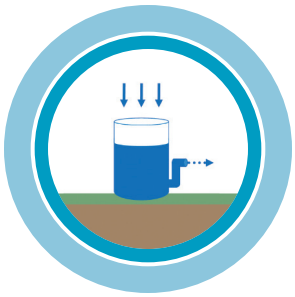

GREEN STORMWATER INFRASTRUCTURE (GSI) FACT SHEET
GSI CONCEPT #3

Storage and Reuse

WHAT IS IT?

Storage and reuse practices are designed to intercept and store runoff from impervious surfaces, such as rooftops, reducing the volume of stormwater runoff exiting a site. The stormwater is contained in a vault or other storage vessel and reused for irrigation, car washing, or other non-potable uses. A water budget, which calculates expected water captured and used, is typically developed for larger systems. The reuse of stormwater for potable needs and human consumption is not recommended.

Storage and reuse has minimal direct effect on water quality, however, indirectly it helps mitigate erosion and nutrient loading by reducing stormwater runoff volumes and the magnitude and timing of peak flows.

HOW CAN IT ASSIST IN THE MANAGEMENT OF STORMWATER?

There are two main issues associated with stormwater runoff: quality and quantity. Storage and reuse systems provide a means of addressing the latter. By capturing stormwater near its source, these systems reduce the amount of water entering nearby waterways, thus decreasing the risk of flooding, channel instability, and nutrient loading.

Storage and reuse systems are extremely useful in tight urban settings where other stormwater management techniques may be difficult to implement. Storage systems come in a variety of shapes, sizes, and configurations suitable for residential, commercial, and industrial settings.

Source: Hydro International

WHAT FACTORS AFFECT IT?

There are many things to consider when utilizing storage and/or reuse. First, it is important to measure the catchment area and calculate the expected water volume. Estimated or typical annual rainfall amounts vary by location. Annual or seasonal rainfall amounts can be obtained on the web. The storage system should be sized according to this number and include an appropriate overflow mechanism. Expected use of the stored water should also be considered. If water use is expected to be low, the system can still be used for volume reduction but may need special modifications to be as effective. Climate can also come into play. Storage systems often need to be protected from light and designed to handle freezing temperatures.

Factsheet prepared by the Vermont Green Infrastructure Initiative, a program of the Watershed Management Division of the VT Department of Environmental Conservation (http://watershedmanagement.vt.gov/).

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
GREEN INFRASTRUCTURE INITIATIVE

GREEN STORMWATER INFRASTRUCTURE (GSI) FACT SHEET
GSI CONCEPT #3: STORAGE AND REUSE

PUTTING THE CONCEPT TO WORK

Storage and reuse systems are an effective means of managing stormwater quantity and can be used in a variety of settings from urban to rural. Above ground options are perfect for residential areas while below ground systems provide greater storage capacity without a loss of space. Remember, rain water does not become stormwater until it travels across some impervious surface and gets discharged. Below are a few examples of GSI best management practices that utilize storage and reuse. Additional BMPs can be viewed at our website: http://www.watershedmanagement.vt.gov/stormwater/htm/sw_green_infrastructure.htm.

Source: Better Buildings for Oregon [Julie Waters]

Rain Barrel/Cistern

BENEFITS

> Diversion of "first flush"
> Volume reduction

Rain barrels/cisterns are designed to intercept and store runoff from rooftops. The stored volume can then be used for a variety of things. Rain barrels are typically 55 gallons in size and are perfect for small residential sites. Cisterns can be 100 gallons or more and are appropriate when greater storage is needed. 1,000 square feet of impervious generates 623 gallons of water in a 1"storm.

Underground Storage

BENEFITS

> Effective use of space
> Groundwater recharge

Underground storage can be used to capture and store rainwater from surrounding impervious surfaces such as a building roof or parking lot. Often, riser pipes and curb cuts lead runoff to subsurface vaults and large diameter pipes. Stored water is often used for irrigation. Underground storage can be placed beneath a parking lot or recreation field.

Rainwater Reuse

BENEFITS

> Independent water supply
> Decreased water demand

Rainwater reuse systems often involve the storage and reuse of water collected from roof surfaces during rain events. These systems are somewhat similar to rain barrels and cisterns but done on a much larger scale and include pumps and sometimes complex filtering systems. Potential uses include water for flushing toilets and irrigation.

REFERENCES

Lake Superior Streams, Tools for Stormwater Management, Underground Storage, http://www.lakesuperiorstreams.org/stormwater/toolkit/underground.html

Pennsylvania Department of Environmental Protection, Stormwater Best Management Practices Manual, 2006.

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

Vermont Green Infrastructure Initiative, VT DEC Watershed Management Division, One National Life Drive, Main 2, Montpelier, VT 05620-3522; 802-490-6118