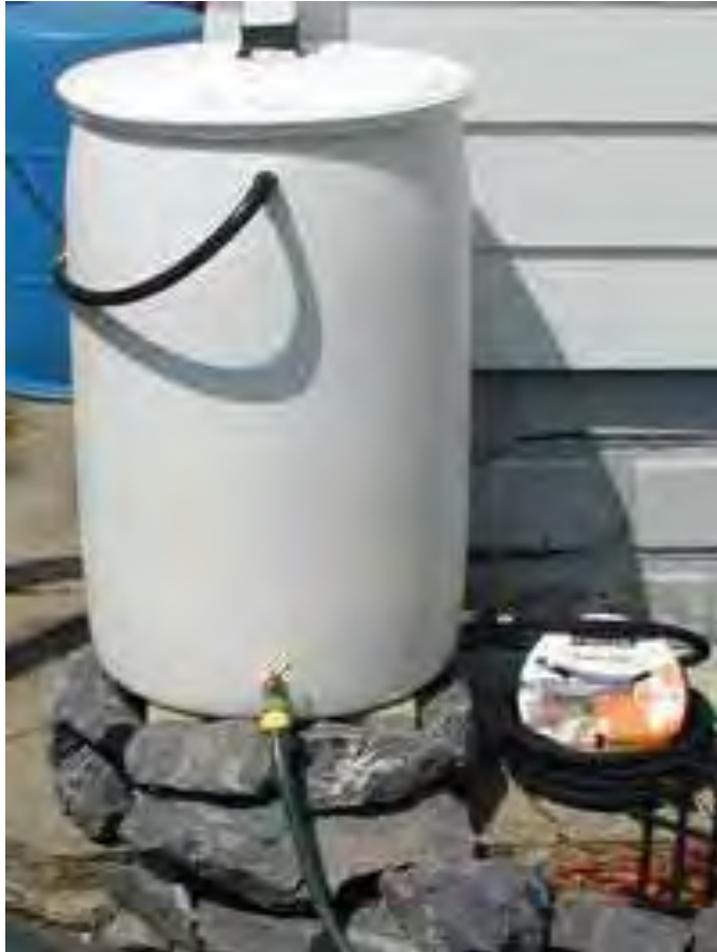
Cover inlet with screen to catch debris and block mosquitoes

Installing a rain barrel



Replace lid

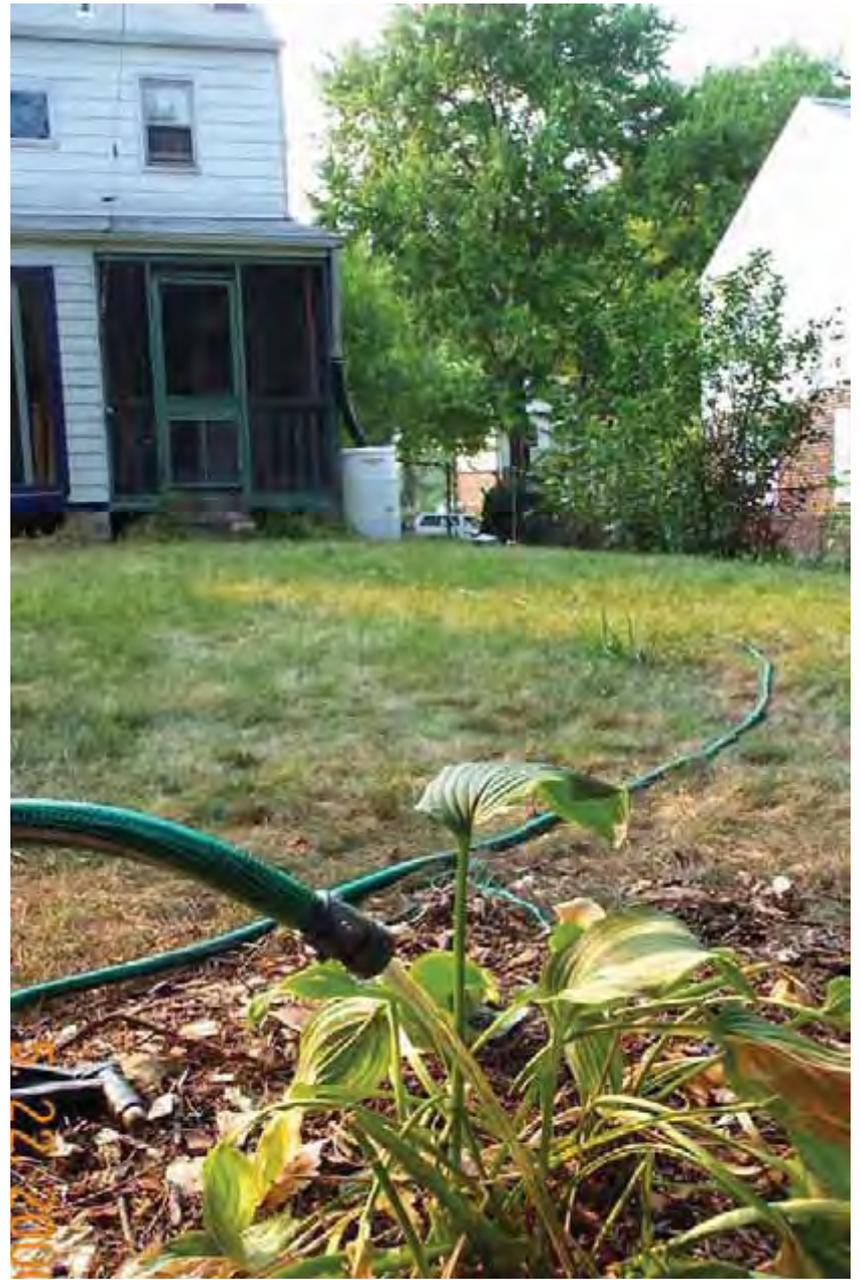
Using captured rainwater



- Hook up a garden hose
- Wash cars, windows



- Fill buckets/watering cans
- Use soaker hose to drain



Cleaning the barrel

- Periodically clean the screen
- Keep gutters clear
- Empty the barrel at least 1/year
- Add small amount of bleach if necessary
- Clean with soap and water or a biodegradable cleaner
- Clean with wet/dry vacuum



Winter maintenance

- Empty the barrel
- Store indoors or upside down
- Redirect flow onto the yard at least 6' from house



Mosquitoes

- Use a mesh screen
- Use a closed barrel
- Prevent standing water outside the barrel
- Use mosquito control pellets (Mosquito-Dunks, Mosquito-zhymes)
- Add a teaspoon of bleach to kill larvae



Finishing touches



Go catch some rain!



Special Thanks to

- The City of Rockville
- The City of Gaithersburg
- Biohabitats
- Howard County

- **2010 Local Implementation Trust Fund**

2010 Trust Fund Project Highlights

Howard County Columbia Association General Growth Properties

Little Patuxent Local
Implementation 2010 Trust Fund
Grant

As a part of Maryland's plan to clean up the Chesapeake Bay, the first 2-year milestone consists of a suite of 27 actions to reduce harmful runoff by 3.75 million pounds of nitrogen and 193,000 pounds of phosphorus. Governor O'Malley announced the 2-year milestones last May to accelerate Maryland's on the ground efforts to reach its current nutrient reduction goals by a newly established end date of 2020.

The Local Implementation Trust Fund supports projects that improve water quality by reducing nitrogen, phosphorus and/or sediment pollution and that help to achieve the 2-Year Milestone. These grants provide an opportunity for locally driven initiatives to improve water quality close to home and the Bay. This 1 page highlights some examples of what the Trust is funding in Howard County.



Nutrient Reductions

TN: 47 lbs

TP: 5 lbs

TSS: 1,530 lbs

Paul Mill Road - Stream Restoration



Pre Construction November 3, 2009



Post Construction July 26, 2010

This was a heavily eroding tributary to the Little Patuxent River. The County identified a 600' reach of this stream that needed to be stabilized and restored. The stream started out on County property but it had begun migrating laterally onto the private properties. Completed, the restored stream is no longer be a source of sediment and pollutants for the Little Patuxent River.

Font Hill and Sewell's Orchard - Floating Wetlands



The County used native, perennial aquatic plants suspended in floating rafts as a low impact way to remove excess nutrients from storm water management ponds located within community parks. The County installed 3 Floating Wetlands™ in the ponds being aerated to further reduce the amount of nutrients in these systems. According to researchers from the University of Maryland, certain aquatic plants can remove almost one-quarter of a pound of nitrogen per square foot of plant material per year.

Howard County Columbia Association General Growth Properties

Little Patuxent Local
Implementation 2010 Trust Fund
Grant



Nutrient Reductions

TN: 1347 lbs

TP: 243 lbs

TSS: 251 lbs

Education and Outreach



Watershed restoration requires a variety of water quality projects, which includes larger stormwater pond and stream restoration projects, as well as individual efforts of the residents within the watershed. While the County is designing and constructing the larger scale projects, there is a need to mobilize the residents in the watershed to increase their environmental awareness and promote smaller projects/efforts on their individual lots. When looked at as a whole all of these small scale projects can have a large impact on the water quality in the watershed. Simple things such as smart lawn fertilization, picking up your pet's waste and installing a raingarden or a rainbarrel can help.

Cedar Lane Park - North Area Bioretention Facility



Pre Construction November 3, 2009



Post Construction July 26, 2010



Post Construction July 26, 2010



The main parking lot at the Cedar Lane Park did not receive water quality treatment. Bioretention was added to the site to help treat site runoff from the parking lot. A bioretention facility (or series of bioretention islands in the parking lot) will pick up the parking lot drainage and pre-treat it prior to its discharge from the site, thus providing water quality treatment that is not currently being provided. The facility will also help to reduce the volume of water leaving the site, which will help the stream.

Contact and Resources



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Sea Grant Extension

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Green Central Station

livegreenhoward.com

<http://livegreenhoward.com/water/rain-gardens-rain-barrels/>