

# Stormwater Management for Hotels

**Green Hotel**  
Webinar Series  
Session 3: April 16, 2014




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## Presenter

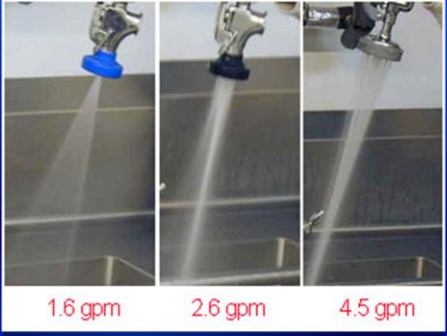
- ☼ Chairman and President of the American Green Lodging and Hospitality Association
- ☼ Formally Co-founder and Director of the Florida Green Lodging Program
- ☼ Member of the Board of Advisors for EcoRooms & EcoSuites
- ☼ Extensive public and private sector experience in various areas of environmental protection and sustainability.



Obvious Payback



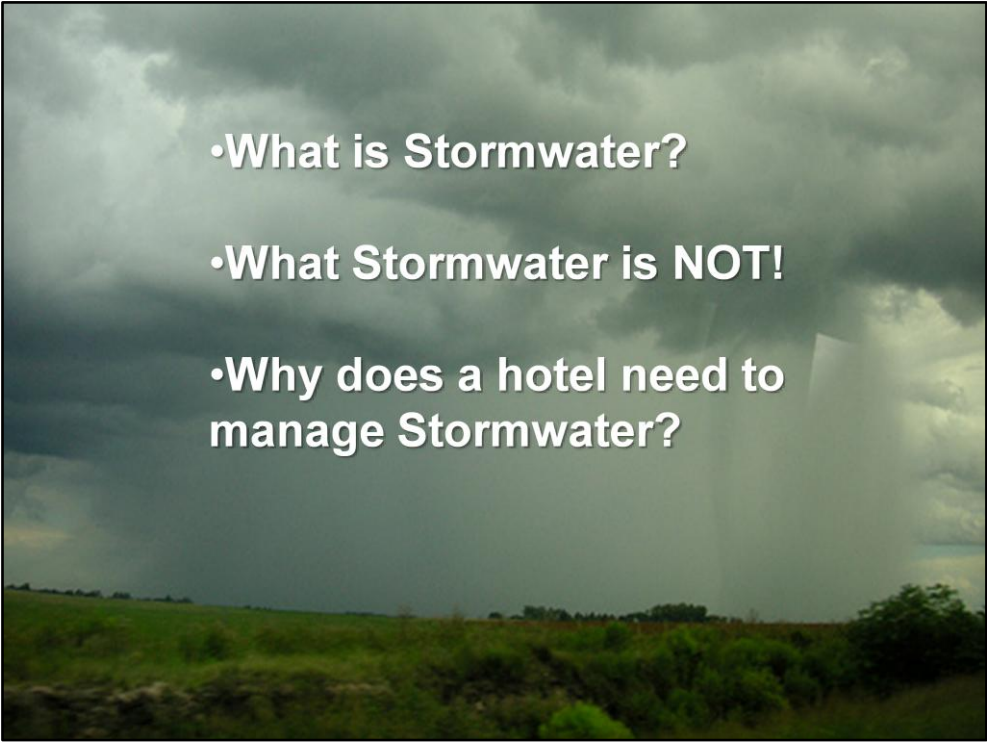
Energy Efficiency



Water Efficiency

The image illustrates 'Obvious Payback' through two examples of efficiency. On the left, four energy-efficient light bulbs are shown against a green background, with the text 'Energy Efficiency' below them. On the right, three faucets are shown with different water flow rates: 1.6 gpm, 2.6 gpm, and 4.5 gpm, with the text 'Water Efficiency' below them. The overall background is blue.

- Unlike initiatives to reduce energy and water consumption, the payback for managing Stormwater is not as obvious.

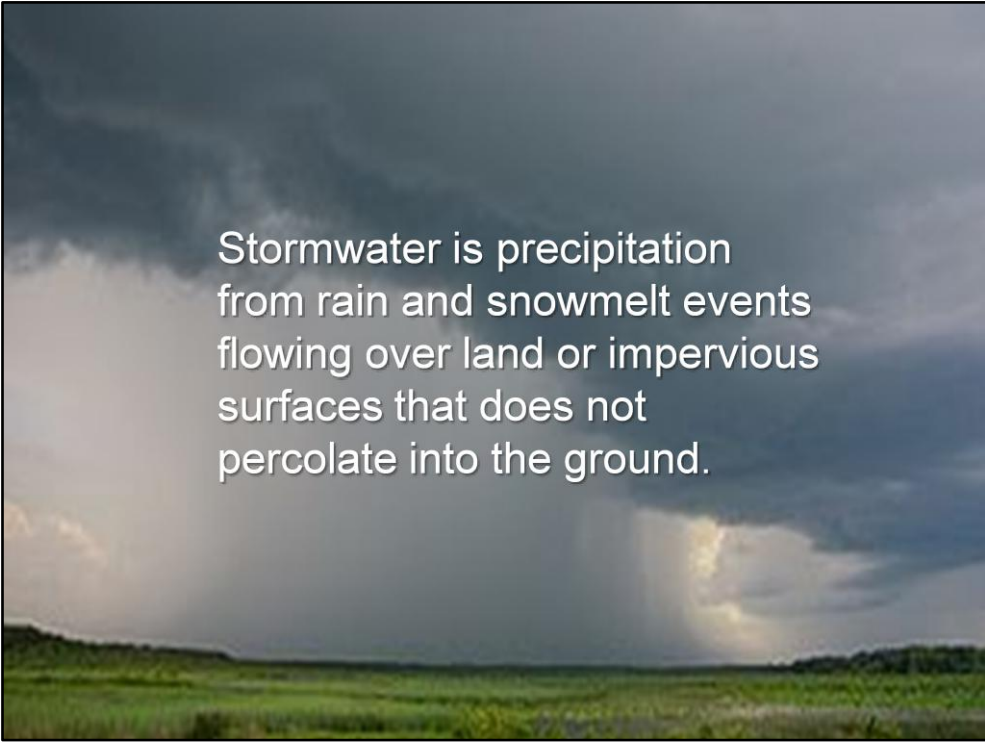


•What is Stormwater?

•What Stormwater is NOT!

•Why does a hotel need to manage Stormwater?

Stormwater is precipitation from rain and snowmelt events flowing over land or impervious surfaces that does not percolate into the ground.



- Stormwater is NOT!



Water generated by washing down street and sidewalks



Water generated by washing down equipment with or without chemicals

- Stormwater is not water generated from washing dirt, oil, lawn chemicals or grass clippings off a sidewalk or from a parking lot and into a storm drain.
- It is not water generated from washing or steam cleaning equipment, regardless of whether cleaning chemicals are used or not.

- Stormwater is NOT!



Water generated by washing any items into the storm drain



Water generated by washing or disposing of any products or chemicals

-Water generated by washing  
not SW.

is

-Water generated by washing or disposing of any products  
or chemicals into a storm drain is not SW.

- Stormwater is NOT!



Water generated by the mopping of floors



Water generated by washing vehicles

•Mop water pored out into a parking lot or a storm drain is not SW.

•Water generated by washing vehicles were the wastewater makes its way into the storm drain is SW.





- Only stormwater, water generated from a rainfall or snowmelt events, should ever make its way into a storm drain.



## Why manage Stormwater?

- To minimize water quantity and quality issues caused by Urbanization,
- To help maintain the health and esthetics of a property and the community,
- To reduce flooding and erosion potential,
- To lessen the risk of regulatory fines,
- To moderate losses and saves money...

## Managing SW reduces water quantity issued caused by Urbanization

- Increased impervious surfaces
- Increases the volume and velocity
- Destructive to public and private property



•Stormwater either gets absorbed into the ground where it's filtered and replenishes the aquifer or flows into downstream waters.

•In urbanized areas, impervious surfaces such as rooftops, roads and parking lots prevent stormwater from naturally percolating into the ground. Instead, the water runs rapidly across these surfaces and into storm drains, sewer systems, and drainage ditches causing an increases in the volume and velocity.

•Stormwater runoff and sediments can be destructive to public and private property and their infrastructure.

## Managing SW reduces water quality issues caused by Urbanization

- Conveyance of urban pollution
- Toxic chemical, nutrients and pathogens
- Downstream damage



- Stormwater contributes to the conveyance of urban pollutants such as:
  - Oil, grease and toxic chemicals from motor vehicles,
  - Pesticides, herbicides and fertilizers from lawns and gardens
  - Viruses, bacteria and nutrients from pet waste and failing septic systems
  - Road salts
  - And Heavy metals from roof shingles, motor vehicles and other sources
- Moves downstream where it can have devastating impacts on the environment.

## Not managing SW reduces fisheries and wildlife habitat resulting in:

- Siltation of nurseries
- Reduced food supply
- Reduced hunting and fishing



- Unmanaged stormwater results in siltation of fish and wildlife nurseries and the pollution of their habitat.
- Can impact food supplies and recreational hunting and fishing.

## Managing SW helps maintain the health and esthetic quality of a property and the community

- Prevents unsightliness
- Reduced release of noxious fumes



- Properly maintaining a stormwater system prevents the unsightly accumulation of dirt and trash at and surrounding a property.
- Helps prevent the release of unpleasant odors from the sewer system.

## Managing SW reduces flooding potential

- Reduces interior flooding potential
- Lessens risk of mold formation
- Prevents decay and destruction of landscape
- Minimizes need for fungicides



- Flooding of a hotel can be devastating to its staff and owners.
- Mold caused by high moisture levels can have long-term affects.
- Management of a hotel's stormwater and stormwater system can help prevent both flooding and erosion, and can prevent the decay and destruction of a propert's landscape caused by excess siltation and soil moisture.
- Proper management can lessen the need to use landscape fungicides when soil moisture levels remain high for long periods of time.

## Managing SW lessens the potential for regulatory fines

- State and local government guidelines, ordinances and requirements
- Check to ensure compliance



- Many state and local governments have a number of guidelines, ordinances and requirements for managing a facility's stormwater system for the purposes of preventing, reducing, and/or treating stormwater runoff.
- Every property should check with their local stormwater management program to learn more and to ensure that they are in compliance.

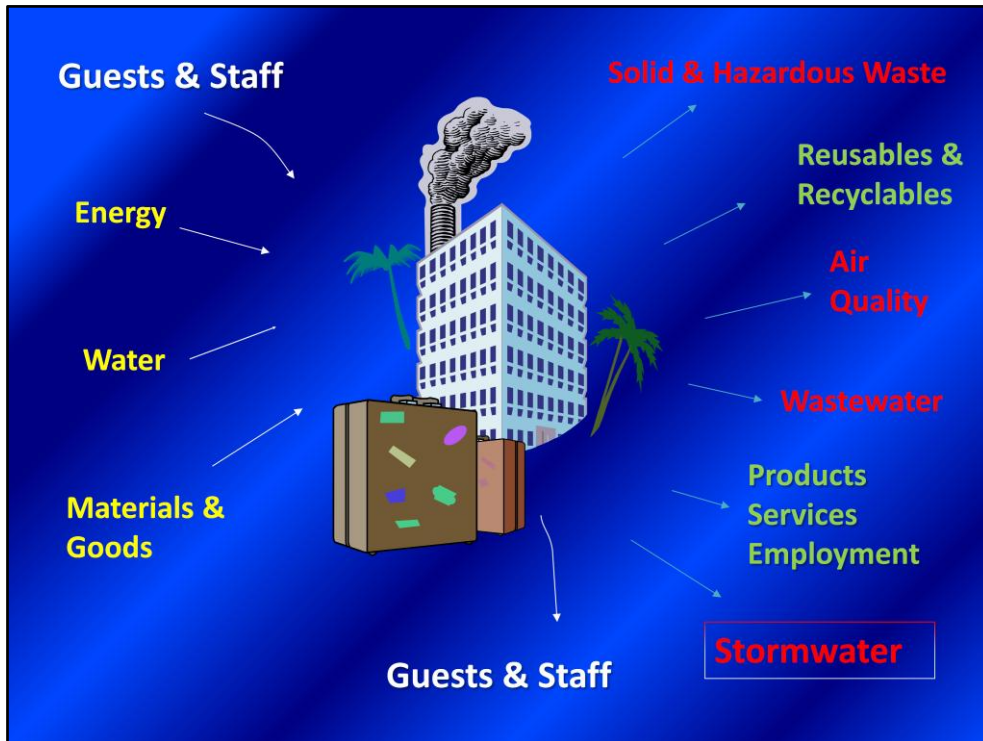


## Managing SW moderates losses and saves money

- Keeps guests returning
- Flooding losses minimized
- Prevents regulatory fines



- Vacation and resort properties may attract guest because of their area's outdoor recreational opportunities or natural beauty. For these properties, its highly important to do all they can to help maintain what attracts their guests. The active management of a property's stormwater system can help ensure the health and beauty of both a property and the neighboring community where guests visit.
- Losses can be prevented and money saved by properly managing a stormwater system to reduce flooding and erosion.
- Knowing what's required of a hotel for the proper management of its stormwater system can prevent any regulatory fines from being levied against it, saving time and money.



•A hotel is not unlike a factory. It consumes Energy, Water, Materials and Goods and generates Products, Services, Employment and Waste (Solid & Hazardous Waste, Wastewater and STORMWATER).

•Every structure, every building, every hotel produces STORMWATER!

## Operational BMPs

- Utilize local resources to develop a SWM Plan or hire a professional
- Educate staff about SW
- Work with staff to implement the Plan
- Place contractor prohibitions in the contract



•Operational Best Management Practices to help a hotel better manage their SW:

- Contact the locally available resources such as the county or city SW program, a universities or an agricultural extension office and ask for FREE assistance to help develop a Stormwater Management Plan. Consider hiring a professional SW management consultant to develop a plan and help implement it.
- Educate staff about the importance of managing the property's SW and work closely with them to implement the Plan.
- If contracting with a lawn service or with any other contractors for work on the property, make sure they understand that nothing is to be dumped or washed out in the parking lot or storm drain and that only SW is permitted to makes its way into the stormwater system. Consider added specific prohibitions to any contracts established.

## Operational BMPs

- Contractor stormwater system prohibitions:
  - NO solids waste
  - NO toxins or nutrients
  - NO cleaning product
  - NO paints, oils or greases
  - NO wash water of any kind



•A list prohibiting the disposal of the following items into the SW system should include:

- Solids waste such street sweepings, dirt or grass clippings,
- Toxins or nutrients used for landscape maintenance,
- Cleaning products such as degreasers or bleaches, even if non-toxic,
- Paints, oils or greases, including low or no VOC products and cooking oils and
- A prohibition on ALL wash water, including water generated when washing buildings, parking lots, equipment or vehicles.

## Operation BMPs

- Clear storm drains and properly dispose of waste
- Properly control and remove all oils and greases



•Staff should keep ALL storm drains and catch basins clear of silt, leaf liter and trash. All waste collected should be properly disposed with the property's solid waste.

•Staff should active look to control and properly remove all oils and greases from the parking lots, dumpster area and cooking oil collection stations.

## Operation BMPs

- Cleaning on porous surface
- Utilize a mop sink



•All washing, including pressure washing or steaming clean taking place outside should be done on a flat and porous surface such as on the lawn or a porous concrete parking area with non-toxic cleaners.

•Utilize a mop sink if available to wash small equipment and other items such as paint brushes and cleaning mops. PTAC units can be cleaned in a properly sized mop sink.

## Infrastructure BMPs

- Land contouring



•Infrastructure Best Management Practices to help a hotel better manage their SW:

○Structural features or modifications can be made to a property and its SW management system to optimize water quality and reduce volumes such as Land Contouring.

○This is one of the most common BMPs utilized to slow the conveyance of water. It can be as simple as sloping land away from a building to prevent undermining of the structures foundation or as detailed as constructing a stormwater retention basin.

## Infrastructure BMPs

- Retention basins



- In a Retention basin, water slowly makes its way through vegetation and percolates through soils for filtration and biological action to remove pollutants.



## Infrastructure BMPs

- Concrete grid pavers



- Concrete grid pavers can be employed to reduce runoff volumes and trap vehicle generated pollutants.

## Infrastructure BMPs

- Vegetative filter strips



- Vegetative filter strips when properly designed can reduce sediment and remove pollutants from SW before it makes its way to natural water bodies downstream.

## Infrastructure BMPs

- Grassy swales



Grassy swales provide filtration and pretreatment to SW before discharge to a treatment systems or receiving water body.

## Infrastructure BMPs

- Rain barrels or cisterns



- Rain barrels and cisterns are primarily used to harvest rainwater; however, they are also an excellent tool to help control volumes of SW generated in a rainfall event.

## Infrastructure BMPs

- Green roof



•Green roofs can serve several purposes for a hotel, such as to absorb and filter rainwater, and to providing insulation for the building. It can also provide a more aesthetically pleasing view for guestrooms that overlook them.



If interested in learning more about SW, why it's important to manage and what a hotel can do to improve it, the following websites are recommend:

- EPA Stormwater Management Best Practices
- Best Management Practices for South Florida Urban Stormwater Management Systems
- North Carolina Division of Water Quality Best Management Practices Manual
- NJ Stormwater Best Management Practices Manual

## Contact

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