

Irrigation Association
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Abstract: Landscapes are losing sustainability and are placing greater demands on municipal and natural resources. Contaminated stormwater runoff from developed land is the leading cause of water quality problems, accounting for 70% of water pollution in urban areas. Approximately 80% of rainwater runs into storm sewers versus soaking into the ground.

Utilizing rainwater for gardens and lawns reduces the strain on municipal systems. Stored rainwater alleviates water shortages during periods of drought and helps alleviate flooding that typically occurs when heavy rains follow a drought. Consumers want an aesthetically appealing solution to environmental problems.

Used in conjunction with a decorative water feature, a rainwater harvest storage system captures polluted rainwater before it enters the sewer system, and then filters and stores the water to be accessed for future use in both residential and commercial applications.

In addition, ecosystem ponds can be implemented to further aid in providing sustainable environments for wildlife habitat.

Keywords: Decline in Biodiversity, Rainwater solutions, Urban Runoff, Polluted Runoff, Water Issues, Coastal pollution, Clean Water Act, Problems with Combined Sewer Systems, Stormwater runoff and Coastal Health Issues, Hydrologic Cycle, Riparian habitat degradation

Report:

A summary of the hydrologic cycle and facts about water, we're known as the blue planet, the majority 97.5% of all water is salt water the remaining water is made up of glaciers, groundwater, lakes, rivers and streams and water vapor in our atmosphere. The water cycle is a process in which water is evaporated and rises up into the atmosphere where it condenses and cools it then falls back to the earth as precipitation, it will soak into the ground replenishing our groundwater or runoff into a lake or river or it's absorbed by plants for photosynthesis. This cycle has been going on for eons unchanged until man and development.

Urbanization has altered our watersheds through the process of construction and development, this occurs in several ways:

- Impervious surface installation, roofs, roads, asphalt, etc...
- Removal and compaction of native soils
- Use of potable water for irrigation
- Pollutant and contamination from stormwater runoff

The effects of urbanization on our environment and biodiversity, this is a critical component for future generations which include: Clean water for drinking and healthy water for native inhabitants: amphibians, insects, fish, birds, mammals etc... all living things need water and the proper habitats to survive.

The changes associated with development have negative impacts on their immediate surroundings and global impacts from a watershed perspective as all water leads to the sea. During this process the increased volume, velocity and quality of the water is responsible for the degradation of all the associated riparian habitats. According to the EPA urban runoff is the #1 cause of coastal pollution.

The combination of impervious surface construction (blocking the natural infiltration of water to the aquifers), increasing usage of water through improper irrigation techniques and population growth in water stressed areas is causing a decline in our freshwater reserves. The effects of these are forcing the implementation of water restrictions and regulations limiting consumption and usage of this resource. Aquifers (subterranean water reserves), continue to decrease in volume forcing policy makers to make hard decisions for the sustainability of their communities. Simply put we're taking out water faster than we're allowing it to fill back up, this is not sustainable!

This process is not only destroying lakes, rivers and streams but also overburdening our storm sewer systems requiring costly repairs and upgrades to handle the increasing volumes. Just moving water from underground reserves, from surface lakes and reservoirs, filtering it and delivering it to our homes and businesses is responsible for up to 5% (estimate) of our countries electrical consumption! Add to this the carbon dioxide production and use of other resources needed to produce the energy.

Summary:

The answer is simple rainwater capture and reuse on a micro scale, capture water where it falls and use it in and around the landscape instead of using filtered potable water. This will alleviate the stress on the overburdened storm systems, less flooding, slowing the volume and velocity down so it does not harm the natural stream corridors which will save drinking water for drinking. Less energy consumption equals better air quality and more energy available for other uses. Rainwater also has some benefits over tap water for plant productivity, water as nature intended it.

Resources:

- (California Natural Heritage Program)
- (Clean Water Act, 1972)
- (Coastal Zone Act Reauthorization Ammendments, 1990)
- (Environmental Health Science and Policy Program, University of California)
- (The Endangered Species Act, 1973)
- (Gallup Poll, Princeton New Jersey, March 2008) Environmental concerns with water
- (International Herald Tribune, April 2008) Droughts and Rainwater solutions
- (The Millenium Ecosystem Assessment, 2005) 1,360 scientists in 95 countries on Biodiversity Impacts
- (Natural Resources Defense Council) Stormwater runoff and health issues
- (Newsweek, April 2008) Rivers Running Dry
- (The New York Times, June 2008) California drought information
- (Pacific Institute) The electrical cost of water
- (Tucson Citizen, July 2008) Rainwater harvesting policies
- (Surfrider Organization) Stormwater and health/coastal issues
- (UNESCO) Global Hydrology and Water Resources
- (The United Nations World Water Development Report) World wide water facts