



Stormwater: A Business Resource

*Help Reduce
Water Pollution
and Flooding*

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Pennsylvania - Major River Basins



Delaware River Basin



Delaware
River
Watershed:
All the land
that drains
stormwater
to the
Delaware
River.

Water Supply

Rain: too much or too little



Rain flows to the river through storm drains. No trash or waste water should go to the storm drain.



Water Demand

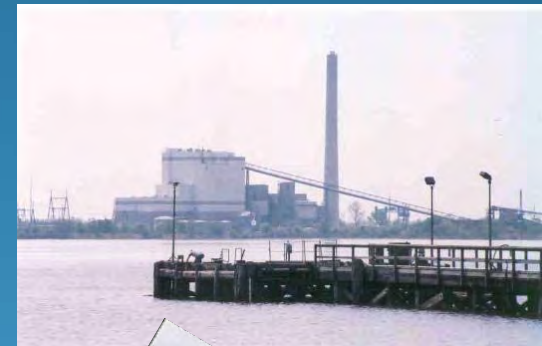


**Swimming & Boating
= \$60 Million Annually**

**Drinking
Water for 15
million
people**



**Regional Industry =
Billions of \$'s, and
1000's of Jobs**



**Fishing & Wildlife Tourism =
\$150 Million Annually**



**Regional Farming =
\$2.5 Billion Annually**



We depend on clean and plentiful water



- **Drinking Water & Sanitation**

- **Industry**

- **Food Production**

- **Recreation**

- **Scenery & Property Values**

- **Fire Safety**

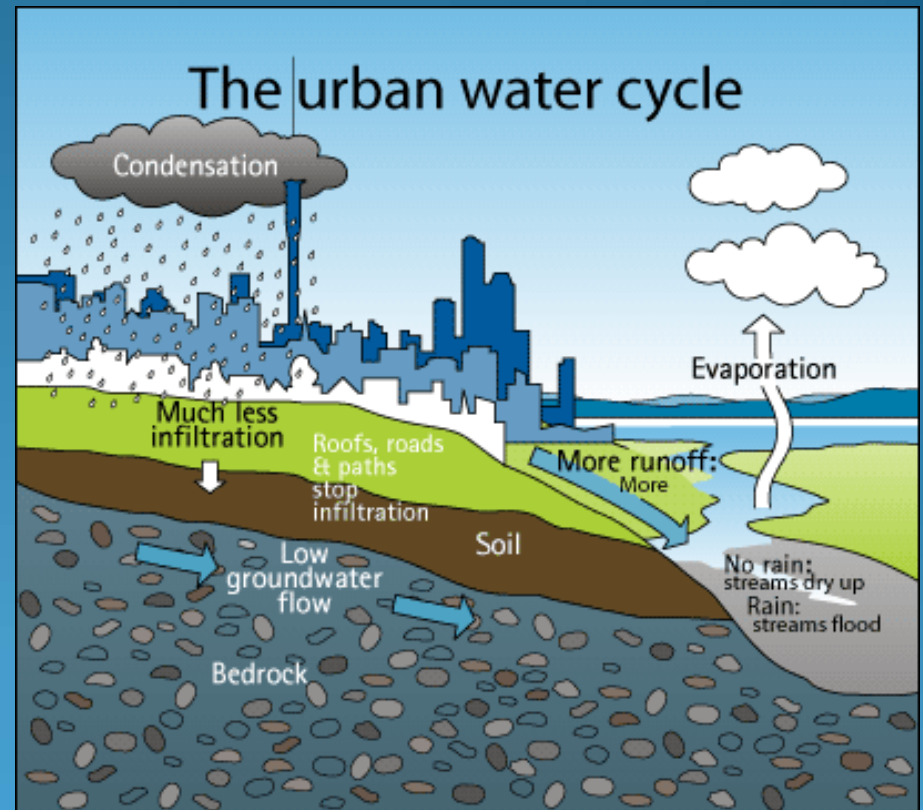
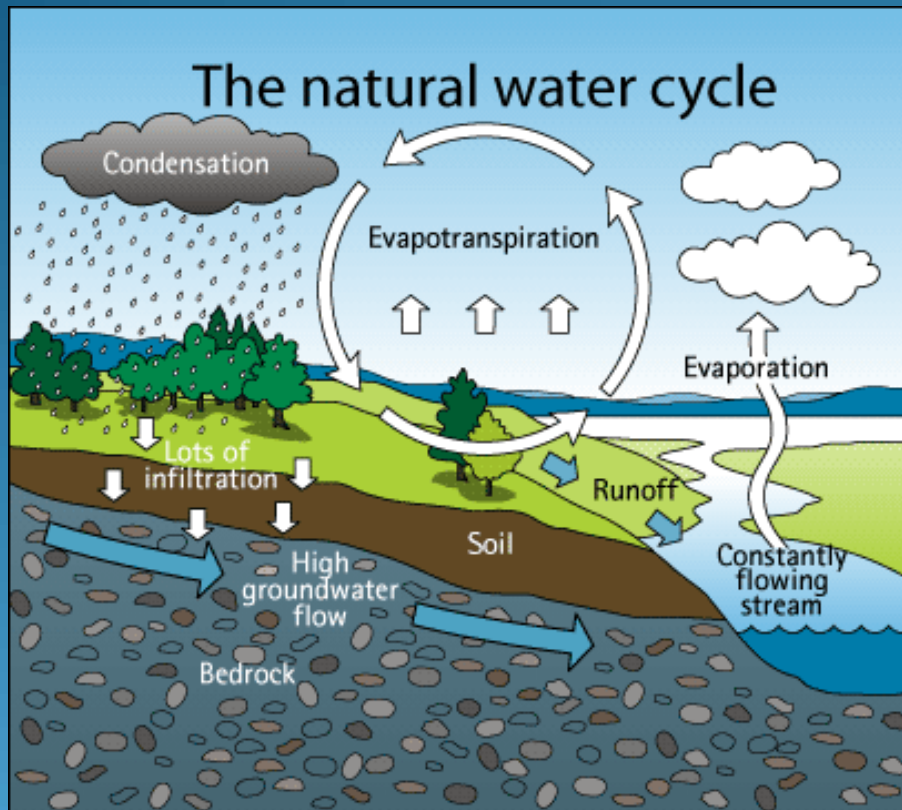
Clean water is good for business

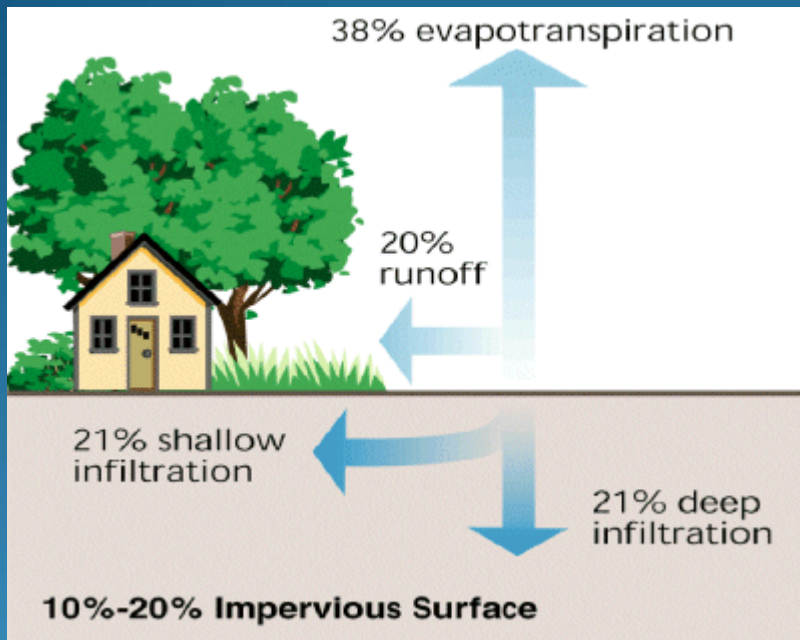


Flooding and pollution are bad for everyone

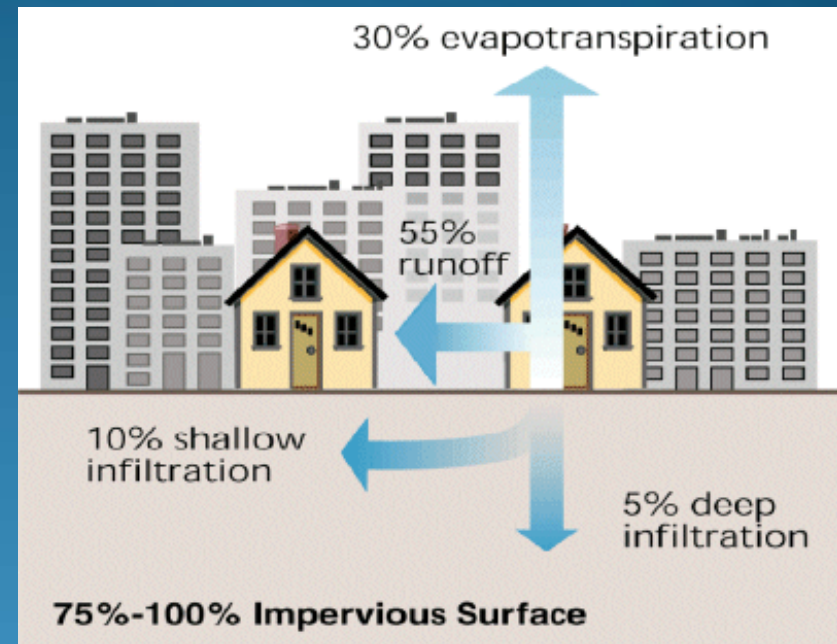


How landscape moves rainwater:



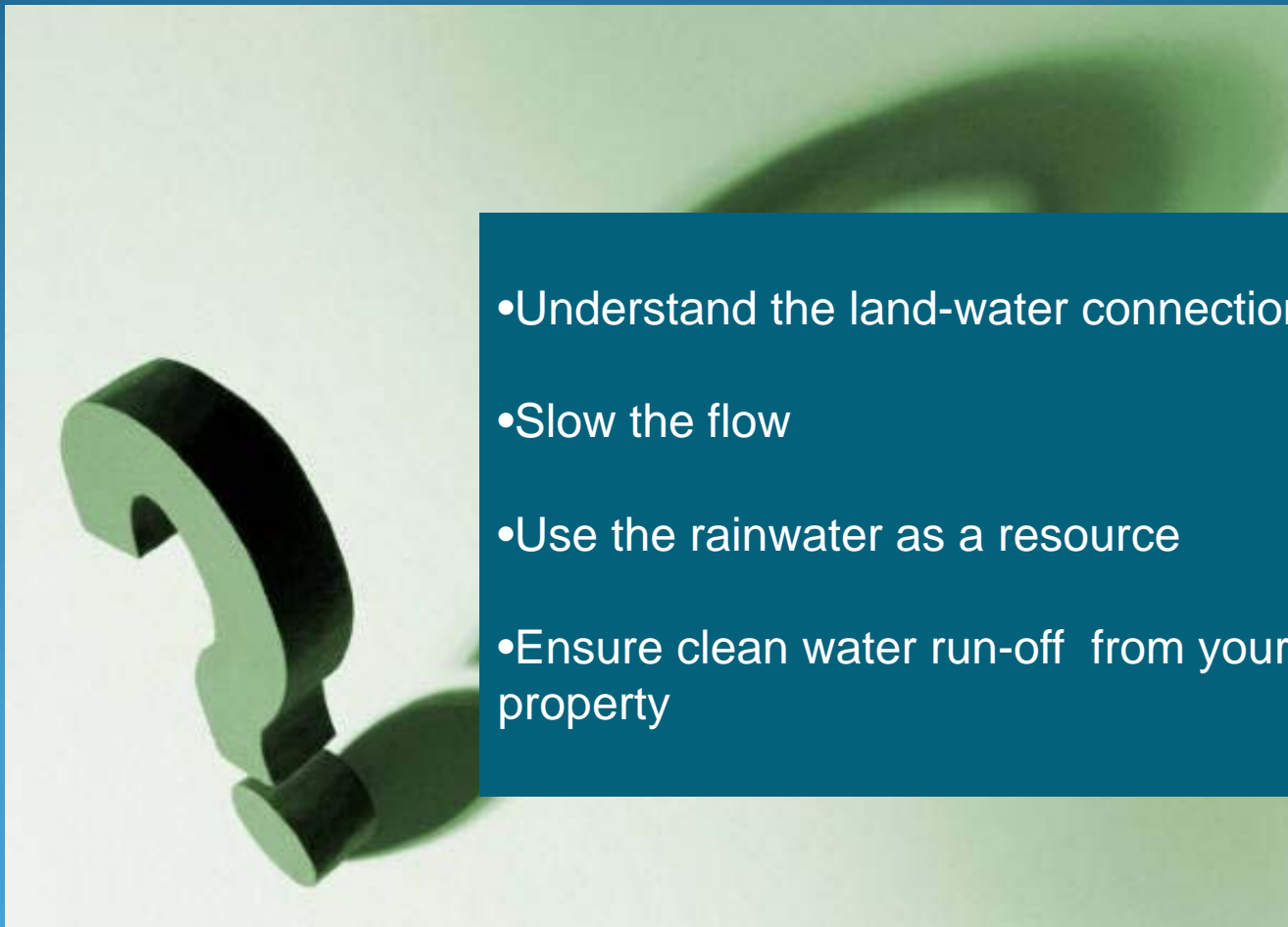


At **10%** impervious (hard) surfaces, streams start to have pollution, erosion and flooding issues.



At **25-40%** impervious (hard) surfaces, streams no longer support ecological or human uses such as drinking water. Cities have more than **75%** impervious surfaces.

How can your business help clean waterways and reduce flooding?



- Understand the land-water connection
- Slow the flow
- Use the rainwater as a resource
- Ensure clean water run-off from your property

SLOW the FLOW...



REDUCE FLOODING

Stormwater Runoff:

Torrents of rain water flooding the streets, overpowering storm sewers, eroding stream banks while carrying away precious soil from the land, leaving raging creeks scoured and lifeless - all while wreaking more havoc downstream...

and we all live downstream.

Water is valuable – why let it run away? We have options!



SIMPLE BUSINESS PRACTICES TO
REDUCE FLOODING AND KEEP
LOCAL WATERS CLEAN

Understanding the Land-Water connection is the first step to prevent flooding and protect local creeks and rivers.

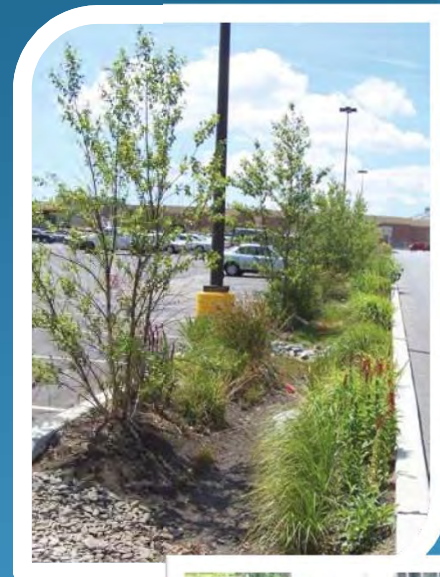
1 Green-up Your Property

Greening up to slow the flow:

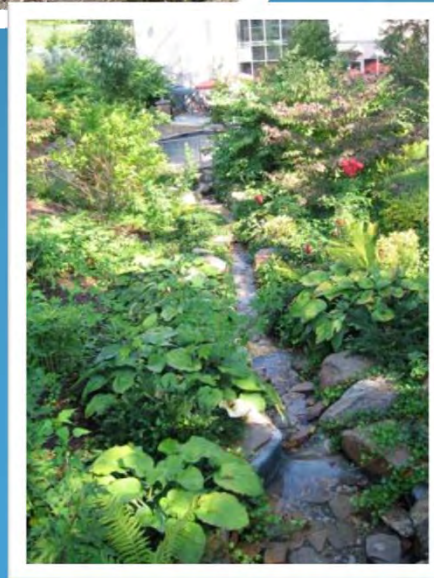


Rain Gardens soak up water in a low spot-great for small properties.

Natural recycled water pond at Arcadia University.



Parking area swales capture runoff and allow water to soak into the ground.



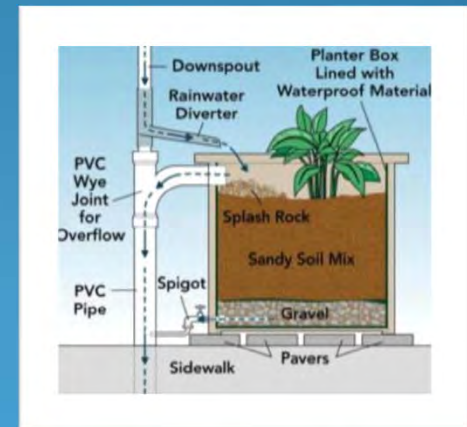
Put plants to work!



Sidewalk planters beautify streetscapes and soak up stormwater!



Downspout planters make use of roof water to keep plants healthy and create attractive storefronts!



Local property owners paying \$2,000 to \$3,000 per year on maintenance were able to reduce their costs by 10% per year with natural landscapes



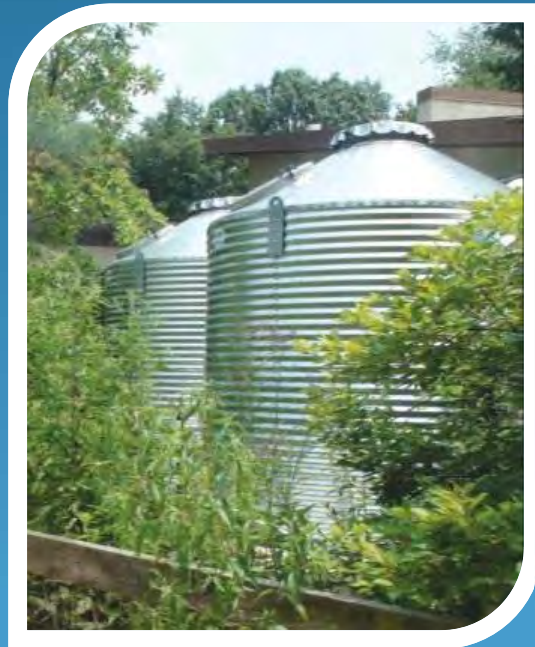
Meadows or small areas of plants with long roots stabilize soil to prevent erosion. They slow down runoff and filter pollutants too!



Street trees provide beauty, cooling shade, and they drink a LOT of water.

In some cases, properties can gain up to a 50% reduction in their energy costs from mature urban trees planted near buildings.

Rain water is free water: Reduce stormwater runoff AND your water bill!

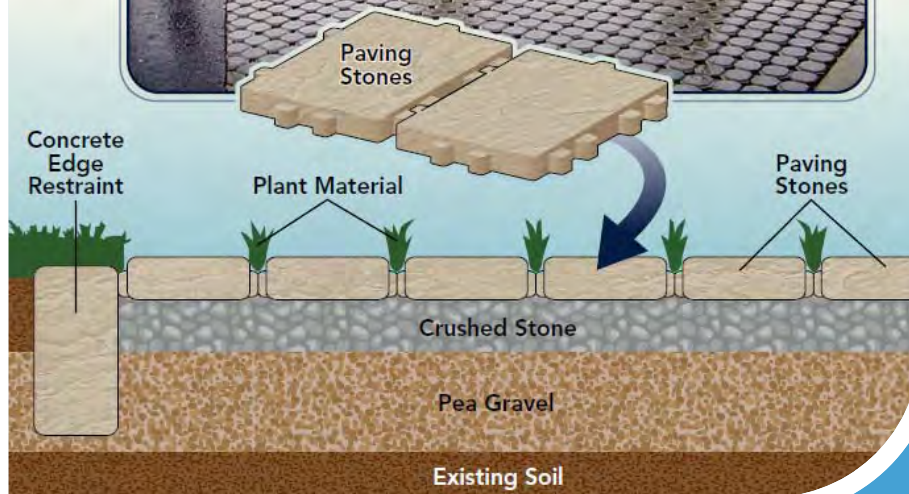


Even in small spaces, rain barrels collect enough water to help keep indoor and outdoor plants happy during dry spells!



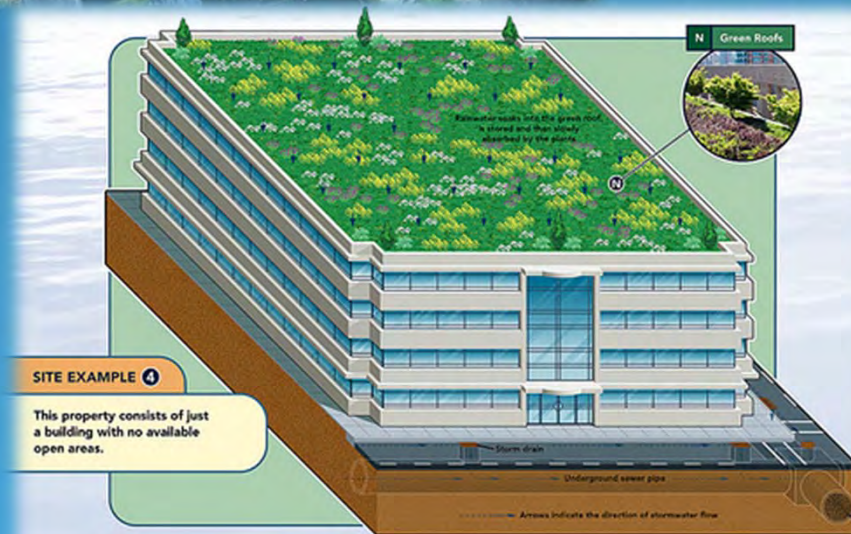
Water reuses for businesses can include HVAC cooling, washing machines, toilets, and cleaning.

Need pavement? Consider porous alternatives!



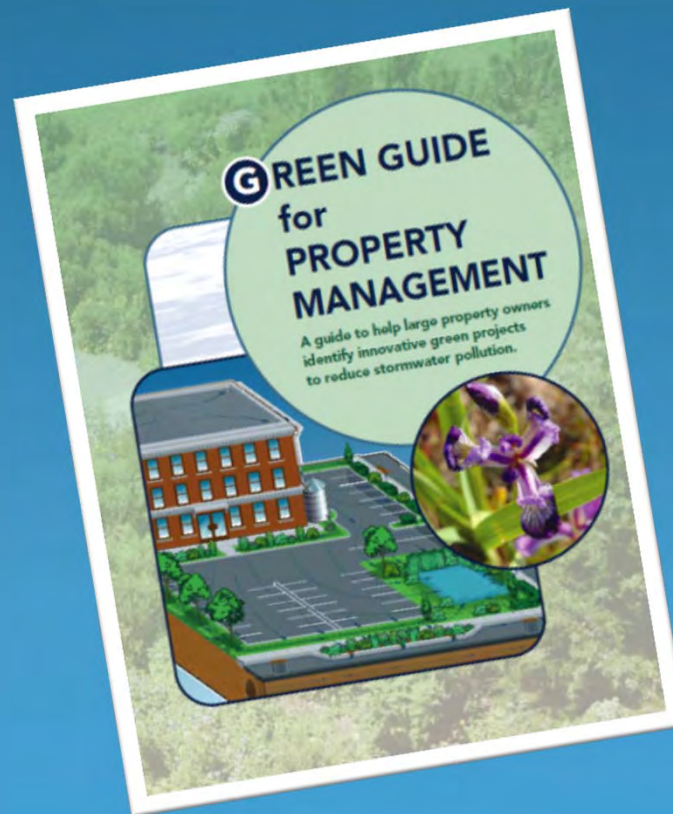
Green roof technology

Concept
photo of
Philadelphia
neighborhood



New green
roof at
Arcadia
University

Learn more about green infrastructure



Making the land/water connection

Clean Streets = Clean Streams!

Everything that takes place in the streets, on sidewalks, and on your work, home or school property can have an impact on the amount of water and the cleanliness of water in local creeks and rivers.

DIRT/SAND

METALS

BACTERIA

GREASE

TRASH

FUEL/OIL

NUTRIENTS



Protecting source water...

...makes good “cents”. The dirtier the water, the more expensive it is to treat for public use.

It is easier and far less expensive to prevent water pollution.



Where does your drinking water come from?

Business housekeeping for cleaner water:

- Dry Methods for Cleanup
- Cover and Contain
- Avoid Drainage Areas
- Limit Use of Toxics
- Educate Employees
- Look for Ways to Improve



Dry Methods for Cleaning

- Sweep – avoid using a water hose to clean paved areas.
- Keep outdoor areas litter-free.
- Use absorbent products to clean up chemical or oil spills & follow proper disposal procedures.



Large area?

Hire/rent street sweeper or professional machinery to vacuum dirt & debris.

Water use a “must” for cleanup?

Carefully dispose of wastewater down a drain that is connected to wastewater treatment facility – NEVER down a stormdrain!

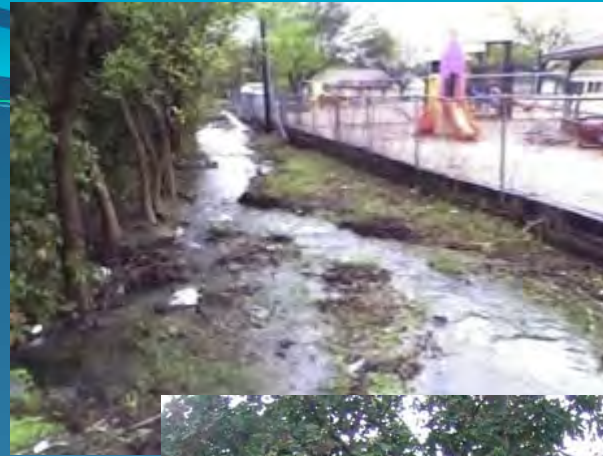
Cover and Contain

- Provide lidded cigarette and trash receptacles.
- Cover & elevate materials (such as trash, grease or chemicals) that are stored outdoors.
- Use tarps for items without permanent cover.
- Keep pollution-potential activities under cover (fueling, engine repair, painting, etc.).
- Have back-up protection to contain spills (i.e. drip pans, catch basins, curbing, etc.) so they can be cleaned up easily.



Avoid Working in Drainage Areas

- Keep ALL storage out of water flow paths.
- Plan outdoor projects such as painting, fertilizing, mixing chemicals, etc. to take place in DRY weather.
- Consider off-site services or storage space if you cannot conduct certain activities without impacting water quality (i.e. commercial car wash, rental storage space).
- Keep dumpsters and other storage containers away from downspouts to prevent rust & leaks.



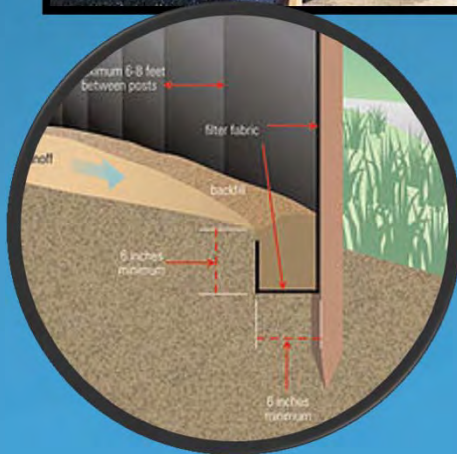
Under construction? Use temporary measures to slow down stormwater and stop erosion before it starts.

Silt Fencing



Stop erosion

Plant bare ground with vegetation as soon as possible to stop erosion.



Limit Use of Toxic Products

- Look for eco-friendly alternatives to toxic chemicals for cleaning, degreasing, pest control, etc.
- Purchase needed chemicals in small quantity so extended storage is not needed.
- Dispose of toxic materials in a safe and approved way.
- Recycle whenever possible.



Educate Employees

- Train employees and contractors on clean water maintenance practices.
- Label storm drains on your property as a reminder that they drain to a local waterway – only allow RAIN down the DRAIN!
- Keep appropriate cleanup supplies in areas where spills can occur. Train employees on proper use and disposal of these materials according to MSDS information.



Look for Opportunities on Your Property

- Look around for signs of pollution – oil sheens, grease stains, eroding soil, etc. Take action to fix these problems.
- Make sure stormwater drains or other stormwater structures are working properly – maintain them regularly to prevent clogs.
- Create rain gardens or basins in places where water naturally pools on your property.
- Eliminate illicit discharges – in older buildings.

**Water is precious:
Clean water partners can
make a difference!**



LEAN WATER IS EVERYBODY'S BUSINESS!

With a few simple steps, businesses can reduce these harmful pollutants in local waterways:

BUSINESS ACTIVITY EXAMPLES:	COMMON POLLUTANTS:					
	Bacteria	Heavy Metals	Nutrients	Oil & Grease	Erosion & Debris	Toxic Chemicals
Engine Maintenance & Repair		✓		✓	✓	✓
Food Service & Production	✓		✓	✓	✓	✓
Gas Stations		✓		✓	✓	✓
Washing Vehicles, Equipment, etc.	✓			✓	✓	✓
Waste Handling	✓	✓	✓	✓	✓	✓
Landscaping		✓	✓		✓	✓
Parking Lots, Sidewalks, & Paved Areas	✓		✓	✓	✓	

Thank You!



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Pennsylvania Department of Environmental Protection



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