Your Water, Your Future
by Dauphin County Conservation District

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Effective Stormwater Management in Action

This newsletter, the tenth in a series of eleven publications, presents several projects in Dauphin County that feature innovative Best Management Practices to effectively manage the site's stormwater runoff.

Your Water, Your Future is produced as part of Dauphin County Conservation District's Municipal Stormwater Outreach Initiative.

Please contact Gil Hirschel at 921-8100 regarding questions, comments, and requests for additional information.

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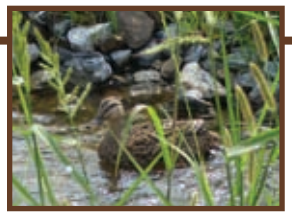
Hershey Center for Applied Research
Derry Township

The newly built Hershey Center for Applied Research needed to manage a substantial amount of runoff from large roof areas and expansive parking lots. Research Center officials decided early on in the planning process to address stormwater runoff requirements by employing the latest technology available. They looked to stormwater Best Management Practices (BMPs) to meet their needs.

Top: Rain garden with overflow inlet in center of garden.

Bottom: Rain garden designed to capture runoff from parking lot. Notice the curb along the parking spots is flush with the level of the rain garden.



Duck swimming in newly restored stream at Hershey Center for Applied Research.

Instead of installing a costly conventional stormwater sewer system, project planners decided to install multiple rain gardens that will capture runoff and prevent it from leaving the site. Runoff from the roof and parking lot is directed to strategically placed rain gardens that are designed to detain, infiltrate, and filter contaminated drainage. The rain gardens also provide attractive landscaped areas filled with flowers and plants that enhance the appearance of the Center. This site's design illustrates effective stormwater management through the use of BMPs that minimize impacts to local streams, while at the same time, provide environmentally beneficial functions.

The site also featured a small stream that ran across the property for a distance of about 1,200 feet, then disappeared underground, where it had been diverted to flow into a large pipe. Center officials decided that this waterway, if restored to a natural state, could be a great asset to the site. To restore the stream, contractors excavated a channel, and then placed a layer of various sized rocks along the bottom. Rock waterfalls and deflectors in the channel created pools and riffles, features that promote a natural aquatic habitat.

Streambanks were lined with matting, and then planted with natural meadow grasses, shrubs and trees, whose roots hold the streambank soil in place, and help prevent erosion. Just a month following construction, the new stream channel takes on the appearance of a natural waterway, as pictured below.

(Continued on reverse)

Section of restored stream featuring rock waterfall. Trees planted along the bank will hold the streambank's soil in place, preventing erosion.

Parking Garage Drainage
Derry Township

Planners of a new 1,400 vehicle parking garage at the Hershey Medical Center wanted to address concerns about the quality of runoff from impervious parking areas in the garage. They faced a dilemma in that the site had little land area surrounding the garage in which to place water quality BMPs. The solution came in the form of a relatively compact Water Quality Unit connected to the drainage system of the garage. Polluted runoff contaminated with oil, grease, and dirt enters the device; dirt and other small particles settle to the bottom chamber of the unit, while grease and oil float into a second chamber where they are held until the unit is pumped clean. The treated runoff is discharged to the existing storm sewer system. As a side note, the planners liked the idea that the unit is located underground and does not interfere with the site's appearance.

Left: Water quality unit located underground between garage and sidewalk preserves site aesthetics.

Fairville Park
West Hanover Township

A new parking lot was planned to accommodate visitors to West Hanover Township's Fairville Park. The township's Environmental Advisory Council was searching for an inexpensive, environmentally sensitive method of dealing with increased runoff created by the construction of a large impervious area. The answer came in the form of a rain garden. A grant from the state secured the funding needed for the project. The parking lot was graded to direct runoff into the rain garden, which featured a waterfall constructed of stones to funnel the runoff into the garden. The attractive rain garden detains, infiltrates and filters the parking lot stormwater and fits in perfectly with the natural surroundings of the park.

See examples of the BMPs featured in these projects at DCCD's onsite BMP tour!

Medical Offices
Derry Township

A group of doctors needed a site they could develop for new offices. They chose to renovate an existing structure in Derry Township. They also needed to deal with the increased runoff from roof and parking areas. Once again, site planners turned to innovative BMPs to effectively handle stormwater. Roof drainage was directed though pipes to an infiltration trench constructed under a portion of the parking lot. The trench is out of sight, but can be accessed by discreet wells in order to ensure the system is working properly. Runoff originating from the parking and yard areas is directed via grass-lined swales to a rock-lined channel that eventually enters a small stream near the property. The swales and rock channel slow the speed of runoff, which reduces erosion of the streambank.

Above: Underneath this parking lot is an infiltration trench for storing parking lot runoff.

Left: A gently sloping grass swale collects runoff from the paved area adjacent to it.

Non-Structural Strategy
Washington Township

The projects discussed above all employed structural BMPs to solve their stormwater runoff problems. However, in Washington Township, Dauphin County, a non-structural approach to reduce the harmful effects of stormwater runoff was implemented. This is contained in the township's floodplain management ordinance, which prohibits new development on the designated floodplain. Although this type or ordinance is not required by federal regulations, Washington Township's municipal leaders enacted this measure to reduce the potential for property damages caused by flooding. The floodplain areas of waterways in the township are protected and maintained in a natural vegetated state, resulting in better management of stormwater flows. Several townships in Dauphin County employ this approach.

Conclusion

The techniques discussed above are just a few of the projects in Dauphin County that employ innovative solutions to adequately manage stormwater runoff. These solutions work, and, as mentioned in previous newsletters, they do so at a lower cost than installation of conventional storm sewers. BMPs are flexible and can be adapted to any site. Municipal officials are encouraged to provide for the use of these stormwater management solutions and make sure that current ordinances do not preclude their use. □

Next Issue: Summary of Stormwater Management Topics